

# **Tree Crops' CO<sub>2</sub> Removal Capacity**

# Report

**Action C.4** 



# LIFE CLIMATREE

(LIFE14 CCM/GR/000635)

A novel approach for accounting & monitoring carbon sequestration of tree crops and their potential as carbon sink areas







#### Introduction

The current Report is the Deliverable of **Action C.4** which was implemented in the framework of the LIFE CLIMATREE project (LIFE14 CCM/GR/000635) [www.lifeclimatree.eu].

The LIFE CLIMATREE project was co-financed by the European Commission in the framework of the Programme LIFE Climate Change Mitigation.

In the context of the LIFE CLIMATREE project, a specialized algorithm (CO<sub>2</sub>RCA: CO<sub>2</sub> Removal Capacity Algorithm) was designed and developed to efficiently and accurately calculate the tree crops' capacity to remove CO<sub>2</sub> from atmosphere. CO<sub>2</sub>RCA's design principles provide calculation of the tree crop's carbon balance which is strictly related to atmosphere's CO<sub>2</sub> (CO<sub>2</sub> related carbon). More specifically, it calculates the annual balance between the mass of CO<sub>2</sub> which is captured from atmosphere throughout the biological cycle of the tree to produce new wood biomass as well as fruits biomass, and the mass of CO<sub>2</sub> which is emitted to atmosphere by the applied agricultural practices. Moreover, it calculates and takes into account in the calculation of the CO<sub>2</sub> balance, the annual CO<sub>2</sub> gain which results from the application of "green" agricultural practices.

CO<sub>2</sub>RCA was designed and formulated by the scientific team of TERRA NOVA Ltd.:

Ioannis Spanos Chemical Engineer, MSc. (Action C.4 Leader)

Andreas Sotiropoulos Environmental Scientist, MSc.

Leta Karava Forester, MSc.

Based on the CO<sub>2</sub>RCA, a tree crops' CO<sub>2</sub> Removal Capacity Calculation Tool (CO<sub>2</sub>RCCT) was designed, developed and tested.

CO<sub>2</sub>RCCT was applied at pilot scale to 5 tree species [Olive (*Olea europaea*), Apple (*Malus domestica*), Orange (*Citrus sinensis*), Peach (*Prunus persica*) and Almond (*Amygdalus communis*)] in three countries [Greece, Italy, Spain].

CO<sub>2</sub>RCCT was designed and developed by the scientific team of TERRA NOVA Ltd.:

Ioannis Spanos Chemical Engineer, MSc. (Action C.4 Leader)

Andreas Sotiropoulos Environmental Scientist, MSc.

Leta Karava Forester, MSc.

Stavroula Barafaka Chemical Engineer, MSc.
Roula Chandrinou Environmental Scientist, MSc.
Kostis Dramitinos Environmental Scientist
Dimitris Ntinopoulos Environmental Engineer





#### in close collaboration with:

- a. The scientific team of the Agricultural University of Athens (AUA) regarding the currently applied cultivation practices for the 5 pilot tree species, as well as regarding best, "green", practices that could be alternatively applied:
  - Serko Haroutounian, *Professor at the Department of Nutritional Physiology and Feeding, School of Agriculture, Engineering and Environment*
  - Petros Roussos, Associate Professor at the Department of Crop Science, Laboratory of Pomology Epameinondas Evergetis, Scientific Assistant at the Department of Nutritional Physiology and Feeding, School of Agriculture, Engineering and Environment
- b. The Institute of Urban Environment and Human Resources of the Panteion University of Athens (UEHR) regarding the development of the equations supporting the Soil section:
  - Angelos Mimis, Associate Professor at the Department of Economic and Regional Development

The operation of the CO<sub>2</sub>RCCT is supported by an extended <u>back-end database</u>, which was specifically developed for the purpose to provide data and coefficients to the CO<sub>2</sub>RCA. This database was developed by:

- A. The above scientific team of TERRA NOVA
- B. The above scientific team of the Agricultural University of Athens
- C. The scientific team of the University of Basilicata (UNIBAS) regarding coefficients for the specific tree crops' cultivation in Italy as well as statistical data at national scale:

Giuseppe Montanaro Associate Professor
Teodoro Berloco Post doc fellowship
Giuseppe Acinapura Post lauream fellowship

- D. The scientific team of the Spanish National Research Council (CSIC) regarding coefficients for the specific tree crops' cultivation in Spain as well as statistical data at national scale:
  - Diego Intrigliolo Agriculture Engineer, PhD, Senior Scientist at CSIC

# The current Report presents:

- i. the CO<sub>2</sub> Removal Capacity Algorithm (CO<sub>2</sub>RCA)
- ii. the CO<sub>2</sub> Removal Capacity Calculation Tool (CO<sub>2</sub>RCCT)
- iii. the results of various CO<sub>2</sub>RCCT runs
- iv. the analysis of the results and the extracted conclusions
- v. the emerging potentials derived for the further use of the CO<sub>2</sub>RCA and the CO<sub>2</sub>RCCT





# 1. TREE CROPS CO<sub>2</sub> REMOVAL CAPACITY ALGORITHM (CO<sub>2</sub>RCA)

#### 1.1 ALGORITHM'S DESIGN PRINCIPLES AND CHARACTERISTICS

The scope of the  $CO_2$  Removal Capacity Algorithm ( $CO_2RCA$ ) is to efficiently and accurately calculate the tree crops' capacity to remove  $CO_2$  from atmosphere.

The Algorithm (CO<sub>2</sub>RCA) was designed to calculate the balance between:

- the mass of CO<sub>2</sub> which is removed from atmosphere by tree crops to produce new biomass, and
- ⇒ the mass of CO<sub>2</sub> which is emitted to atmosphere by the applied agricultural practices.

#### CO<sub>2</sub>RCA takes into account:

- ✓ the biological cycle of the tree
- ✓ the practices applied for its cultivation, maintenance, protection and harvesting.

It is underlined that  $CO_2RCA$  calculates the carbon balance which is strictly related to atmosphere's  $CO_2$  ( $CO_2$  related carbon).

The calculations boundaries of the CO<sub>2</sub>RCA are:

- a) <u>Investigated subject</u>: the tree itself and subsequently the tree crop land in terms of a specific farm or broader areas which are exclusively used for the cultivation of tree crops.
- b) <u>Time period</u>: 1 entire calendar year (e.g., 2019) taking into account that within a year a full cultivation cycle can be considered as a completed one and thus a full productive cycle of the tree crop will be performed.





#### 1.2 ALGORITHM DESCRIPTION

#### Algorithm's structure

The Algorithm (CO<sub>2</sub>RCA) consists of a backbone set of equations, which are divided in 4 sections:

- i. CO<sub>2</sub> Removal from the atmosphere for the development of tree's new biomass
- ii. CO<sub>2</sub> Storage into the soil beneath and around the tree
- iii. CO<sub>2</sub> Emissions to the atmosphere due to the currently applied cultivation practices
- iv. CO<sub>2</sub> Gain as a result of the application of "green" agricultural practices

CO<sub>2</sub>RCA is described by the following main equation:

$$ARC = TAR - TAE + TAG = AR_B + AS_S - TAE + TAG$$
 [1]

where:

ARC: CO<sub>2</sub> Annual Removal Capacity [in tn of CO<sub>2</sub> per year]

TAR: CO<sub>2</sub> Total Annual Removals [in *tn of CO<sub>2</sub> per year*]

TAE: CO<sub>2</sub> Total Annual Emissions [in *tn of CO<sub>2</sub> per year*]

TAG: CO<sub>2</sub> Total Annual Gain [in tn of CO<sub>2</sub> per year]

AR<sub>B</sub>: CO<sub>2</sub> Annual Removal due to the biomass change of the tree [in tn of CO<sub>2</sub> per year]

AS<sub>5</sub>: CO<sub>2</sub> Annual Storage in soil as carbon of the fallen biomass [in tn of CO<sub>2</sub> per year]

It has to be underlined an important difference between ARC and TAR; ARC is the result of the  $CO_2$  mass balance between (a) the total quantity of  $CO_2$  which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of  $CO_2$  which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

#### CO<sub>2</sub> Removal Capacity due to the production of new biomass

The biomass change of the tree is analysed into 2 main categories:

- ✓ the annual production of fruits
- ✓ the annual production of new trunk, branches and roots.

$$AR_B = AR_{BF} + AR_{BW}$$
 [2]

where:

AR<sub>BF</sub>: CO<sub>2</sub> Annual Removal due to the production of fruits biomass [in tn of CO<sub>2</sub> per year]

AR<sub>BW</sub>: CO<sub>2</sub> Annual Removal due to the production of wood biomass [in tn of CO<sub>2</sub> per year]





# (a) CO<sub>2</sub> removal from atmosphere for the production of fruits biomass

The quantity of CO<sub>2</sub> which is absorbed by the tree from the surrounding atmosphere to be used for the production of the fruits' biomass, is calculated by the following equation:

$$AR_{BF} = C_f \times K_1 \times Y = C_f \times K_1 \times TYD \times S \times (1+I_Y)$$
 [3]

where:

AR<sub>BF</sub>: CO<sub>2</sub> Annual Removal due to the production of fruits biomass [in tn of CO<sub>2</sub> per year]

C<sub>f</sub>: carbon content of fresh fruit [in tn C per tn of fresh fruit]

 $K_1$ : mass conversion coefficient from C to  $CO_2 = 3.66419$ 

Y: total yield of the farm or the broader area regarding fruit production [in tn per year]

TYD: typical yield density of the tree crop cultivation [in tn per ha per year]

S: surface of the tree crop cultivation [in ha]

I<sub>Y</sub>: increase of yield due to the application of an alternative agricultural practice [in %]

# (b) CO<sub>2</sub> removal from atmosphere for the production of wood biomass

The quantity of CO<sub>2</sub> which is annually absorbed by the tree from the surrounding atmosphere to be utilized for the production of new woody biomass (new trunk, branches and roots), is calculated by the following equation:

$$AR_{BW} = (JP \times PD \times S \times ADR_1 \times C_w \times K_1) + (MP \times PD \times S \times ADR_2 \times C_w \times K_1) + AR_{BPr}$$
 [4] where:

AR<sub>BW</sub>: CO<sub>2</sub> Annual Removal due to the production of wood biomass [in *tn of CO<sub>2</sub> per year*]

JP: percentage of the orchard's trees that are in the Juvenile Phase [in %]

MP: percentage of the orchard's trees that are in the Mature Phase [in %]

PD: planting density of the tree crop cultivation [in *number of trees per ha*]

S: surface of the tree crop cultivation [in *ha*]

ADR<sub>1</sub>: annual development rate of tree's biomass (trunk, branches, roots) in Juvenile Phase [in *tn of dry wood per tree per year*]

ADR<sub>2</sub>: annual development rate of tree's biomass (trunk, branches, roots) in Mature Phase [in *tn of dry wood per tree per year*]

C<sub>w</sub>: carbon content of dry wood = 0.475 tn C per tn of dry wood

(this is an average value applicable to practically all types of wood)

 $K_1$ : mass conversion coefficient from C to  $CO_2 = 3.66419$ 

AR<sub>BPr</sub>: CO<sub>2</sub> Annual Removal due to the management of prunings biomass [in *tn of CO<sub>2</sub> per year*]





The trees of an orchard are developed in time through 2 Development Phases:

- Arr The Juvenile Phase, which initiates at time point  $T_0$  when the tree is transferred from the nursery and it is planted in the farm. The Juvenile Phase ends at time point  $T_1$  when the full production period of the tree initiates.
- ☑ The Mature Phase, which follows the Juvenile Phase. It initiates at time point T₁ and lasts until time point T₂. It is the period through which the tree achieves its full production performance. T₂ is the time point that the tree's life in the orchard ends and the tree is replaced by a young one transferred from the nursery. At this point it has to be noted that for specific species, like olive trees, there isn't a predefined T₂ time point, since these trees can extend their full productive life span almost indefinitely.

Each Development Phase is characterized by an individual Annual Development Rate of tree's woody biomass:

- → ADR<sub>1</sub> for the Juvenile Phase
- → ADR<sub>2</sub> for the Mature Phase.

Thus, the knowledge of the age of the trees in an orchard is important for the calculation of the  $AR_{BW}$ , since the appropriate ADR factor must be selected to be used in equation [4].

A significant assumption regarding the development process of the tree is that the ADRs of each Phase (Juvenile and Mature respectively) are considered each to be represented by a constant value, meaning that the development of the tree through each Phase is illustrated by a linear line and not a curve.

Furthermore, it is underlined that ADR exclusively refers to the annual change of the woody biomass of the tree (trunk, branches, roots including rootlets). It does not include the biomass of the produced fruits.





 $AR_{BPr}$  is a correction factor of the  $AR_{BW}$  equation regarding the  $CO_2$  related to the biomass of the branch prunings, which is actually included in the first 2 sections (Juvenile and Mature Phase) of equation [4]. More specifically the value of  $AR_{BPr}$  depends on the practice which is applied for the management of prunings, as it is presented in the following set of equations [5]:

	AR <sub>BPr</sub>	
		it is deducted because the CO <sub>2</sub> quantity related
		to the specific biomass returns to the
Prunings are left in the field		atmosphere except of this taken into account in
	-( $M_{Pr}$ x DW/FW x MP x PD x S x $C_w$ x $K_1$ )	the equations of the Soil section (AS <sub>s</sub> )
Prunings are burnt in the field		it is deducted because the CO <sub>2</sub> quantity related
Prunings are used as a solid		to the specific biomass returns to the
fuel outside the field		atmosphere
Prunings have another use	0	it is already calculated in the first 2 parts of
different than burning	0	equation [5]

#### where:

AR<sub>BPr</sub>: CO<sub>2</sub> Annual Removal due to the management of prunings biomass [in tn of CO<sub>2</sub> per year]

M<sub>Pr</sub>: annual mass of produced prunings [in *tn of fresh wood per tree per year*]

DW/FW: coefficient indicating wood moisture [in tn of dry wood per tn of fresh wood]

MP: percentage of the orchard's trees that are in the Mature Phase [in %]

<u>Important note</u>: the MP coefficient is used because the prunings process is applied mainly to trees being in the Mature Phase

PD: planting density of the tree crop cultivation [in *number of trees per ha*]

S: surface of the tree crop cultivation [in ha]

C<sub>w</sub>: carbon content of dry wood = 0.475 tn C per tn of dry wood

(this is an average value applicable to practically all types of wood)

 $K_1$ : mass conversion coefficient from C to  $CO_2 = 3.66419$ 

[5]





# CO2 Storage in soil as carbon of the fallen biomass

The specific section of the CO<sub>2</sub>RCA is based on the RothC model (*version 26.3*). It calculates the quantity of atmosphere's CO<sub>2</sub> that is eventually stored into the soil in form of carbon through the decomposition of tree's fallen biomass.

The following parts of the tree are considered as Fallen Biomass:

- ✓ fruits from thinning processes (tree self-thinning or/and intentionally by the farmer)
- ✓ leaves from both types of trees (the whole quantity of leaves from deciduous trees and percentage of the annually replaced leaves in evergreen trees)
- √ hulls left in the field after harvesting (e.g. almond hulls)
- ✓ prunings left in the field.

An additional parameter affecting the above calculation is the existence or not of soil cover crops (surface vegetation) underneath the trees. This particular practice actually increases the quantity of CO<sub>2</sub> that eventually is removed from atmosphere due to the storage of a part of that carbon, which initially has been used for the development of this type of vegetation, into the soil.

$$AS_S = C_{FB} \times K_1 \times e^{-a \times b \times c \times k \times t}$$
 [6]

where:

ASs: CO<sub>2</sub> Annual Storage in soil as carbon of the fallen biomass [in tn of CO<sub>2</sub> per year]

C<sub>FB</sub>: carbon content of fallen biomass [in *tn of C per year*]

 $K_1$ : mass conversion coefficient from C to  $CO_2 = 3.66419$ 

a: rate for temperature, given by  $a = 47.9/(1 + e^{106/(T+18.3)})$ 

b: rate for moisture, which is a function of rainfall, pan evaporation and clay content of the soil

c: retainment factor [0.6 when the soil is vegetated, otherwise 1.0]

k: decomposition rate

t: 1, since k represents an annual decomposition rate.

T: Mean annual temperature of the cultivated area [in  ${}^{\circ}C$ ]

$$C_{FB} = C_{FB\_fruits} + C_{FB\_leaves} + C_{FB\_hulls} + C_{FB\_Pr\_lf} [in tn of C per year]$$
 [6.1]

where:

C<sub>FB\_fruits</sub>: carbon content of fallen fruits [in *tn of C per year*]
C<sub>FB\_leaves</sub>: carbon content of fallen leaves [in *tn of C per year*]





CFB\_hulls: carbon content of hulls remaining in the field after harvesting [in tn of C per year]

C<sub>FB\_Pr\_If</sub>: carbon content of prunings left in the field [in *tn of C per year*]

$$C_{FB\_fruits} = (Z_{fruits}/(1-Z_{fruits})) \times Y \times C_f$$
 [6.2]

where:

C<sub>FB\_fruits</sub>: carbon content of fallen fruits [in *tn of C per year*]

 $Z_{fruits}$ : the percentage of total product losses (thinning) throughout a full cultivation cycle [in %] <u>Important note</u>:  $Z_{fruits}$  is not a percentage of the Yield, but a percentage of the Total Potential fruits biomass, meaning that  $Y = Total Potential fruits biomass x (1 - <math>Z_{fruits}$ )

Y: total yield of the farm or the broader area regarding fruit production [in tn per year]

C<sub>f</sub>: carbon content of fresh fruit's biomass [in tn C per tn of fresh fruit]

$$C_{FB\_leaves} = M_{leaves} \times PD \times S \times C_w$$
 [6.3]

where:

C<sub>FB\_leaves</sub>: carbon content of fallen leaves [in *tn of C per year*]

M<sub>leaves</sub>: annual mass (dry matter) of fallen leaves or newly generated leaves per tree [in *tn dry matter* of leaves per tree per year]

<u>Important note</u>: At the mature phase of the tree, approximately the annual mass of fallen leaves is equal to the mass of the new leaves generated. This is applicable to both types of trees (evergreen & deciduous). The total mass of leaves in evergreen trees is fully renewed within a period of approximately 3 years, while in deciduous trees it is fully renewed annually.

PD: planting density of the tree crop cultivation [in *number of trees per ha*]

S: surface of the tree crop cultivation [in *ha*]

C<sub>w</sub>: carbon content of dry wood = 0.475 tn C per tn of dry wood

Assumption: the dry matter of leaves approximates dry wood in terms of carbon content

#### $C_{FB\_hulls} = M_{hulls} \times Z_{hulls} \times PD \times S \times C_{w}$ [6.4]

where:

C<sub>FB\_hulls</sub>: carbon content of hulls remaining in the field after harvesting [in *tn of C per year*]

M<sub>hulls</sub>: mass of hulls of the produced fruits [in *tn of hulls per tree per year*]

Z<sub>hulls</sub>: percentage of hulls remaining in the field after harvesting [in %]

PD: planting density of the tree crop cultivation [in *number of trees per ha*]

S: surface of the tree crop cultivation [in *ha*]

C<sub>w</sub>: carbon content of dry wood = 0.475 *tn C per tn of dry wood* (this is an average value applicable to practically all types of wood)





#### $C_{FB\_Pr\_lf} = Z_{Pr\_lf} \times M_{Pr} \times DW/FW \times MP \times PD \times S \times C_w$

[6.5]

where:

C<sub>FB Pr If</sub>: carbon content of prunings left in the field [in *tn of C per year*]

Z<sub>Pr\_lf</sub>: percentage of prunings left in the field [in %]

M<sub>Pr</sub>: annual mass of produced prunings [in *tn of fresh wood per tree per year*]

DW/FW: coefficient indicating wood moisture [in tn of dry wood per tn of fresh wood]

MP: percentage of the orchard's trees that are in the Mature Phase [in %]

<u>Important note</u>: the MP coefficient is used because the prunings process is applied mainly to trees being in the Mature Phase

PD: planting density of the tree crop cultivation [in *number of trees per ha*]

S: surface of the tree crop cultivation [in ha]

C<sub>w</sub>: carbon content of dry wood = 0.475 tn C per tn of dry wood

(this is an average value applicable to practically all types of wood)

#### CO<sub>2</sub> Emissions due to the currently applied cultivation practices

The CO<sub>2</sub> emissions which are attributed to the applied agricultural practices are analysed into 3 categories:

- use of fertilizers
- use of pesticides
- consumption of fossil fuels and electricity.

The third category (fossil fuels and electricity) represents the actual use of mechanical (internal combustion and electrical respectively) equipment and machinery, which are used through the various cultivation activities (tillage, trimming, spaying, irrigation, harvesting, etc.).

$$TAE = AE_f + AE_p + AE_{ff&e}$$

[7]

where:

TAE: CO<sub>2</sub> Total Annual Emissions [in tn of CO<sub>2</sub> per year]

AE<sub>f</sub>: CO<sub>2</sub> Annual Emissions due to the use of fertilizers [in *tn of CO<sub>2</sub> per year*]

AE<sub>p</sub>: CO<sub>2</sub> Annual Emissions due to the use of pesticides [in *tn of CO<sub>2</sub> per year*]

AE<sub>ff&e</sub>: CO<sub>2</sub> Annual Emissions due to the use of fossil fuels & electricity [in tn of CO<sub>2</sub> per year]





Each category of emissions is illustrated respectively by the following equations:

$$AE_f = ((R_N \times M_N \times EF_N) + (R_K \times M_K \times EF_K) + (R_P \times M_P \times EF_P)) \times K_1 \times S$$
 [8]

where:

AE<sub>f</sub>: CO<sub>2</sub> Annual Emissions due to the use of fertilizers [in tn of CO<sub>2</sub> per year]

 $R_N$ ,  $R_K$ ,  $R_P$ : content of fertilizer in Nitrogen (N), Potassium (K), Phosphorus (P) respectively [in %]  $M_N$ ,  $M_K$ ,  $M_P$ : quantity (mass) of the N-fertilizer, K-fertilizer, P-fertilizer respectively, used within a year [in *tn of fertilizer per ha per year*]

EF<sub>N</sub>, EF<sub>E</sub>: emission factor regarding the carbon emissions (equivalent) for the production, transportation, storage and transfer of the N-fertilizer, K-fertilizer, P-fertilizer respectively [in *tn of C per tn of N, K, P respectively*]

 $K_1$ : mass conversion coefficient from C to  $CO_2 = 3.66419$ 

S: surface of the tree crop cultivation [in ha]

# $AE_p = ((M_{H_ai} \times ED_{H_ai}) + (M_{I_ai} \times ED_{I_ai}) + (M_{F_ai} \times ED_{F_ai}) + (M_{GR_ai} \times ED_{GR_ai})) \times EF_{GE} \times K_2 \times S$ [9] where:

AE<sub>p</sub>: CO<sub>2</sub> Annual Emissions due to the use of pesticides [in *tn of CO<sub>2</sub> per year*]

M<sub>H\_ai</sub>, M<sub>I\_ai</sub>, M<sub>F\_ai</sub>, M<sub>GR\_ai</sub>: quantity (mass) of the active ingredient (ai) of the Herbicide, Insecticide, Fungicide, Growth Regulator respectively, used within a year [in *tn of pesticide ai per ha per year*]

ED<sub>H\_ai</sub>, ED<sub>I\_ai</sub>, ED<sub>F\_ai</sub>, ED<sub>GR\_ai</sub>: energy demand for the production, formulation, packaging and transportation of Herbicide, Insecticide, Fungicide, Growth Regulator respectively [in *MJ per tn of ai*]

EF<sub>GE</sub>: emission factor representing the global carbon intensity of electricity generated [in *tn of CO<sub>2</sub> per KWh*]

K<sub>2</sub>: conversion coefficient from MJ to KWh = 0.27778 KWh/MJ

S: surface of the tree crop cultivation [in *ha*]

*Note*: the global carbon intensity of electricity generated is used as carbon emission factor since it is not always known the specific country where each pesticide was produced.





 $AE_{ff\&e} = AE_D + AE_G + AE_{EL} = (M_D \times EF_D \times S) + (M_G \times EF_G \times S) + (M_{EL} \times EF_{EL} \times S)$  [10] where:

AEff&e: CO<sub>2</sub> Annual Emissions due to the use of fossil fuels & electricity [in tn of CO<sub>2</sub> per year]

AE<sub>D</sub>: CO<sub>2</sub> Annual Emissions due to the use of diesel [in *tn of CO<sub>2</sub> per year*]

AE<sub>G</sub>: CO<sub>2</sub> Annual Emissions due to the use of gasoline [in tn of CO<sub>2</sub> per year]

AE<sub>EL</sub>: CO<sub>2</sub> Annual Emissions due to the use of electricity [in tn of CO<sub>2</sub> per year]

M<sub>D</sub>: annual consumption of diesel [in *It per ha per year*]

M<sub>G</sub>: annual consumption of gasoline [in *It per ha per year*]

M<sub>EL</sub>: annual consumption of electricity [in *KWh per ha per year*]

EF<sub>D</sub>: emission factor regarding the  $CO_2$  emissions due to the production (Well to Tank) and combustion of diesel [in *tn CO<sub>2</sub> per lt of diesel*]

EF<sub>G</sub>: emission factor regarding the  $CO_2$  emissions due to the production (Well to Tank) and combustion of gasoline [in *tn CO<sub>2</sub> per lt of gasoline*]

EF<sub>EL</sub>: emission factor regarding the  $CO_2$  emissions due to the production and transportation of electricity [in *tn CO<sub>2</sub> per KWh of electricity*]

S: surface of the tree crop cultivation [in *ha*]

#### CO<sub>2</sub> Gain due to the application of "green" cultivation practices

Depending on the application of potential "green" cultivation practices, a  $CO_2$  gain can result which subsequently leads to the reduction of the  $CO_2$  Total Annual Emission (TAE). By this way the overall performance of the tree crop cultivation in terms of  $CO_2$  can be further improved (the  $CO_2$  Annual Removal Capacity, ARC, is increased).

A set of promising "green" cultivation practices was selected and the respective equations for the calculation of the CO<sub>2</sub> gain of each individual practice were designed, formulated and incorporated as separate factors in the Total Annual Gain (TAG) equation:

TAG =  $AG_{N-f\_LCC} + AG_{f\_FGT} + AG_{H\_cc/m} + AG_{I\_im/mt} + AG_{WF} + AG_{RES} + AG_{EL\_m} + AG_{D\_FGT}$  [11] where:

TAG: CO<sub>2</sub> Total Annual Gain

AG<sub>N-f\_LCC</sub>: CO<sub>2</sub> Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)

AG<sub>f\_FGT</sub>: CO<sub>2</sub> Annual Gain due to fertilizers reduction (use of fertigation)





AG<sub>H cc/m</sub>: CO<sub>2</sub> Annual Gain due to herbicides reduction (use of cover crops/mulching)

AG<sub>I\_im/mt</sub>: CO<sub>2</sub> Annual Gain due to insecticides reduction (insects monitoring/mass trapping)

AGWF: CO2 Annual Gain due to the use of wood fuel instead of diesel to produce the same calorific result

AGRES: CO<sub>2</sub> Annual Gain due to the use of Renewable Energy Sources

AG<sub>EL\_m</sub>: CO<sub>2</sub> Annual Gain due to electricity reduction (use of mulching)

AG<sub>D\_FGT</sub>: CO<sub>2</sub> Annual Gain due to diesel reduction (use of fertigation)

All above are expressed in [tn of CO2 per year]

Below, the equations of each particular CO<sub>2</sub> gain factor are presented:

 $AG_{N-f\_LCC} = N_L \times EF_N \times K_1 \times S$  [12]

where:

AG<sub>N-f\_LCC</sub>: CO<sub>2</sub> Annual Gain due to N-fertilizer reduction (use of Leguminosae cover crops) [in *tn of CO<sub>2</sub>* per year]

 $N_L$ : mean value of nitrogen provided by the Leguminosae cover crops [in *tn of N per ha per year*] EF<sub>N</sub>: emission factor regarding the carbon emissions (equivalent) for the production, transportation, storage and transfer of N-fertilizer [in *tn of C per tn of N*]

 $K_1$ : mass conversion coefficient from C to  $CO_2 = 3.66419$ 

S: surface of the tree crop cultivation [in *ha*]

 $AG_{f\_FGT} = RF_{f\_FGT} \times ((R_N \times TM_N \times EF_N) + (R_K \times TM_K \times EF_K) + (R_P \times TM_P \times EF_P)) \times K_1 \times S$  [13] where:

AG<sub>f\_FGT</sub>: CO<sub>2</sub> Annual Gain due to fertilizers reduction (use of fertigation) [in tn of CO<sub>2</sub> per year]

RF<sub>f\_FGT</sub>: reduction factor of fertilizers demands due to the application of fertigation [in %]

R<sub>N</sub>, R<sub>K</sub>, R<sub>P</sub>: content of fertilizer in Nitrogen (N), Potassium (K), Phosphorus (P) respectively [in %]

 $TM_N$ ,  $TM_F$ : typical quantity (mass) of N-fertilizer, K-fertilizer, P-fertilizer respectively, used within a year [in *tn of fertilizer per ha per year*]

EF<sub>N</sub>, EF<sub>K</sub>, EF<sub>P</sub>: emission factor regarding the carbon emissions (equivalent) for the production, transportation, storage and transfer of the N-fertilizer, K-fertilizer, P-fertilizer respectively [in *tn of C per tn of N, K, P respectively*]

 $K_1$ : mass conversion coefficient from C to  $CO_2 = 3.66419$ 

S: surface of the tree crop cultivation [in *ha*]





#### $AG_{H\_cc/m} = RF_H \times TM_{H\_ai} \times ED_{H\_ai} \times EF_{GE} \times K_2 \times S$

[14]

where:

AG<sub>H\_cc/m</sub>: CO<sub>2</sub> Annual Gain due to Herbicides reduction (use of cover crops and/or mulching) [in *tn of CO<sub>2</sub> per year*]

RF<sub>H</sub>: reduction factor of Herbicides consumption if cover crops and/or mulching are used [in %]

 $TM_{H\_ai}$ : typical quantity (mass) of active ingredient (ai) of Herbicide used within a year [in *tn of pesticide* ai per ha per year]

 $ED_{H_ai}$ : energy demand for the production, formulation, packaging and transportation of Herbicide [in MJ per tn of ai]

EF<sub>GE</sub>: emission factor representing the global carbon intensity of electricity generated [in *tn of CO<sub>2</sub> per KWh*]

K<sub>2</sub>: conversion coefficient from MJ to KWh = 0.27778 KWh/MJ

S: surface of the tree crop cultivation [in *ha*]

*Note*: the global carbon intensity of electricity generated is used as carbon emission factor since it is not always known the specific country where each pesticide was produced.

#### $AG_{I_{im}/mt} = RF_{I} \times TM_{I_{ai}} \times ED_{I_{ai}} \times EF_{GE} \times K_{2} \times S$

[15]

where:

AG<sub>I\_im/mt</sub>: CO<sub>2</sub> Annual Gain due to Insecticides reduction (insects monitoring or/and mass trapping) [in tn of CO<sub>2</sub> per year]

RF<sub>I</sub>: reduction factor of Insecticides consumption if insects monitoring or/and mass trapping is applied [in %]

 $TM_{I_ai}$ : typical quantity (mass) of active ingredient (ai) of Insecticide used within a year [in *tn of pesticide ai per ha per year*]

 $ED_{I\_ai}$ : energy demand for the production, formulation, packaging and transportation of Insecticide [in MJ per tn of ai]

EF<sub>GE</sub>: emission factor representing the global carbon intensity of electricity generated [in *tn of CO<sub>2</sub> per KWh*]

K<sub>2</sub>: conversion coefficient from MJ to KWh = 0.27778 KWh/MJ

S: surface of the tree crop cultivation [in *ha*]

*Note*: the global carbon intensity of electricity generated is used as carbon emission factor since it is not always known the specific country where each pesticide was produced.





# $AG_{WF} = Z_{Pr\_WF} \times M_{Pr} \times PD \times S \times 1,000,000 \times NCV_W \times EF_D/(NCV_D \times d_D)$

[16]

where:

AG<sub>WF</sub>: CO<sub>2</sub> Annual Gain due to the use of wood fuel instead of diesel to produce the same calorific result [in *tn of CO<sub>2</sub> per year*]

Z<sub>Pr\_WF</sub>: percentage of prunings used as wood fuel [in %]

M<sub>Pr</sub>: annual mass of produced prunings [in *tn of fresh wood per tree per year*]

PD: planting density of the tree crop cultivation [in *number of trees per ha*]

S: surface of the tree crop cultivation [in *ha*]

NCV<sub>w</sub>: Net Calorific Value of fresh wood [in *GJ/tn*]

NCV<sub>D</sub>: Net Calorific Value of diesel [in *GJ/tn*]

 $d_D$ : density of diesel [in  $Kg/m^3$ ]

EF<sub>D</sub>: emission factor regarding the  $CO_2$  emissions due to the production (Well to Tank) and combustion of diesel [in *tn CO<sub>2</sub> per lt of diesel*]

# AGRES = RFRES X TMEL X EFEL X S

[17]

where:

AGRES: CO<sub>2</sub> Annual Gain due to the use of Renewable Energy Sources [in tn of CO<sub>2</sub> per year]

RF<sub>RES</sub>: percentage of the farm's electricity needs covered by RES [in %]

TM<sub>EL</sub>: typical annual consumption of electricity [in *KWh per ha per year*]

EF<sub>EL</sub>: emission factor regarding the  $CO_2$  emissions due to the production and transportation of electricity [in *tn CO<sub>2</sub> per KWh of electricity*]

S: surface of the tree crop cultivation [in ha]

#### $AG_{EL_m} = RF_{EL_m} \times TM_{EL} \times EF_{EL} \times S$

[18]

where:

AGEL\_m: CO<sub>2</sub> Annual Gain due to electricity reduction (use of mulching) [in tn of CO<sub>2</sub> per year]

RF<sub>EL\_m</sub>: reduction factor of the consumption of irrigation water [in %]

TM<sub>EL</sub>: typical annual consumption of electricity [in *KWh per ha per year*]

EF<sub>EL</sub>: emission factor regarding the  $CO_2$  emissions due to the production and transportation of electricity [in *tn CO<sub>2</sub> per KWh of electricity*]

S: surface of the tree crop cultivation [in *ha*]

<u>Note</u>: electricity is mainly used for the operation of the irrigation pumps, thus when the irrigation needs are reduced, the electricity consumption is reduced by approximately the same percentage





# $AG_{D\_FGT} = RF_{D\_FGT} \times TM_{D} \times EF_{D} \times S$

[19]

where:

AGD\_FGT: CO2 Annual Gain due to diesel reduction (use of fertigation) [in tn of CO2 per year]

RF<sub>D\_FGT</sub>: reduction factor of the consumption of diesel due to the application of fertigation [in %]

TM<sub>D</sub>: typical annual consumption of diesel [in *It per ha per year*]

 $\mathsf{EF}_D\text{: emission factor regarding the }\mathsf{CO}_2\text{ emissions due to the production (Well to Tank) and combustion}$ 

of diesel [in tn CO2 per lt of diesel]

S: surface of the tree crop cultivation [in *ha*]





# 2. TREE CROPS CO<sub>2</sub> REMOVAL CAPACITY CALCULATION TOOL (CO<sub>2</sub>RCCT)

Based on the CO<sub>2</sub>RCA, an e-tool (Tree crops' CO<sub>2</sub> Removal Capacity Calculation Tool [CO<sub>2</sub>RCCT]) was developed incorporating CO<sub>2</sub>RCA's equations and enabling the calculation of tree crops CO<sub>2</sub> removal capacity under different scenarios (e.g., cultivation practices, trees protection, fuels, energy, etc.).

 $CO_2RCCT$  was developed within Action C.4 in excel format. Moreover, a web-based e-tool was developed in the context of Action C.3, which was based on the  $CO_2RCCT$ . Both versions are available at the official web-site of the LIFE CLIMATREE project [www.lifeclimatree.eu].

CO<sub>2</sub>RCCT was developed at a pilot scale incorporating 5 tree species:

- ✓ Orange [*Citrus sinensis*]
- ✓ Apple [*Malus domestica*]
- ✓ Peach [*Prunus persica*]
- ✓ Almond [Amygdalus communis or Prunus dulcis]
- ✓ Olive [Olea europaea]

in 3 countries:

- ✓ Greece
- ✓ Italy
- ✓ Spain.

It is operational in 4 languages:

- English
- Greek
- Italian
- Spanish.

 $CO_2RCCT$  is designed and developed in such a way to be able to operate and extract reliable and accurate results even if the user has no knowledge of all requested input data. Thus, the  $CO_2RCCT$  can be used equal effectively by both; users having the technical know-how a specific cultivation (e.g., the farmer, the agronomist) as well as by users having a general aspect of the issue (e.g., decision/ policy makers).





The CO<sub>2</sub>RCCT results can be useful tools for:

- ☑ policy makers to evaluate agricultural policies, assess them and improve them or modify them accordingly towards the direction of promoting "green" and environmentally friendly agricultural practices and enhancing the sustainability of the agricultural sector while simultaneously combating climate change.
- ✓ farmers and agronomists to analyse the agricultural practices that are applied to real case studies tree crop farms and determine the specific points that require improvement or modification towards the increase of the "climate" performance of these cultivations.

In Annex I of the current Report, the CO<sub>2</sub>RCCT User Manual is presented which includes instructions on how to use and operate effectively the tool.

#### CO<sub>2</sub>RCCT back-end database

The operation of  $CO_2RCCT$  is supported by an extended back-end database, which includes data and coefficients appropriate to be used in the  $CO_2RCA$  equations. More specifically, the sources of these data are presented below:

Type of data and coefficients		Source
Cultivation performance data (e.g., yield,	•	Official statistical data of each country for the last 5
planting density, cultivated surface)		successive years (2012-2016)
Wood biomass data	•	Field experiments performed during the previous 4
		years by the team of the Agricultural University of
		Athens
Fertilizers and pesticides data	•	International literature
Fossil fuels data	•	Greenhouse Gas Protocol Tool - Mobile Combustion
		GHG Emissions Calculation Tool, Version 2.6, World
		Resources Institute (2015)
Electricity data	•	European Environment Agency
	•	International Energy Agency, "Global Energy & CO <sub>2</sub>
		Status Report, The latest trends in energy and
		emissions in 2018", 2019
Agricultural practices data	•	Information collected and analyzed by the team of
		the Agricultural University of Athens through a
		questionnaire survey which was addressed to over
		300 Greek farmers.

In Annex II, the back-end database of the currently uploaded version (r.14) of the  $CO_2RCCT$ , is presented.





#### CO<sub>2</sub>Removal Capacity Indexes (RCI)

Through a series of appropriately designed Indexes (CO<sub>2</sub> Removal Capacity Indexes - RCI), CO<sub>2</sub>RCCT produces results that can be used to efficiently compare alternative cultivation scenarios as well as the actual impact of potentially applied "green" agricultural practices.

#### RCIs consist of 3 categories:

- ☑ CO<sub>2</sub> per unit of cultivated area [in *tn CO<sub>2</sub>/hectare/year*]
- ☑ CO<sub>2</sub> per unit of harvested fruits [in *tn CO<sub>2</sub>/tn of yield/year*]
- ☑ CO<sub>2</sub> per tree unit [in *tn CO<sub>2</sub>/tree/year*]

These Indexes were proved substantial tools to assess the performance of a tree crop cultivation in terms of Climate Change as well as to investigate and determine the reasons why a specific cultivation does not perform efficiently or/and it presents a significant deviation from the expected performance.

#### **CO<sub>2</sub>RCCT optimization**

CO<sub>2</sub>RCCT was run and tested by a multidisciplinary pool of users and it was optimized based on their remarks and comments.

51 draft versions of CO<sub>2</sub>RCCT were developed prior to its launching on the project's website. Even then, CO<sub>2</sub>RCCT was kept on being optimized. Today the  $14^{th}$  released version of the CO<sub>2</sub>RCCT (.xlsx) is uploaded to the project's website and is freely available to any interested scientist, stakeholder or policy maker.





# 3. Runs of the CO<sub>2</sub>RCCT

The tree crops CO<sub>2</sub>RCCT was operated for a series of different scenarios (runs) based on:

- ✓ the country
- ✓ the tree crops species.

Moreover, a series of "green" alternative agricultural practices were examined by using the CO<sub>2</sub>RCCT:

- ✓ use of cover crops
- ✓ use of Leguminosae cover crops
- ✓ application of mulching
- ✓ application of fertilizers via fertigation
- ✓ application of insects monitoring and/or mass trapping
- √ valorization of prunings as solid fuel instead of diesel
- ✓ use of Renewable Energy Sources,

and their impact on tree crops' "climate" performance was analyzed in depth.

Indicative runs of various case studies are presented below. The detailed results of each run are presented in Annex III of the current Report.

run#	Country	Tree species	Agricultural practice
1	Greece	orange	conventional
2	Greece	apple	conventional
3	Greece	peach	conventional
4	Greece	almond	conventional
5	Greece	olive	conventional
6	Italy	orange	conventional
7	Italy	apple	conventional
8	Italy	peach	conventional
9	Italy	almond	conventional
10	Italy	olive	conventional
11	Spain	orange	conventional
12	Spain	apple	conventional
13	Spain	peach	conventional
14	Spain	almond	conventional
15	Spain	olive	conventional
16	Greece	olive	use of cover crops
17	Greece	olive	use of cover crops of the Leguminosae family
18	Greece	olive	application of fertilizers through fertigation
19	Greece	orange	use of cover crops of the Leguminosae family





run#	Country	Tree species	Agricultural practice
20	Greece	apple	use of cover crops of the Leguminosae family
21	Greece	peach	use of cover crops of the Leguminosae family
22	Greece	almond	use of cover crops of the Leguminosae family
23	Greece	olive	use of prunings as wood fuel
24	Greece	orange	use of prunings as wood fuel
25	Greece	apple	use of prunings as wood fuel
26	Greece	peach	use of prunings as wood fuel
27	Greece	almond	use of prunings as wood fuel
28	Greece	orange	cover of electricity needs by 100% RES
29	Greece	orange	use of insects' mass trapping
30	Greece	orange	use of cover crops





# 4. ANALYSIS OF THE RESULTS OF THE CO<sub>2</sub>RCCT RUNS

The following Table summarizes the comparative results of the CO<sub>2</sub>RCCT runs for the 5 tree species (orange, apple, peach, almond, olive) per each of the 3 countries (Greece, Italy, Spain), when they are cultivated by using conventional agricultural practices (runs 1 to 15 of Annex III).

<u>Table 1</u>
CO<sub>2</sub>RCCT results for the conventional cultivation of the pilot trees in Greece, Italy and Spain

Greece		Orange	Apple	Peach	Almond	Olive
ARC	tn CO <sub>2</sub> /year	218,437	9,768	280,022	70,437	3,047,921
$AR_{BW}$	tn CO <sub>2</sub> /year	300,878	58,443	403,408	101,011	4,549,120
ASs	tn CO <sub>2</sub> /year	7,224	2,069	2,719	2,305	54,879
AE <sub>f</sub>	tn CO <sub>2</sub> /year	37,063	15,213	32,746	9,047	635,916
AE <sub>p</sub>	tn CO <sub>2</sub> /year	25,353	5,981	32,739	11,609	492,126
AE <sub>ff&amp;e</sub>	tn CO <sub>2</sub> /year	27,248	29,550	60,620	12,223	428,037
ARCarea	tn CO <sub>2</sub> /hectare/year	6.44625	0.87465	7.12835	5.29610	3.73945
ARC <sub>product</sub>	tn CO <sub>2</sub> /tn of yield/year	0.27844	0.03866	0.45389	2.29570	0.89183
ARCtree	tn CO <sub>2</sub> /tree/year	0.01446	0.00118	0.01623	0.01899	0.02157
TAE/TAR		0.29102	0.83857	0.31051	0.31824	0.33798

Italy		Orange	Apple	Peach	Almond	Olive
ARC	tn CO <sub>2</sub> /year	544,000	144,815	-45,766	-81,653	-432,427
AR <sub>BW</sub>	tn CO₂/year	791,664	313,581	136,115	33,706	1,765,111
$AS_S$	tn CO₂/year	20,505	35,737	18,578	19,144	135,218
AE <sub>f</sub>	tn CO₂/year	72,709	32,607	41,374	38,250	602,340
AE <sub>p</sub>	tn CO <sub>2</sub> /year	63,163	28,041	56,860	50,760	681,448
AE <sub>ff&amp;e</sub>	tn CO₂/year	132,296	143,854	102,226	45,492	1,048,968
ARC <sub>area</sub>	tn CO₂/hectare/year	6.44393	2.76564	-0.67081	-1.40407	-0.38314
ARC <sub>product</sub>	tn CO <sub>2</sub> /tn of yield/year	0.30873	0.06122	-0.03219	-1.03453	-0.15651
ARC <sub>tree</sub>	tn CO <sub>2</sub> /tree/year	0.02685	0.00205	-0.00103	-0.00520	-0.00246
TAE/TAR		0.33019	0.58544	1.29585	2.54502	1.22755

Spain		Orange	Apple	Peach	Almond	Olive
ARC	tn CO <sub>2</sub> /year	1,072,597	21,311	-53,901	55,887	13,717,511
AR <sub>BW</sub>	tn CO₂/year	1,364,264	138,480	78,832	1,074,843	16,840,922
AS <sub>S</sub>	tn CO <sub>2</sub> /year	41,335	5,469	5,433	100,949	592,428
AE <sub>f</sub>	tn CO <sub>2</sub> /year	134,041	33,189	35,081	251,313	985,823
AEp	tn CO <sub>2</sub> /year	102,510	15,350	37,156	432,868	1,466,719
AE <sub>ff&amp;e</sub>	tn CO <sub>2</sub> /year	96,451	74,098	65,929	435,723	1,263,297
ARC <sub>area</sub>	tn CO <sub>2</sub> /hectare/year	7.82865	0.74348	-1.20901	0.11269	5.64687
ARC <sub>product</sub>	tn CO <sub>2</sub> /tn of yield/year	0.32876	0.03891	-0.04626	0.29248	2.13593
ARC <sub>tree</sub>	tn CO <sub>2</sub> /tree/year	0.01879	0.00150	-0.00242	0.00047	0.01227
TAE/TAR		0.23691	0.85195	1.63965	0.95247	0.21315





#### **General results**

The apparent conclusion of the figures presented in Table 1 is that tree crops present a significant  $CO_2$  Annual Removal Capacity (ARC) and thus they can have an important role as a mitigation measure in confronting Climate Change. More specifically, the total ARC of the 5 types of tree crops that were examined in the 3 countries sum up to 18,568,959 tn  $CO_2$ /year.

Nevertheless, there are cultivation cases that can be improved either to increase their "climate" performance (blue values) or to reverse their negative carbon balance (red values).

The performance of a tree crop cultivation is represented by the TAE/TAR Index (Total Annual Emissions divided by the Total Annual Removals). This is a very important Index, which indicates in a direct way the percentage of the CO<sub>2</sub> emissions which actually "consumes" the profit derived by the CO<sub>2</sub> removals and thus leads to the decrease of the CO<sub>2</sub> Removal Capacity. High TAE/TAR values give a clear signal that measures have to be taken to decrease the CO<sub>2</sub> emissions of the applied agricultural practices.

Especially when the value of TAE/TAR is greater than 1, this means that the quantity of CO<sub>2</sub> emitted due to the applied agricultural practices is larger than the CO<sub>2</sub> quantity absorbed by the atmosphere to create the tree's woody biomass. This is an alarming indication that immediate drastic measures must be taken to reverse this negative condition.

# **Results of the Greece case**

Specifically regarding the results presented in Table 1 for Greece, it is concluded that:

- Peach and orange are the trees presenting the highest ARC<sub>area</sub> Index, a fact that is mainly attributed to the intensive cultivation practices applied which demand high values of Planting Densities (439,32 trees/ha and 445,91 trees/ha respectively. Nevertheless, apple cultivation although applied at the highest Planting Density (PD: 739 trees/ha), it presents the lowest ARC<sub>area</sub>, which is due to the high value of the TAE/TAR Index. This particular Index although is lower than 1, reveals that the CO<sub>2</sub> emissions due to the applied cultivation practices are significantly high leading by this way to the substantial diminishing of any significant carbon profit that could be extracted.
- ✓ Olive presents the highest ARC<sub>tree</sub> Index mainly due to the typical size of olive trees which are considerably larger than the trees of the rest examined species.





Regarding the TAE/TAR Index, all four tree species (orange, peach, almond, olive) present similar values fluctuating at a close range, except of the apple which demonstrates a TAE/TAR value almost 2.5 times higher.

# The role of soil

Another important result extracted by the above runs is that although  $AS_s$  values do not constitute soil as a principal component of the  $CO_2$  Annual Removal Capacity (ARC), still it participates consistently in storing  $CO_2$  as carbon of the fallen biomass.

More specifically, regarding the 5 tree species examined in Greece, Italy and Spain, every year 1,043,992 tn  $CO_2$  (total AS<sub>5</sub>) are stored into the soil beneath the trees of these orchards. This quantity corresponds to the 3.74% of the quantity of  $CO_2$  which is removed from atmosphere to create the wood biomass of the trees (total AR<sub>BW</sub>: 27,950,378 tn  $CO_2$ ).

Table 2 presents the respective  $AS_s$  Index per tree ( $AS_{S\_tree}$ ), e.g., for the cultivation of olive. The differences in the values are mainly attributed to the way the tree is cultivated (growth, formulation, prunings management) since the quantity of the carbon stored into the soil is directly depended on the quantity of the fallen biomass.

		Greece	Italy	Spain
AS <sub>S_tree</sub>	tn CO <sub>2</sub> /tree/year	0.00039	0.00077	0.00053





#### **Use of Leguminosae cover crops**

As far as concerning various alternative cultivation practices, the results of the CO<sub>2</sub>RCCT runs 5, 16, 17 and 18 for the cultivation of olive in Greece (conventional, use of cover crops, use of Leguminosae cover crops, application of fertilizers via fertigation respectively), presented in the following Table 3, lead to interesting conclusions in terms of "climate" performance vs cultivation practices.

<u>Table 3</u>
ARC, TAR and TAE for alternative olive cultivation practices in Greece

Cultivation practice	ARC (tn CO <sub>2</sub> /year)	Increase	TAR (tn CO <sub>2</sub> /year)	Increase	<b>TAE</b> (tn CO <sub>2</sub> /year)	Reduction
Conventional	3,047,921		4,604,000		1,556,079	
Use of cover crops	3,402,006	11.62%	4,648,405	0.96%	1,246,399	19.90%
Use of Leguminosae cover crops	3,712,610	21.81%	4,648,405	0.96%	935,795	39.86%
Use of fertigation	3,194,791	4.82%	4,604,331	0.01%	1,409,540	9.42%

## More specifically:

- There is a substantial increase of ARC in the case of using cover crops and even higher when these cover crops belong to the Leguminosae family (nitrogen slow releasers), while on the other hand the respective increase in the case of fertigation is not that impressive. This is a useful conclusion when a decision process is in progress to plan investments for the improvement of the "climate" performance of this cultivation. It is apparent that the use of cover crops, or even better the use of Leguminosae cover crops, a practice of significantly lower capital cost compared to fertigation, can lead to impressive results regarding the increase of ARC.
- Another interesting conclusion derived by the above values is that the respective increase of ARC is
  not attributed to a substantial increase of TAR, but to the significant decrease of TAE due to the
  CO<sub>2</sub> Annual Gain (AG<sub>N-f\_LCC</sub>) because of the reduction on the use of Nitrogen-fertilizers.

Respectively, the use of Leguminosae cover crops in the cultivation of orange, apple, peach and almond can lead to significant increase of ARC, as it is resulted by CO<sub>2</sub>RCCT runs 19-22 (see Table 4 below).





<u>Table 4</u>
Positive impact of the use of Leguminosae cover crops in orange, apple, peach and almond cultivations in Greece

ARC	Orange	Apple	Peach	Almond
(tn CO <sub>2</sub> /year)				
Conventional	218,437	9,768	280,022	70,437
Use of Leguminosae cover crops	250,031	18,518	315,093	82,419
Increase	14.46%	89.58%	12.52%	17.01%

At this point it has to be clarified that apparently the ARC increase percentage is not following the same pattern for all 5 tree species, since their needs in Nitrogen fertilization vs Potassium and Phosphorus fertilization are not the same, thus affecting dissimilarly the TAE reduction.

#### Use of prunings as solid fuel

Another important result derived by  $CO_2RCCT$  is the significant contribution of the applied prunings management practice in the values of ARC. Specifically, the use of prunings as a solid fuel (wood fuel) outside the field instead of conventional fossil fuels (i.e., diesel), is a Climate Change mitigation measure acknowledged by FAO. The Annual  $CO_2$  Gain (AGWF) that derives by this particular management practice is incorporated in the Annual  $CO_2$  Removal due to the production of wood biomass (ARBW), which in its turn is incorporated in the calculation of ARC.

Table 5 presents the percentages of the current main prunings management practices applied in Greece, while Table 6 proposes an alternative distribution of the respective management practices.

<u>Table 5</u>
Currently applied prunings management practices in Greece

Current Management practices	Orange	Apple	Peach	Almond	Olive
left in the field	40.00%	80.00%	40.00%	20.00%	
burnt in the field			40.00%	20.00%	20.00%
use as a solid fuel outside the field	60.00%	20.00%	20.00%	60.00%	70.00%
other use different than burning					10.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%





<u>Table 6</u>
Proposed distribution of prunings management practices in Greece

Proposed Management practices	Orange	Apple	Peach	Almond	Olive
left in the field	10.00%	10.00%	10.00%	10.00%	
burnt in the field					
use as a solid fuel outside the field	90.00%	90.00%	90.00%	90.00%	90.00%
other use different than burning					10.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

The above proposed change in the prunings management practices leads to a significant increase of  $AG_{WF}$  as it is presented in the following Table 7, and subsequently to increase of ARC.

<u>Table 7</u>
Alteration of AG<sub>WF</sub> at country level (Greece) based on the proposed management practices of Table 6

AG <sub>WF</sub> (tn CO <sub>2</sub> /year)	Orange	Apple	Peach	Almond	Olive
Current status	80,021	12,246	23,147	16,335	1,028,170
Proposed scheme	120,032	55,105	104,161	24,503	1,321,932
Increase	50.00%	349.98%	350.00%	50.00%	28.57%

#### Comparative analysis of alternative "green" agricultural practices

CO<sub>2</sub>RCCT can be used to compare alternative "green" agricultural practices regarding their "climate" performance vs investment requirements. A characteristic example is the examination of the application of a Renewable Energy Sources plant (e.g., photovoltaic) specifically dedicated to cover the electricity needs of a particular tree crop farm.

For the purposes of this example, the orange cultivation in Greece will be used as a case study, since the specific cultivation is the most demanding in terms of electricity consumption compared to the cultivation of other tree species (Table 8).





**Table 8**Typical annual mean consumption of electricity

<b>TM<sub>EL</sub></b> (KWh/ha/year		
Orange	280.00	
Apple	170.00	
Peach	180.00	
Almond	113.00	
Olive	14.29	

The electricity needs will be covered by 100% by RES (run 28). This scenario will be compared in terms of  $CO_2$  Annual Gain to the application of insects' mass trapping (run 29) and to the application of cover crops (run 30). The extracted comparative results are presented in the following Table 9.

<u>Table 9</u>
Comparison of alternative "green" agricultural practices

	Conventional	RES 100%	Insects' mass trapping	Use of cover crops
ARC (tn CO <sub>2</sub> /year)	218,437	224,348	227,660	237,118
TAE (tn CO <sub>2</sub> /year)	89,664	83,753	80,442	76,790
CO <sub>2</sub> Annual	Gain (tn CO <sub>2</sub> /year)	9,223	12,874	
Increase of CO <sub>2</sub> Annual Gain compared to RES (%)			56.03%	117.80%

Based on the above results, it is apparent that simpler to apply and by far more economical, regarding the required capital cost, agricultural practices can deliver significantly higher  $CO_2$  Annual Gains compared to the application of RES.





# The role of fruits biomass for regulating climate

Although the fruits' biomass is not taken into account by the current official systems for the calculation of agriculture's  $CO_2$  budgeting due to the short life cycle of the fruit as a product, it is apparent that the amounts of  $CO_2$  that are removed from atmosphere, even temporarily, to create the fruits' biomass are considerably high.

More specifically, concerning the 5 types of tree crops examined within the project, the mass of  $CO_2$  which is removed from atmosphere to create the fruits' biomass (AR<sub>BF</sub>) has been calculated by the  $CO_2RCCT$  and it is presented in the following Table 10:

Table 10

CO<sub>2</sub> Annual Removal due to the production of fruit biomass

AR <sub>BF</sub> tn CO <sub>2</sub> /year	Orange	Apple	Peach	Almond	Olive	Total per country
Greece	55,365	18,746	29,229	66,792	1,889,674	2,059,806
Italy	56,979	228,564	220,123	21,922	713,386	1,240,974
Spain	230,246	40,640	55,205	415,962	3,551,048	4,293,101
Total per tree crop	342,590	287,950	304,557	504,676	6,154,108	7,593,881

The total mass of  $CO_2$  which is removed from atmosphere to create the fruits' biomass (AR<sub>BF</sub>) sum up to 7,593,881 tn  $CO_2$ /year, which, although with a limited life span in terms of being outside the system of the atmosphere, offers a 40.90% overplus above the total  $CO_2$  Annual Removal Capacity (ARC) of the 5 tree crops in the 3 countries (18,568,959 tn  $CO_2$ /year).

Examining this issue from another angle, every year the 5 examined tree crops in the 3 pilot countries absorb from the atmosphere 36,588,251 tn CO<sub>2</sub> of which:

- → 76.40% (27,950,378 tn CO<sub>2</sub>) is used to create the new wood biomass of the trees (AR<sub>BW</sub>)
- → 20.75% (7,593,881 tn CO<sub>2</sub>) is used to create the fruits' biomass (AR<sub>BF</sub>)
- $\rightarrow$  2.85% (1,043,992 tn CO<sub>2</sub>) is stored into the soil beneath the trees as carbon of the fallen biomass (ASs).

It is revealed by the above analysis that the, even temporary, contribution of the fruits in the confrontation of Climate Change through the removal of CO<sub>2</sub> from the atmosphere, can be considered as a substantial one.





The important role of the fruits' biomass in the issue of the current analysis, can be illustrated in a micro scale if considering the carbon content of the mass of the fruits (see Table 11), which is directly attributed to the CO<sub>2</sub> removed from the atmosphere by the trees.

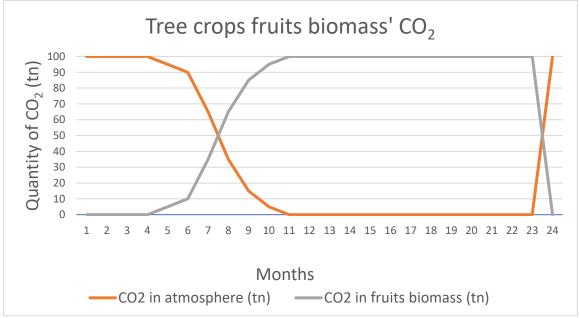
Table 11
Carbon content of fresh fruits' biomass

	[g C / Kg fresh fruit]	[g CO <sub>2</sub> absorbed from atmosphere / Kg fresh fruit]*
Orange	19.26	70.57
Apple	20.25	74.20
Peach	12.93	47.38
Almond	594.10	2,176.90
Olive	150.90	552.93

<sup>\*</sup>To calculate the CO<sub>2</sub> mass by the respective carbon (C) content, the K<sub>1</sub> coefficient (3.66419) is used.

All the above mentioned data substantiate the importance of fruits and consequently the importance of the corresponding tree crop farms as a significant Climate Change mitigation measure. Tree crops through their fruits' biomass can serve as a <u>Climate Regulator</u>.

The specific  $CO_2$  mass can be considered as a "short-term climate loan", which enables the planet, instead of dealing with an  $X_1$  quantity of  $CO_2$  steadily existing in the atmosphere and thus contributing to the formulation of the climate, to deal with a smaller quantity  $X_2$  fluctuating gradually throughout a calendar year from  $X_1$  to 0 and then back to  $X_1$  when the fruits will be consumed, depending on the product after a period of 1 month to 4 years (during the period between harvesting and final consumption,  $X_2$  is constantly 0) [see Diagram 1].



**Diagram 1**: Transfer of CO<sub>2</sub> between atmosphere and fruits biomass





## 5. CONCLUSIONS REGARDING THE TREE CROPS CO<sub>2</sub> REMOVAL CAPACITY

Concluding, based on all the above, tree crops are proved to be of significant importance for the regulation of the climate, acting as a Climate Change mitigation measure.

In this context, the expansion of areas covered by tree crops combined with the adoption of "green" cultivation practices that entail lower CO<sub>2</sub> emissions, appears to be of paramount importance towards the achievement of the Climate Change goals.

On top of that, an expansion of the area used for tree crop cultivation could further contribute substantially to the sector of Food Security providing adequate quantities of food of good quality to cover the needs of more people.

Prerequisite for accomplishing the above mentioned (tree crops areas expansion, adoption of "green" cultivation practices), is the respective decision making for planning of policies and strategies that will aim at mobilizing the farmers towards this direction through:

- extended awareness raising
- ✓ provision of financial incentives
- elimination of bureaucratic barriers and speed-up of licensing procedures.





#### 6. EMERGING POTENTIALS FOR USING THE CO<sub>2</sub>RCA AND THE CO<sub>2</sub>RCCT

A series of rising potentials for using the  $CO_2RCA$  and the  $CO_2RCCT$  appear to be significantly promising regarding the expected impacts on the climate, the sustainable agricultural development and the economy.

The quantified results regarding the tree crops' CO<sub>2</sub> Annual Removal Capacity as well as its constituting parameters, can provide the necessary data:

- to the farmers, as well as to the consulting agronomists, towards the improvement of the "climate" performance of their tree crop farms through the adoption of best/ "green" agricultural practices.
- to the policy/decision makers towards the improvement of the relevant agricultural climate change indexes through the effective planning, organization and promotion of the appropriate required policies, strategies and measures (e.g., financial incentives, "green" subsidies, supporting infrastructure, etc.) to enhance the development of the agricultural sector in a sustainable and simultaneously viable way.
- to the financial institutions to develop "green" banking products for the agricultural sector that will be based on a CO<sub>2</sub> reduction incentive concept (e.g., lower "green" interest rate) by taking into account the "climate" performance of the specific tree crop farm for which the farmer requests financing.
- to a voluntary carbon off-setting market through which the farmers themselves will be able to financially exploit the CO<sub>2</sub> credits of their own tree crop farms.

The above potential uses of the CO<sub>2</sub>RCA and the CO<sub>2</sub>RCCT can lead to a series of significant advantages:

- ☑ Financial support to the European Union's agricultural sector.
- ☑ Development of financial incentives (e.g., "green" subsidies, "green" loans, etc.) for the farmers towards the adoption of "green" agricultural practices, which can lead to less CO<sub>2</sub> emissions and consequently to increased CO<sub>2</sub> Annual Removal Capacity of their orchards.
- ✓ Avoidance of currency export to third, non-EU countries for purchasing CO<sub>2</sub> credits in the case of the voluntary carbon off-setting market.
- ☑ Development of a new market of services within EU that will provide:
  - consultation to the farmers for "greening" the applied agricultural practices
  - ✓ calculation of the CO₂ Annual Removal Capacity of the orchards
  - ✓ certification of the calculated CO₂ credits
  - ✓ brokering of the certified CO₂ credits.





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The most representative references, which were studied during the process for the design and development of the CO<sub>2</sub>RCA and the CO<sub>2</sub>RCCT, are listed below:

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# Annex I CO<sub>2</sub>RCCT User Manual

#### Instructions for using the Tree crops' CO<sub>2</sub> Removal Capacity Calculation Tool (CO<sub>2</sub>RCCT)

## Tool settings

Input

The first step is the User to enter worksheet "Tool settings" (light green colour tab) and select the Country (Greece, Italy or Spain) on which CO<sub>2</sub>RCCT will be applied and then the language that will be used by CO<sub>2</sub>RCCT.

The available language options depend on the selected Country (English is a common option to all 3 Countries).

In the worksheet "Input" (coral colour tab) the User has to insert information and data for the tree crop cultivation of interest.

Questions Q1 and Q2 are mandatory and must be answered prior to the rest Questions.

Regarding the rest Questions (Q3 to Q13.5), even if the User has no available data or knowledge to answer them, the design of CO<sub>2</sub>RCCT ensures the extraction of reliable results by retrieving the non filled-in, missing data by the back-end supporting Database.

If fields Q9.1, Q10.1, Q10.3, Q10.5, Q10.7 are not filled-in by the User, CO<sub>2</sub>RCCT will consider the corresponding answer as an affirmative one (e.g. yes fertilizers are used) and it will proceed to the calculations using data that will be retrieved by the back-end Database.

In case the User decides to change the Country option in worksheet "Tool settings" while there is in progress an on-going "run" of CO<sub>2</sub>RCCT, he must change respectively the selection of the geographical area in Question Q2 otherwise CO<sub>2</sub>RCCT will not continue to operate appropriately.

Finally, it has to be underlined that the User is important to read and follow the instructions which are included in each individual Question of worksheet "Input".

#### Results

The results that are extracted by the operation of the CO<sub>2</sub>RCCT are presented in the worksheet "Results" (light blue colour tab).

Furthermore, the CO<sub>2</sub> Gain due to the application of "green" agricultural practices, is calculated and presented per case.

The overall results are presented (CO<sub>2</sub> Annual Removal Capacity, CO<sub>2</sub> Total Annual Removals, CO<sub>2</sub> Total Annual Emissions) as well as the results of the sub-sections of the CO<sub>2</sub>RCA (CO<sub>2</sub> Annual Removal due to Biomass of Wood, CO<sub>2</sub> Annual Removal due to Biomass of Fruits, CO<sub>2</sub> Annual Storage in soil as carbon of the fallen biomass, CO<sub>2</sub> Annual Emissions due to the use of fertilizers, pesticides, fossil fuels and electricity). For each sub-section, the constituent parameters are also calculated and presented.

For all the above results, the respective CO<sub>2</sub> Removal Capacity Indexes (per unit of cultivated area, per unit of harvested fruits, per tree unit) are calculated and presented.

Note: if #DIV/0! appears instead of a numerical result, this means that one or more of the corresponding statistical data YD (Yield Density), PD (Planting Density) and S (Surface of tree crop plantation) for the specific selected geographical area are not available in the back-end Database.

Database

The back-end Database that supports the operation of CO<sub>2</sub>RCCT contains various coefficients and data that have been acquired by several sources which are referenced accordingly. This Database is included in the worksheets of the current .xlsx file with the black colour tabs.

These worksheets also include the equations, assumptions and logical paths that constitute the  $CO_2$  Removal Capacity Algorithm ( $CO_2$ RCA) based on which  $CO_2$ RCCT performs its calculations. Although these worksheets are accessible by the User, it is strongly adviced not to alter or modify any data or equations because in such a case the  $CO_2$ RCCT may not operate appropriately. The only data that the User could replace with other probably more suitable for his case study, are the ones included in the black cells with the white characters.





# Annex II CO<sub>2</sub>RCCT backend database

Tree crops	
	Species
Orange	Citrus sinensis
Apple	Malus domestica
Peach	Prunus persica
Almond	Amygdalus communis*
Olive	Olea europaea

<sup>\*</sup>synonym: Prunus dulcis

	Trunk, l	branches	and roots b	iomass devel	opment						
	<b>T</b> <sub>1</sub>	T <sub>2</sub>	ADR <sub>1</sub>	ADR <sub>2</sub>	% Juvenile Phase (Phase 1)	% Mature Phase (Phase 2)					
_											
Greece		ars	•	er/tree/year	,	nal level)					
Orange	6	50	0.00380	0.01220	12.00%	88.00%					
Apple	4	20	0.00360	0.00572	20.00%	80.00%					
Peach	4	15	0.00572	0.01760	26.67%	73.33%					
Almond	5	30	0.00887	0.01680	16.67%	83.33%					
Olive	7	150	0.00970	0.01859	4.67%	95.33%					
	_	•	•								
Italy	(ye	ars)	tn dry matt	er/tree/year	(at natio	nal level)					
Orange	6	40	0.00500	0.02870	15.00%	85.00%					
Apple	3	20	0.00169	0.00530	15.00%	85.00%					
Peach	3	10	0.00100	0.00451	30.00%	70.00%					
Almond	5	25	0.00590	0.00290	20.00%	80.00%					
Olive	8	100	0.00875	0.01000	8.00%	92.00%					
Spain	(ye	ars)	tn <b>dry matt</b>	er/tree/year	(at natio	nal level)					
Orange	6	40	0.02000	0.01220	15.00%	85.00%					
Apple	4	25	0.01300	0.00572	16.00%	84.00%					
Peach	4	15	0.00572	0.00200	26.67%	73.33%					
Almond	5	25	0.00887	0.00400	20.00%	80.00%					
Olive	7	100	0.01224	0.00800	7.00%	93.00%					

	C <sub>f</sub>
Carbon c	ontent of fresh fruits
	biomass
Greece	[g C / Kg fresh fruit]
Orange	19.260
Apple	20.250
Peach	12.930
Almond	594.100
Olive	150.900
Italy	[g C / Kg fresh fruit]
Orange	8.825
Apple	26.370
Peach	42.252
Almond	75.800
Olive	70.465
Spain	[g C / Kg fresh fruit]
Orange	19.260
Apple	20.250
Peach	12.930
Almond	594.100
Olive	150.900

Annual Pr	Annual Prunings Biomass												
	$M_{Pr}$	Kg dry matter/t	tter/tree/year										
	Greece	Italy	Spain										
Orange	3.17500	3.17500	3.32500										
Apple	2.60000	2.60000	2.50000										
Peach	2.41667	2.41667	2.31657										
Almond	2.83333	2.83333	2.75000										
Olive	4.50000	4.50000	3.90000										

	Prunings DW/FW
Orange	0.4983
Apple	0.4855
Peach	0.4992
Almond	0.5347
Olive	0.5998

Prunings management						
		Greece				
Management practices (%)		Orange	Apple	Peach	Almond	
left in the field		40.00%	80.00%	40.00%	20.00%	
burnt in the field				40.00%	20.00%	
use as a solid fuel outside the field		60.00%	20.00%	20.00%	60.00%	
other use different than burning						
	Total	100.00%	100.00%	100.00%	100.00%	:
		Italy				
Management practices (%)		Orange	Apple	Peach	Almond	
left in the field		80.00%	80.00%	80.00%	80.00%	
burnt in the field		20.00%	20.00%	20.00%	20.00%	
use as a solid fuel outside the field						
other use different than burning						
	Total	100.00%	100.00%	100.00%	100.00%	1
		Spain				
Management practices (%)		Orange	Apple	Peach	Almond	
left in the field		40.00%	80.00%	40.00%	20.00%	
burnt in the field				40.00%	20.00%	
use as a solid fuel outside the field		60.00%	20.00%	20.00%	60.00%	
other use different than burning						
	Total	100.00%	100.00%	100.00%	100.00%	1

Product losses throughout a full cultivation cycle												
Note: the intentional thinning is included												
Percentage of total Note: NOT percentage of												
Z <sub>fruits</sub>	potential fruits biomass	the yield										
i Orange	20.00%											
ii Apple	20.00%											
iii Peach	20.00%											
iv Almond	10.00%											
v Olive	10.00%											
Sources:	i, ii, iii: FAO 2011 / SIK 2013, Table	33										
	iv, v: P. Roussos/Agricultural Unive	rsity of Athens										

Annual biomass (dry matter) of fallen leaves												
	M <sub>leaves</sub>	Kg dry matter/t	ree/year									
	Greece	Italy	Spain									
Orange	7.05357	7.05357	7.05357									
Apple	2.57143	2.57143	2.57143									
Peach	1.91453	1.91453	1.91453									
Almond	2.56604	2.56604	2.56604									
Olive	6.21103	6.21103	6.21103									

Hulls mass (M<sub>hulls</sub>): 10.16667 Kg/tree/year of which, remain in the field

#### GREECE

Processed data obtained originally by ELSTAT (Ελληνική Στατιστική Αρχή/ Hellenic Statistical Authority)

Mean values of years:

2012 to 2016 [Yield Density]

YD (in tn of fruits produced per ha)

[Planting Density]

PD (in trees planted per ha)

S (in ha) [Surface of tree crop plantation]

Regions		range trees			Apple trees			Peach trees			Almond trees			Olive trees	
negions .		D (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)
GREECE (total)	23.15	445.91	33,885.94	22.62	739.00	11,168.26	15.70	439.32	39,282.78	2.31	278.87	13,299.76	4.19	173.39	815,072.90
EASTERN MACEDONIA & THRACE (total)	5.63	243.75	0.32	13.19	755.49	187.46	7.83	420.58	206.26	3.95	283.95	1,259.02	4.69	192.70	16,070.40
Rodopi				14.09	427.65	37.84	6.70	266.17	12.32	3.56	219.17	68.76	6.62	207.04	955.22
Drama				15.95	495.72	25.72	7.23	352.65	11.24	2.02	254.36	41.32	5.53	258.15	694.96
Evros	1.00	190.00	0.20	9.92	1,217.64	60.18	2.69	578.19	36.52	1.72	264.04	108.06	1.95	180.87	2,251.86
Thasos				5.77	218.79	2.98	4.34	205.00	9.40	1.48	237.39	15.38	1.03	137.36	7,289.40
Kavala	13.33	333.33	0.12	21.26	563.94	34.76	11.12	302.96	83.58	4.46	292.42	1,007.72	12.33	280.26	4,132.28
Xanthi				5.67	737.47	25.98	8.16	585.36	53.20	2.03	284.48	17.78	2.96	204.83	746.68
CENTRAL MACEDONIA (total)	4.98	251.49	3.50	<b>24.52</b> 13.88	711.47	3,105.20	14.85 12.92	<b>429.59</b> 344.77	34,772.80	<b>2.76</b> 2.08	<b>254.01</b> 277.61	2,708.10	<b>6.31</b> 3.70	218.54	41,089.18
Thessaloniki Imathia	0.00	710.00	0.02	27.01	456.52 754.91	61.36 1,404.50	17.32	421.65	65.78 15,480.78	6.43	337.48	315.40 65.42	10.74	215.33 262.60	3,377.92 304.76
Kilkis	0.00	200.00	0.02	4.70	339.46	1,404.30	8.48	331.99	37.84	2.23	261.47	149.88	4.44	271.66	449.14
Pella	0.00	200.00	0.02	23.38	681.16	1,412.66	12.77	436.48	18,865.04	1.76	292.03	69.60	4.73	301.62	800.76
Pieria	1			23.56	811.03	144.80	21.31	454.55	235.62	2.79	261.27	102.80	5.10	288.66	3,375.46
Serres	15.00	400.00	0.04	17.34	734.59	40.56	10.45	514.13	42.42	2.84	245.75	1,933.34	3.66	265.19	5,231.68
Chalkidiki	4.84	247.37	3.42	6.37	245.53	27.00	11.59	264.32	45.32	2.56	234.10	71.66	7.27	197.72	27,549.46
WESTERN MACEDONIA (total)	0.00	500.00	0.04	33.10	1,325.70	2,483.92	27.21	627.86	1,731.78	3.60	549.84	490.60	7.00	277.09	232.76
Kozani	0.00	500.00	0.04	36.25	1,880.84	955.62	22.12	648.87	783.40	4.04	716.09	291.48	7.03	277.34	232.02
Grevena				13.03	703.01	42.04	3.15	250.42	1.44	0.99	155.42	58.08	0.00	196.22	0.74
Kastoria				35.54	966.70	1,155.66	17.57	544.80	1.00	3.51	322.98	11.48			- 1
Florina				18.26	1,055.12	330.60	31.60	611.12	945.94	3.88	372.72	129.56			
EPIRUS (total)	22.60	439.11	4,273.20	4.37	263.84	75.46	8.01	334.22	35.24	1.75	181.92	70.88	5.26	121.60	24,648.44
Ioannina	5.75	273.53	0.34	3.48	225.03	14.68	6.57	301.19	18.80	1.97	190.31	16.84	3.95	159.52	60.48
Arta	22.23	436.94	3,724.08	3.45	250.36	50.04	9.19	419.54	6.90	1.64	189.28	8.58	5.92	200.35	4,951.90
Thesprotia	32.67	491.10	336.52	12.74	335.95	8.24	11.19	340.46	6.12	1.24	186.29	27.46	4.99	87.11	11,080.64
Preveza	13.56	395.09	212.26	6.94	523.68	2.50	7.55	332.46	3.42	2.00	163.89	18.00	5.19	120.43	8,555.42
THESSALY (total)	6.37	286.04	23.42	20.09	526.29	3,732.66	23.64	464.57	1,906.98	2.32	302.97	6,099.78	3.56	228.41	34,034.10
Larissa Karditsa	29.55 5.45	322.00 300.00	0.10 0.22	28.36 4.36	791.03 365.75	1,804.68 32.48	24.94 6.18	474.35 289.16	1,745.58 5.72	2.79 0.44	321.95 138.12	3,943.32 44.22	6.21 2.88	275.15 202.83	8,173.26 116.88
	6.63	285.94	22.98	12.89	268.40	1,736.32	11.44	334.02	87.92	1.51	271.85	2,048.12	2.67	207.62	21,664.34
Magnesia Sporades Islands	4.07	250.00	0.12	4.46	304.76	0.84	11.44	334.02	87.32	0.96	211.55	30.00	0.66	234.68	2,531.16
Trikala	4.07	250.00	0.12	11.57	370.95	158.34	10.82	397.00	67.76	2.73	272.40	34.12	5.94	264.19	1,548.46
CENTRAL GREECE (total)	9.53	341.80	169.76	13.40	540.26	221.70	10.12	307.23	118.62	0.99	196.34	1,054.56	3.24	159.91	90,209.90
Pthiotida	4.22	222.22	1.26	22.88	856.09	118.36	11.79	321.42	78.98	1.89	268.97	409.78	3.84	189.93	37,980.90
Viotia	12.23	377.55	0.98	2.92	106.26	6.36	8.48	395.63	2.88	0.43	143.94	168.28	1.61	137.11	17,484.52
Evia	9.64	361.41	123.76	6.73	188.93	59.92	8.20	269.64	36.30	1.51	193.59	127.70	4.16	139.15	27,197.70
Evritania				2.62	234.46	11.48	2.73	257.89	0.38	1.28	187.27	1.10	0.26	138.57	678.38
Fokida	9.87	288.96	43.76	1.12	147.01	25.58	4.05	412.50	0.08	0.18	137.15	347.70	0.63	136.19	6,868.40
IONIAN ISLANDS (total)	10.22	344.88	334.10	4.96	256.26	35.30	4.31	277.73	14.10	1.47	225.96	135.62	5.72	147.08	38,315.30
Corfu	11.12	366.91	245.40	5.39	269.37	32.26	4.22	279.77	13.20	1.74	236.78	89.62	4.53	149.24	19,214.12
Zakynthos	12.08	310.54	29.22	3.85	166.67	0.12	5.30	228.85	0.52	2.08	191.58	1.90	15.72	172.61	8,454.04
Ithaka	2.85	300.20	2.02	0.57	100.00	0.04				0.34	125.00	2.84	0.84	103.46	1,102.64
Kefallonia	7.92	272.43	40.56	1.38	109.40	2.34	3.88	273.68	0.38	1.27	214.50	31.88	1.84	123.81	3,919.50
Lefkada	2.48	263.67	16.90	1.29	140.74	0.54				0.73	199.10	9.38	0.39	126.12	5,625.00
WESTERN GREECE (total)	14.38	351.94	5,430.24	8.08	306.72	120.08	10.91	347.09	75.70	2.24	196.65	383.58	4.92	186.89	70,083.12
Achaia	11.25	320.38	298.02	8.04	278.78	87.92	10.41	294.83	27.36	2.08	196.30	103.06	7.33	170.18	13,721.74
Etoloakarnania	12.26	301.50	2,701.98	9.31	402.87	26.50	9.20	307.92	16.28	2.20	196.26	235.74	3.13	186.29	22,840.44
DELODONNESS (total)	17.24 <b>27.67</b>	411.89	2,430.24 18,856.58	8.37	290.53 <b>411.66</b>	5.66 <b>883.54</b>	12.66 <b>14.37</b>	411.57 <b>414.82</b>	32.06 <b>303.54</b>	2.69 <b>1.30</b>	199.51 189.20	44.78 <b>490.30</b>	5.11 <b>4.94</b>	194.14 <b>168.24</b>	33,520.94
PELOPONNESE (total) Arkadia	15.05	<b>474.00</b> 376.96	73.48	15.04 18.48	411.66 463.75	883.54 613.60	6.62	269.48	<b>303.54</b> 22.94	0.58	189.20 155.46	<b>490.30</b> 213.22	4.94	168.24 147.26	209,369.84 16,946.64
Argolida	32.62	496.55	9,344.32	13.76	613.14	8.22	18.61	477.22	172.68	2.59	277.31	59.30	3.12	136.39	27,908.94
Korinthia	9.68	347.04	807.76	8.85	301.44	215.18	9.48	314.84	92.30	1.25	204.04	135.06	2.73	143.20	20,882.96
Lakonia	24.79	470.99	8,150.36	4.43	215.62	20.98	14.97	674.85	10.18	1.59	181.50	61.28	3.09	176.66	65,878.92
Mesinia	14.56	315.05	480.66	4.30	185.45	25.56	7.77	256.73	5.44	2.59	209.65	21.44	7.95	183.85	77,752.38
ATTICA (total)	10.31	338.45	70.26	6.94	340.00	0.10	15.76	377.38	9.30	1.74	253.18	116.68	1.56	122.23	23,155.22
Athens Central Section	1														
Athens North Section	1.50	66.67	0.06							0.66	135.00	0.40	1.70	181.01	11.44
Athens West Section	1												1.01	125.67	13.40
Athens South Section	1														1
Athens East Section	4.51	196.03	29.96	6.98	340.00	0.10	22.76	441.27	6.44	2.16	267.29	70.68	1.68	130.66	9,273.12
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West Attica	3.06	194.78	0.46			1	2.81	238.27	2.66	2.40	263.98	20.28	1.24	124.98	4,763.54
Piraeus	3.00	134.78	0.40				2.61	230.27	2.00	2.40	203.38	20.28	0.00	94.00	0.30
Attica Islands	16.15	447.79	39.78				2.47	170.00	0.20	0.80	207.01	25.32	1.66	112.12	9,093.42
	9.47			3.70	240.54	55.00	2.47	254.03		0.80					
NORTHERN AEGEAN (total)		550.31	387.12			55.90			11.02		226.08	252.60	1.30	172.41	57,972.60
Lesvos	3.93	231.85	84.54	3.60	235.19	42.20	2.32	191.04	5.36	2.21	198.99	25.10	1.54	183.33	43,779.50
Ikaria	9.13	264.76	5.42	9.02	179.59	2.94	2.78	175.00	1.68	0.72	113.63	32.00	0.91	122.65	1,997.16
Limnos	2.72	216.67	0.18	4.97	219.33	0.60	0.81	62.58	1.86	0.87	270.84	91.18	0.87	200.83	85.68
Samos	6.33	292.45	81.74	2.69	281.63	10.16	4.84	694.77	1.72	1.74	354.29	2.94	1.02	142.21	8,305.88
Chios	12.47	780.79	215.24				3.28	425.00	0.40	0.27	224.30	101.38	0.27	138.25	3,804.38
SOUTHERN AEGEAN (total)	5.46	390.68	598.88	13.25	600.96	3.54	24.92	543.94	74.22	2.17	198.31	36.72	2.16	132.47	18,258.80
Syros	6.94	302.35	3.40							3.60	273.08	3.90	5.29	235.71	40.60
Andros	13.96	388.39	4.48	3.73	280.00	0.02				1.91	264.71	0.68	5.81	172.04	186.88
Santorini	5.08	268.18	0.22							4.30	645.64	0.78	2.19	169.97	150.86
Kalimnos	7.78	411.44	17.12	5.31	1,121.43	0.28	12.22	1,675.00	0.28	0.78	304.00	1.00	1.33	117.97	602.78
Karpathos	2.17	233.67	1.20	3.87	266.67	0.18	3.08	254.55	0.66	0.65	149.17	2.18	0.23	99.52	1,105.58
Kythnos	8.41	279.76	1.68				7.45	450.00	0.12	3.09	149.14	11.60	2.93	126.22	86.66
Kos	10.11	288.03	17.98	2.91	400.00	0.08	10.50	371.62	1.48	3.48	275.52	0.58	2.57	197.34	2,082.12
Milos	5.98	267.46	5.04				1.50	250.00	0.10	0.68	297.62	0.84	1.14	143.43	495.80
Mykonos	3.80	212.00	1.00										4.84	217.51	5.94
Naxos	12.23	332.44	49.10	7.52	413.48	0.46	2.86	134.72	2.50	4.03	205.47	2.74	2.64	153.85	1,038.24
Paros	5.09	257.09	5.92	3.00	150.00	0.04	2.40	236.36	0.44	1.33	211.05	3.62	2.58	241.07	623.86
Rhodes	3.70	404.65	490.66	29.48	701.70	2.12	28.78	563.99	68.52	1.25	160.36	8.44	2.17	114.46	11,707.68
Tinos	4.40	200.56	1.08	1.52	122.22	0.36	2.32	166.67	0.12	1.67	233.33	0.36	1.79	195.85	131.80
CRETE (total)	22.14	463.45	3,738.52	5.34	304.41	263.40	5.80	305.18	29.03	0.96	163.72	201.32	4.08	181.53	191,633.24
Heraklion	23.72	420.59	404.82	4.57	212.84	191.20	7.77	318.28	5.22	2.38	373.86	12.44	3.40	173.59	87,939.56
Lasithi	12.56	733.92	43.82	10.62	669.11	40.22	4.62	300.54	1.84	0.74	147.52	180.96	3.29	196.09	33,068.60
Rethymno	8.85	426.96	173.30	3.75	272.71	11.80	3.68	308.98	1.96	0.84	222.20	5.36	2.62	160.22	27,744.10
Chania	23.39	467.24	3,116.58	7.68	463.60	20.18	8.61	425.20	14.20	1.25	165.63	2.56	7.07	200.35	42,880.98

#### **ITALY**

Processed data obtained originally by ISTAT (Istituto Nazionale di Statistica/ Italian National Institute of Statistics)

Mean values of years:

2012

2016

YD (in tn of fruits produced per ha [Yield Density]

PD (in trees planted per ha)

[Planting Density]

**S** (in ha)

[Surface of tree crop plantation]

to

Regions		ORANGE TREES		APPLE TREES			PEACH TREES			-	ALMOND TREES			OLIVE TREES	
	YD (tn/ha)	PD (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)
ITALIA (total)	20.87	240.00	84,420.60	45.18	1,350.00	52,362.00	20.84	650.00	68,225.60	1.36	270.00	58,154.60	2.45	156.00	1,128,634.20
PIEMONTE (total)				32.91	1,350.00	4,553.60	27.98	650.00	3,791.00				1.91	156.00	76.80
Torino				28.90	1,350.00	472.60	19.33	650.00	158.60				1.91	156.00	16.00
Vercelli				18.52	1,350.00	12.40	14.18	650.00	120.80						
Novara				27.57	1,350.00	28.00	15.00	650.00	9.00				2.11	156.00	15.20
Cuneo				34.61	1,350.00	3,739.60	30.19	650.00	2,987.40				1.72	156.00	20.00
Asti				14.94	1,350.00	159.60	14.76	650.00	93.60				2.00	156.00	10.00
Alessandria				24.90	1,350.00	125.40	22.87	650.00	415.60				1.90	156.00	12.60
Biella				18.27	1,350.00	13.40	14.45	650.00	4.40				2.34	156.00	1.40
Verbano Cusio Ossola				11.83	1,350.00	2.60	10.64	650.00	1.60				1.64	156.00	1.60
VALLE D' AOSTA (total)				17.25	1,350.00	306.00	12.50	650.00	0.80						
Aosta				17.25	1,350.00	306.00	12.50	650.00	0.80						
LOMBARDIA (total)				28.35	1,350.00	1,651.60	20.09	650.00	403.00	1.89	270.00	2.60	1.95	156.00	2,313.20
Varese				22.00	1,350.00	9.00	12.27	650.00	11.40				3.43	156.00	1.20 64.40
Como Sondrio				23.40 31.53	1,350.00 1,350.00	13.00 1,123.00	12.50	650.00	0.80				1.13 0.40	156.00 156.00	1.60
Milano				16.84	1,350.00	5.00	9.08	650.00	3.60				0.40	156.00	1.60
Bergamo				11.57	1,350.00	49.00	13.42	650.00	11.40				1.57	156.00	126.40
Brescia				15.65	1,350.00	72.20	10.61	650.00	60.80				2.03	156.00	2,036.00
Pavia				21.73	1,350.00	213.20	19.92	650.00	82.60	1.69	270.00	2.20	0.52	156.00	7.00
Cremona				24.71	1,350.00	16.80	17.72	650.00	11.60	1.03	270.00	2.20	0.52	150.00	7.00
Mantova				27.78	1,350.00	142.60	24.01	650.00	217.80				1.30	156.00	19.20
Lecco				11.00	1,350.00	1.20							1.08	156.00	57.40
Lodi				12.80	1,350.00	2.00	12.18	650.00	2.20						
Monza e della Brianza				18.93	1,350.00	4.60	13.00	650.00	0.80	3.00	270.00	0.40			
LIGURIA (total)	10.21	240.00	14.00	9.24	1,350.00	56.40	9.84	650.00	110.60				1.65	156.00	15,396.00
Imperia	10.53	240.00	3.80	6.29	1,350.00	7.00	11.39	650.00	3.60				2.31	156.00	5,880.00
Savona	10.00	240.00	9.20	8.77	1,350.00	23.40	10.46	650.00	72.80				1.60	156.00	2,196.00
Genova				8.67	1,350.00	12.00	8.51	650.00	31.60				0.89	156.00	6,200.00
La Spezia	11.00	240.00	1.00	12.00	1,350.00	14.00	6.54	650.00	2.60				2.43	156.00	1,120.00
TRENTINO ALTO ADIGE (total)				58.13	1,350.00	27,478.00	9.14	650.00	6.40				4.41	156.00	383.40
Bolzano/Bozen				61.32	1,350.00	17,788.00									
Trento				52.27	1,350.00	9,690.00	9.14	650.00	6.40				4.41	156.00	383.40
VENETO (total)				42.02	1,350.00	5,553.40	19.03	650.00	2,964.80	0.99	270.00	2.00	3.07	156.00	4,140.80
Verona				43.61	1,350.00	4,327.80	18.95	650.00	2,531.80				3.01	156.00	3,078.80
Vicenza				35.89	1,350.00	88.00	16.91	650.00	23.40	0.20	270.00	0.40	3.56	156.00	462.80
Belluno				29.18	1,350.00	64.60	14.00	650.00	0.20						
Treviso				33.88	1,350.00	109.60	19.44	650.00	69.20				3.06	156.00	284.80
Venezia				38.94	1,350.00	193.60	20.12	650.00	58.80	4	270 00	4.55	2.38	156.00	1.60
Padova				43.13	1,350.00	333.80	18.31	650.00	152.20	1.19	270.00	1.60	2.99	156.00	311.60
Rovigo				32.02	1,350.00	436.00	21.16	650.00	129.20	F 74	270.00	1.00	3.02	156.00	1.20
FRIULLI VENEZIA GIULIA (total) Udine				32.34	1,350.00	<b>706.60</b> 406.40	<b>23.79</b> 24.22	650.00	188.60	<b>5.71</b> 6.83	270.00	<b>1.60</b> 1.20	<b>2.69</b> 2.90	156.00	204.00
				32.54 25.59	1,350.00		24.22	650.00	106.80	0.83	270.00	1.20		156.00	68.80 42.60
Gorizia					1,350.00	15.00		650.00	21.00				2.68 2.87	156.00	42.60 38.60
Trieste	l l	l l		16.03	1,350.00	2.40	18.85	650.00	5.20	l l	l		2.8/	156.00	38.60

Pordenone		1		32.54	1,350.00	282.80	23.30	650.00	55.60	2.35	270.00	0.40	2.30	156.00	54.00
EMILIA ROMAGNA (total)				37.97	1,350.00	3,979.80	24.56	650.00					1.70	156.00	3,134.00
Piacenza				21.07	1,350.00	49.80	19.64	650.00	27.20				0.74	156.00	11.60
Parma				17.27	1,350.00	24.80	17.61	650.00	11.40				0.44	156.00	9.00
Reggio nell' Emilia				30.02	1,350.00	81.40	25.45	650.00	29.40				0.97	156.00	12.40
Modena				34.05	1,350.00	376.80	18.99	650.00	220.80				1.06	156.00	15.00
Bologna				42.84	1,350.00	411.40	24.37	650.00	1,601.20				1.86	156.00	245.00
Ferrara				39.69	1,350.00	1,796.80	19.60	650.00	857.60						
Ravenna				37.14	1,350.00	933.00	27.22	650.00	8,101.20				2.14	156.00	381.80
Forlì Cesena				35.40	1,350.00	296.20	21.02	650.00	4,305.00				1.37	156.00	902.80
Rimini				30.00	1,350.00	9.60	22.53	650.00	132.60				1.78	156.00	1,556.40
TOSCANA (total)	17.46	240.00	8.20	24.81	1,350.00	884.80	17.01	650.00	1,190.00	2.69	270.00	25.80	1.19	156.00	85,560.80
Massa Carrara				10.47	1,350.00	41.40	7.35	650.00	11.40				1.73	156.00	660.20
Lucca	13.47	240.00	2.00	20.22	1,350.00	54.80	21.34	650.00	53.40				2.74	156.00	2,625.00
Pistoia				7.37	1,350.00	21.00	7.48	650.00	10.60				0.83	156.00	7,566.60
Firenze				32.29	1,350.00	73.00	28.32	650.00	116.00	6.00	270.00	3.00	1.64	156.00	18,086.00
Livorno	25.11	240.00	3.60	24.46	1,350.00	35.00	15.13	650.00	236.60				1.36	156.00	4,560.60
Pisa				12.89	1,350.00	63.60	10.85	650.00	299.80	2.69	270.00	2.80	0.70	156.00	7,407.40
Arezzo				28.46	1,350.00	482.00	20.11	650.00	202.80				1.27	156.00	10,383.80
Siena				12.97	1,350.00	52.80	11.79	650.00	20.40	3.60	270.00	1.00	1.10	156.00	14,994.60
Grosseto	9.92	240.00	2.60	30.24	1,350.00	59.60	18.86	650.00	239.00	2.11	270.00	19.00	0.85	156.00	17,180.00
Prato				12.05	1,350.00	1.60							1.06	156.00	2,096.60
UMBRIA (total)				13.58	1,350.00	236.00	10.83	650.00	135.20	1.05	270.00	4.00	1.41	156.00	27,183.00
Perugia				13.52	1,350.00	233.00	10.82	650.00	127.00				1.47	156.00	18,138.40
Terni				18.00	1,350.00	3.00	10.98	650.00	8.20	1.05	270.00	4.00	1.31	156.00	9,044.60
MARCHE (total)				20.14	1,350.00	186.20	18.11	650.00	797.40	1.34	270.00	23.00	2.76	156.00	9,533.00
Pesaro e Urbino				11.37	1,350.00	12.20	8.11	650.00	140.80	1.34	270.00	23.00	1.28	156.00	764.20
Ancona				9.08	1,350.00	62.60	8.35	650.00	148.20				2.32	156.00	1,730.00
Macerata				20.09	1,350.00	42.60	15.50	650.00	69.60				2.15	156.00	2,369.00
Ascoli Piceno				32.57	1,350.00	41.60	25.32	650.00	230.80				3.47	156.00	3,016.20
Fermo				30.63	1,350.00	27.20	24.71	650.00	208.00				3.47	156.00	1,653.60
LAZIO (total)	8.89	240.00	515.40	16.31	1,350.00	481.20	12.29	650.00	1,921.20	0.55	270.00	20.60	1.93	156.00	79,693.00
Viterbo				21.60	1,350.00	109.60	13.33	650.00	165.00				2.11	156.00	13,422.00
Rieti				6.35	1,350.00	55.00	5.63	650.00	60.00				1.28	156.00	11,320.00
Roma	8.30	240.00	5.00	10.30	1,350.00	163.00	11.78	650.00	1,254.80	0.53	270.00	20.20	1.91	156.00	23,856.00
Latina	8.72	240.00	503.60	26.23	1,350.00	105.60	15.40	650.00	361.20				2.08	156.00	12,735.00
Frosinone	22.21	240.00	6.80	14.21	1,350.00	48.00	9.21	650.00	80.20	1.50	270.00	0.40	2.11	156.00	18,360.00
ABRUZZO (total)	13.50	240.00	5.60	24.85	1,350.00	552.60	15.51	650.00	2,397.60	0.24	270.00	142.60	2.78	156.00	41,837.20
L'Aquila				29.98	1,350.00	150.20	10.08	650.00	55.80	0.02	270.00	130.00	1.31	156.00	2,084.00
Teramo				22.22	1,350.00	95.40	21.59	650.00	429.40	1.80	270.00	4.80	3.12	156.00	5,776.20
Pescara				26.42	1,350.00	143.60	19.54	650.00	450.40	2.93	270.00	7.80	3.54	156.00	10,376.00
Chieti	13.50	240.00	5.60	20.30	1,350.00	163.40	12.69	650.00	1,462.00				2.49	156.00	23,601.00
MOLISE (total)				15.53	1,350.00	430.00	8.74	650.00		3.50	270.00	15.00	3.48	156.00	14,307.60
Campobasso				16.00	1,350.00	400.00	9.58	650.00	454.00	3.50	270.00	15.00	3.53	156.00	11,640.40
Isernia				9.20	1,350.00	30.00	5.55	650.00					3.28	156.00	2,667.20
CAMPANIA (total)	18.62	240.00	1,027.00	20.01	1,350.00	3,298.60	19.82	650.00	.,	2.53	270.00	13.00	2.66	156.00	74,442.60
Caserta	17.99	240.00	334.00	20.44	1,350.00	2,346.80	19.89	650.00	'				2.56	156.00	8,864.60
Benevento				16.93	1,350.00	333.80	16.42	650.00					2.52	156.00	13,550.00
Napoli	19.34	240.00	253.60	20.83	1,350.00	274.20	19.86	650.00	'				4.72	156.00	2,114.00
Avellino	20.16	240.00	7.40	17.36	1,350.00	93.80	16.81	650.00	l .	2.67	270.00	10.40	2.21	156.00	8,060.00
Salerno	18.66	240.00	432.00	20.24	1,350.00	250.00	19.48	650.00	· ·	1.96	270.00	2.60	2.72	156.00	41,854.00
PUGLIA (total)	26.41	240.00	4,024.20	17.77	1,350.00	228.00	20.26	650.00	,	1.10	270.00	20,378.80	2.79	156.00	376,406.00
		240.00	<b>4,024.20</b> 429.60 64.00	17.77 12.89 20.15	1,350.00 1,350.00 1,350.00	76.00 54.00	20.26 19.79 21.14	650.00 650.00 650.00	670.00	1.10 1.96 0.93	270.00	1,466.00 12,780.00	2.79 3.22 2.44	156.00 156.00 156.00	51,280.00 99,690.00

Taranto	28.99	240.00	3,080.00	21.44	1,350.00	57.00	17.98	650.00	102.00	2.86	270.00	504.00	3.00	156.00	35,804.00
Brindisi	23.76	240.00	59.00	22.11	1,350.00	18.00	20.48	650.00	920.00	1.09	270.00	4,760.00	2.72	156.00	63,680.00
Lecce	18.60	240.00	382.00	15.07	1,350.00	18.00	18.43	650.00	203.80	1.51	270.00	78.80	2.51	156.00	93,154.00
Barletta Andria Trani	16.52	240.00	9.60	18.60	1,350.00	5.00	20.50	650.00	1,914.00	1.16	270.00	790.00	3.90	156.00	32,798.00
BASILICATA (total)	20.73	240.00	4,920.60	20.13	1,350.00	375.00	20.14	650.00	3,213.20	4.76	270.00	71.40	1.24	156.00	26,650.00
Potenza	13.29	240.00	21.40	20.24	1,350.00	349.80	16.05	650.00	223.60	4.34	270.00	19.40	1.18	156.00	11,106.60
Matera	20.76	240.00	4,899.20	18.52	1,350.00	25.20	20.44	650.00	2,989.60	4.91	270.00	52.00	1.29	156.00	15,543.40
CALABRIA (total)	26.92	240.00	16,542.40	15.01	1,350.00	536.40	27.98	650.00	3,038.80	4.37	270.00	166.60	3.38	156.00	182,633.40
Cosenza	35.26	240.00	2,545.60	15.73	1,350.00	183.60	29.75	650.00	2,270.40	2.28	270.00	16.60	3.21	156.00	53,497.40
Catanzaro	29.48	240.00	2,415.80	14.40	1,350.00	171.40	26.57	650.00	530.80	2.74	270.00	54.00	1.92	156.00	41,774.20
Reggio di Calabria	26.19	240.00	9,000.60	19.19	1,350.00	108.60	16.43	650.00	108.00	6.08	270.00	81.40	5.00	156.00	49,791.20
Crotone	17.06	240.00	1,236.00	10.64	1,350.00	36.40	7.27	650.00	69.40	3.56	270.00	12.80	2.01	156.00	21,204.80
Vibo Valentia	20.47	240.00	1,344.40	6.15	1,350.00	36.40	18.01	650.00	60.20	1.30	270.00	1.80	4.51	156.00	16,365.80
SICILIA (total)	19.05	240.00	54,288.80	18.80	1,350.00	682.00	18.94	650.00	6,749.80	1.56	270.00	33,423.60	1.91	156.00	157,028.20
Trapani	17.71	240.00	276.00				10.20	650.00	70.00	3.67	270.00	11.60	2.43	156.00	25,500.00
Palermo	15.81	240.00	393.60	17.00	1,350.00	50.00	15.07	650.00	872.40	1.59	270.00	2,266.00	2.77	156.00	21,356.00
Messina	17.45	240.00	2,040.00	12.14	1,350.00	112.00	13.89	650.00	610.00	1.40	270.00	400.00	0.69	156.00	35,473.20
Agrigento	22.66	240.00	4,855.20	25.48	1,350.00	75.00	20.21	650.00	2,469.80	1.30	270.00	10,606.00	1.86	156.00	24,521.00
Caltanissetta	9.00	240.00	172.00	4.00	1,350.00	4.00	22.24	650.00	1,640.00	1.05	270.00	4,770.00	1.57	156.00	8,208.00
Enna	17.80	240.00	2,902.00	18.00	1,350.00	19.00	15.00	650.00	234.20	1.62	270.00	5,560.00	1.52	156.00	11,820.00
Catania	17.32	240.00	24,870.00	19.76	1,350.00	422.00	20.66	650.00	534.40	1.11	270.00	2,520.00	3.19	156.00	13,610.00
Ragusa	26.49	240.00	1,880.00				18.45	650.00	71.00	1.99	270.00	2,230.00	2.39	156.00	6,240.00
Siracusa	20.34	240.00	16,900.00				13.18	650.00	248.00	2.57	270.00	5,060.00	1.94	156.00	10,300.00
SARDEGNA (total)	16.27	240.00	3,074.40	14.60	1,350.00	185.80	12.13	650.00	2,059.80	0.76	270.00	3,864.00	0.96	156.00	27,711.20
Sassari	15.12	240.00	74.80	12.74	1,350.00	27.80	12.28	650.00	175.40	0.68	270.00	40.40	1.00	156.00	6,983.40
Nuoro	17.01	240.00	266.40	16.49	1,350.00	38.20	10.52	650.00	114.20	0.74	270.00	912.20	1.09	156.00	4,025.60
Cagliari	16.16	240.00	1,952.60	12.86	1,350.00	43.80	11.49	650.00	938.00	0.72	270.00	1,639.40	0.83	156.00	6,759.80
Oristano	17.50	240.00	324.00	13.64	1,350.00	15.40	13.24	650.00	111.60	0.72	270.00	377.40	0.90	156.00	3,747.40
Olbia Tempio	15.90	240.00	33.40	17.14	1,350.00	10.80	10.98	650.00	71.20	0.92	270.00	6.60	1.08	156.00	492.60
Ogliastra	15.55	240.00	235.80	11.34	1,350.00	17.40	11.33	650.00	209.60	0.86	270.00	256.40	1.19	156.00	1,847.60
Medio Campidano	15.70	240.00	93.20	11.84	1,350.00	14.60	14.23	650.00	401.40	0.88	270.00	608.00	0.78	156.00	2,263.60
Carbonia Iglesias	15.62	240.00	94.20	22.46	1,350.00	17.80	12.91	650.00	38.40	0.88	270.00	23.60	1.11	156.00	1,591.20

#### SPAIN

Processed data obtained originally by Ministerio de Agricultura Pesca y Alimentación (MAPA) - Anuario de Estadística Agraria/ Spanish Ministry of Agriculture, Fishery and Food - Agrarian statistics yearbook

Mean values of years:

2012

to

2016

PD (in trees planted per ha)

YD (in tn of fruits produced per ha) [Yield Density] [Planting Density]

S (in ha)

[Surface of tree crop plantation]

Regions		ORANGE TREES	5		APPLE TREES			PEACH TREES	i		ALMOND TREE	S		OLIVE TREE	:S
	YD (tn/ha)	PD (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)	YD (tn/ha)	PD (trees/ha)	S (ha)
ESPANA (total)	23.81	416.68	137,009.20	19.11	495.28	28,663.60	26.14	500.00	44,582.40	0.39	238.10	495,924.40	2.64	460.21	2,429,222.20
GALICIA (total)	6.73	416.67	94.60	13.60	500.00	6,165.40	5.13	500.00	1,120.20				0.97	476.19	225.20
A Coruna	7.00	416.67	60.40	11.44	500.00	2,524.80	5.45	500.00	561.40						
Lugo	6.13	416.67	2.00	12.93	500.00	1,903.00	4.22	500.00	184.60				0.90	476.19	208.00
Ourense	12.43	416.67	1.00	18.11	500.00	792.80	5.62	500.00	177.20				1.28	476.19	5.00
Pontevedra	5.88	416.67	31.20	16.50	500.00	944.80	4.38	500.00	197.00				2.13	476.19	12.20
PAIS VASCO (total)				5.84	500.00	1,727.40	3.70	500.00	11.20	0.77	238.10	75.00	0.43	141.47	919.60
Alava				5.25	500.00	81.20	4.38	500.00	1.00	57.52	238.10	75.00	1.46	476.19	270.20
Guipuzcoa				5.67	500.00	1,385.20							0.18	476.19	3.00
Vizcaya				6.60	500.00	261.00	3.05	500.00	10.20						
P. DE ASTURIAS (total)				3.16	500.00	4,170.40									
CANTABRIA (total)	2.78	416.67	0.60	0.00	0.00	6.40				1.50	238.10	2.00			
NAVARRA (total)				25.04	500.00	557.80	27.98	500.00	510.80	0.84	238.10	3,408.60	3.71	476.19	5,765.00
LA RIOJA (total)						349.40		500.00	390.40	0.45	238.10	6,089.60	2.35	476.19	4,558.60
ARAGON (total)				27.46	500.00	3,144.80	20.31	500.00	11,682.60	0.60	238.10	63,974.40	1.30	475.34	46,512.60
Huesca					500.00	661.60		500.00	5,595.00	6,945.20	238.10	9,632.00	1.29	475.50	7,329.60
Teruel					500.00	26.00		500.00	1,741.40	10,078.40	238.10	20,850.40	0.80	476.19	24,001.20
Zaragoza					500.00	2,457.20		500.00	4,346.20	21,100.60	238.10	33,492.00	2.11	473.93	15,181.80
CATALUNA (total)	11.67	416.67	1,970.40	31.33	500.00	8,563.20	20.87	500.00	10,032.80	0.40	238.10	37,496.40	1.28	475.07	112,565.20
Barcelona		416.67	2.00	112.62	500.00	70.20	52.23	500.00	534.20	358.13	238.10	815.80	1.23	476.19	2,782.20
Girona					500.00	2,197.20		500.00	105.60	16.00	238.10	27.00	1.19	476.16	3,368.20
Lleida				145.81	500.00	6,228.00	131.82	500.00	7,790.40	6,661.93	238.10	16,832.40	1.03	476.19	40,561.60
Tarragona		416.67	1,968.40		500.00	67.80		500.00	1,602.60	8,100.20	238.10	19,821.20	1.45	474.27	65,853.20
BALEARES (total)	7.89	416.67	1,450.00	27.41	500.00	67.00	26.03	500.00	51.00	0.40	238.10	18,151.80	0.57	469.98	6,060.20
CASTILLA Y LEON (total)	8.99	416.67	2.80	22.54	500.00	1,723.60	5.70	500.00	64.40	0.48	238.10	1,308.40	1.47	452.54	7,334.80
Avila				5.56	500.00	118.40	6.04	500.00	25.00	11.26	238.10	13.40	1.52	476.19	3,510.80
Burgos				5.26	500.00	392.20				33.95	238.10	71.00			
Leon				13.86	500.00	408.60	7.11	500.00	5.00	14.11	238.10	15.00			
Palencia				14.81	500.00	16.80				3.90	238.10	6.80			
Palencia Salamanca	10.42	416.67	2.80	14.81 1.31	500.00 500.00	16.80 26.00	7.11 1.80	500.00	5.00	3.90 223.82	238.10 238.10	6.80 652.00	0.98	413.19	2,753.40
Palencia Salamanca Segovia	10.42	416.67	2.80	14.81	500.00 500.00 500.00	16.80 26.00 20.20				3.90 223.82 28.10	238.10 238.10 238.10	6.80 652.00 23.60	0.98	413.19	2,753.40
Palencia Salamanca Segovia Soria	10.42	416.67	2.80	14.81 1.31 3.46	500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60		500.00	5.00	3.90 223.82 28.10 185.00	238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40			·
Palencia Salamanca Segovia Soria Valladolid	10.42	416.67	2.80	14.81 1.31	500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40		500.00	5.00	3.90 223.82 28.10 185.00 40.80	238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40	2.68	476.19	834.80
Palencia Salamanca Segovia Soria Valladolid Zamora	10.42	416.67	2.80	14.81 1.31 3.46 6.84	500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40 238.40	1.80	500.00 500.00 500.00	5.00 2.40 27.00	3.90 223.82 28.10 185.00 40.80 85.00	238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80	2.68 1.55	476.19 476.19	834.80 235.80
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total)	10.42	416.67	2.80	14.81 1.31 3.46 6.84	500.00 500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40 238.40 <b>6.80</b>	1.80 8.32	500.00 500.00 500.00 <b>500.00</b>	5.00 2.40 27.00 <b>1.00</b>	3.90 223.82 28.10 185.00 40.80 85.00	238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 552.40	2.68 1.55 <b>1.10</b>	476.19 476.19 <b>474.70</b>	834.80 235.80 <b>17,748.80</b>
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total)	10.42	416.67	2.80	14.81 1.31 3.46 6.84	500.00 500.00 500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40 238.40 6.80 283.60	1.80	500.00 500.00 500.00 500.00 500.00	5.00 2.40 27.00 1.00 1,518.20	3.90 223.82 28.10 185.00 40.80 85.00 <b>0.84</b> <b>0.44</b>	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 552.40 57,078.60	2.68 1.55 <b>1.10</b> <b>1.39</b>	476.19 476.19 <b>474.70</b> <b>476.00</b>	834.80 235.80 <b>17,748.80</b> <b>347,046.40</b>
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total) Albacete	10.42	416.67	2.80	14.81 1.31 3.46 6.84 9.39 9.82	500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40 238.40 <b>6.80</b> <b>283.60</b> 17.80	1.80 8.32 64.11	500.00 500.00 500.00 500.00 500.00 500.00	5.00  2.40 27.00  1.00  1,518.20  902.00	3.90 223.82 28.10 185.00 40.80 85.00 <b>0.84</b> <b>0.44</b> 10,147.60	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 552.40 57,078.60 32,272.60	2.68 1.55 <b>1.10</b> <b>1.39</b> 1.44	476.19 476.19 <b>474.70</b> <b>476.00</b> 474.40	834.80 235.80 <b>17,748.80</b> <b>347,046.40</b> 33,259.00
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total) Albacete Ciudad Real	10.42	416.67	2.80	14.81 1.31 3.46 6.84 9.39 9.82	500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40 238.40 <b>6.80</b> 283.60 17.80 89.00	1.80 8.32 64.11 3.77	500.00 500.00 500.00 500.00 500.00 500.00	5.00  2.40 27.00  1.00 1,518.20 902.00 36.40	3.90 223.82 28.10 185.00 40.80 85.00 <b>0.84</b> <b>0.44</b> 10,147.60 4,593.61	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 552.40 57,078.60 32,272.60 4,386.60	2.68 1.55 <b>1.10</b> <b>1.39</b> 1.44 1.73	476.19 476.19 <b>474.70</b> <b>476.00</b> 474.40 476.19	834.80 235.80 <b>17,748.80</b> <b>347,046.40</b> 33,259.00 141,256.40
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total) Albacete Ciudad Real Cuenca	10.42	416.67	2.80	14.81 1.31 3.46 6.84 9.39 9.82 13.39 5.68	500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40 238.40 <b>6.80</b> <b>283.60</b> 17.80 89.00 92.60	1.80 8.32 64.11	500.00 500.00 500.00 500.00 500.00 500.00	5.00  2.40 27.00  1.00  1,518.20  902.00	3.90 223.82 28.10 185.00 40.80 85.00 <b>0.84</b> <b>0.44</b> 10,147.60 4,593.61 5,190.25	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 <b>552.40</b> <b>57,078.60</b> 32,272.60 4,386.60 12,442.00	2.68 1.55 <b>1.10</b> <b>1.39</b> 1.44 1.73 0.49	476.19 476.19 474.70 476.00 474.40 476.19 476.03	834.80 235.80 <b>17,748.80</b> <b>347,046.40</b> 33,259.00 141,256.40 36,725.60
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total) Albacete Ciudad Real Cuenca Guadalajara	10.42	416.67	2.80	14.81 1.31 3.46 6.84 9.39 9.82 13.39 5.68 4.99	500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40 238.40 <b>6.80</b> <b>283.60</b> 17.80 89.00 92.60 38.00	1.80  8.32 64.11  3.77 4.00	500.00 500.00 500.00 500.00 500.00 500.00 500.00	5.00  2.40 27.00  1.00  1,518.20  902.00 36.40 0.60	3.90 223.82 28.10 185.00 40.80 85.00 <b>0.84</b> <b>0.44</b> 10,147.60 4,593.61 5,190.25 93.00	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 <b>552.40</b> <b>57,078.60</b> 32,272.60 4,386.60 12,442.00 119.60	2.68 1.55 1.10 1.39 1.44 1.73 0.49 0.61	476.19 476.19 474.70 476.00 474.40 476.19 476.03 476.19	834.80 235.80 <b>17,748.80</b> <b>347,046.40</b> 33,259.00 141,256.40 36,725.60 17,322.00
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total) Albacete Ciudad Real Cuenca Guadalajara Toledo				14.81 1.31 3.46 6.84 9.39 9.82 13.39 5.68 4.99 13.29	500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40 238.40 <b>6.80</b> 283.60 17.80 89.00 92.60 38.00 46.20	1.80  8.32 64.11  3.77 4.00  3.25	500.00 500.00 500.00 500.00 500.00 500.00 500.00	5.00  2.40 27.00  1.00 1,518.20 902.00 36.40 0.60  579.20	3.90 223.82 28.10 185.00 40.80 85.00 <b>0.84</b> <b>0.44</b> 10,147.60 4,593.61 5,190.25 93.00 4,795.62	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 <b>552.40</b> <b>57,078.60</b> 32,272.60 4,386.60 12,442.00 119.60 7,857.80	2.68 1.55 1.10 1.39 1.44 1.73 0.49 0.61 1.35	476.19 476.19 474.70 476.00 474.40 476.19 476.03 476.19 476.19	834.80 235.80 <b>17,748.80</b> <b>347,046.40</b> 33,259.00 141,256.40 36,725.60 17,322.00 118,483.40
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total) Albacete Ciudad Real Cuenca Guadalajara Toledo C. VALENCIANA (total)	10.42	416.67	65,325.60	14.81 1.31 3.46 6.84 9.39 9.82 13.39 5.68 4.99 13.29 16.76	500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40 238.40 6.80 283.60 17.80 89.00 92.60 38.00 46.20	8.32 64.11 3.77 4.00 3.25 35.43	500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00	5.00  2.40 27.00  1.00  1,518.20  902.00 36.40 0.60  579.20 1,985.60	3.90 223.82 28.10 185.00 40.80 85.00 <b>0.84</b> <b>0.44</b> 10,147.60 4,593.61 5,190.25 93.00 4,795.62 <b>0.35</b>	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 552.40 57,078.60 32,272.60 4,386.60 12,442.00 119.60 7,857.80	2.68 1.55 1.10 1.39 1.44 1.73 0.49 0.61 1.35	476.19 476.19 474.70 476.00 474.40 476.19 476.03 476.19 476.19 475.03	834.80 235.80 17,748.80 347,046.40 33,259.00 141,256.40 36,725.60 17,322.00 118,483.40 86,135.80
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total) Albacete Ciudad Real Cuenca Guadalajara Toledo C. VALENCIANA (total) Alicante		<b>416.67</b> 416.67	<b>65,325.60</b> 12,880.20	14.81 1.31 3.46 6.84 9.39 9.82 13.39 5.68 4.99 13.29	\$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00	16.80 26.00 20.20 481.60 21.40 238.40 6.80 283.60 17.80 89.00 92.60 38.00 46.20 889.80 613.80	1.80  8.32 64.11  3.77 4.00  3.25	500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00	5.00  2.40 27.00 1.00 1,518.20 902.00 36.40 0.60  579.20 1,985.60 365.40	3.90 223.82 28.10 185.00 40.80 85.00 <b>0.84</b> <b>0.44</b> 10,147.60 4,593.61 5,190.25 93.00 4,795.62 <b>0.35</b>	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 552.40 57,078.60 32,272.60 4,386.60 12,442.00 119.60 7,857.80 89,677.40 23,150.60	2.68 1.55 1.10 1.39 1.44 1.73 0.49 0.61 1.35 1.15	476.19 476.19 474.70 476.00 474.40 476.19 476.19 476.19 475.03 473.19	834.80 235.80 <b>17,748.80</b> <b>347,046.40</b> 33,259.00 141,256.40 36,725.60 17,322.00 118,483.40 <b>86,135.80</b> 26,801.40
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total) Albacete Ciudad Real Cuenca Guadalajara Toledo C. VALENCIANA (total) Alicante Castellon		<b>416.67</b> 416.67 416.67	<b>65,325.60</b> 12,880.20 5,149.80	14.81 1.31 3.46 6.84 9.39 9.82 13.39 5.68 4.99 13.29 16.76	\$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00	16.80 26.00 20.20 481.60 21.40 238.40 6.80 283.60 17.80 89.00 92.60 38.00 46.20 889.80 613.80 96.00	8.32 64.11 3.77 4.00 3.25 35.43	\$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00	5.00  2.40 27.00 1.00 1,518.20 902.00 36.40 0.60  579.20 1,985.60 365.40 344.80	3.90 223.82 28.10 185.00 40.80 85.00 <b>0.84</b> <b>0.44</b> 10,147.60 4,593.61 5,190.25 93.00 4,795.62 <b>0.35</b> 13,023.83 9,182.20	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 552.40 57,078.60 32,272.60 4,386.60 12,442.00 119.60 7,857.80 89,677.40 23,150.60 36,238.80	2.68 1.55 1.10 1.39 1.44 1.73 0.49 0.61 1.35 1.15 1.26 0.91	476.19 476.19 474.70 476.00 474.40 476.19 476.19 476.19 475.03 473.19 476.00	834.80 235.80 17,748.80 347,046.40 33,259.00 141,256.40 36,725.60 17,322.00 118,483.40 86,135.80 26,801.40 31,835.80
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total) Albacete Ciudad Real Cuenca Guadalajara Toledo C. VALENCIANA (total) Alicante Castellon Valencia		<b>416.67</b> 416.67 416.67 416.67	<b>65,325.60</b> 12,880.20 5,149.80 47,295.60	14.81 1.31 3.46 6.84 9.39 9.82 13.39 5.68 4.99 13.29 16.76	500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40 238.40 6.80 283.60 17.80 89.00 92.60 38.00 46.20 889.80 613.80 96.00 180.00	1.80  8.32 64.11  3.77 4.00  3.25  35.43  8.74	\$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00	5.00  2.40 27.00 1.00 1,518.20 902.00 36.40 0.60  579.20 1,985.60 365.40 344.80 1,275.40	3.90 223.82 28.10 185.00 40.80 85.00 0.84 0.44 10,147.60 4,593.61 5,190.25 93.00 4,795.62 0.35 13,023.83 9,182.20 9,329.60	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 552.40 57,078.60 32,272.60 4,386.60 12,442.00 119.60 7,857.80 89,677.40 23,150.60 36,238.80 30,288.00	2.68 1.55 1.10 1.39 1.44 1.73 0.49 0.61 1.35 1.15 1.26 0.91 1.30	476.19 476.19 474.70 476.00 474.40 476.19 476.19 476.19 475.03 473.19 476.00 475.71	834.80 235.80 17,748.80 347,046.40 33,259.00 141,256.40 36,725.60 17,322.00 118,483.40 86,135.80 26,801.40 31,835.80 27,498.60
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total) Albacete Ciudad Real Cuenca Guadalajara Toledo C. VALENCIANA (total) Alicante Castellon Valencia R. DE MURCIA (total)	12.92	<b>416.67</b> 416.67 416.67 416.67 416.67	<b>65,325.60</b> 12,880.20 5,149.80 47,295.60 <b>8,710.60</b>	14.81 1.31 3.46 6.84 9.39 9.82 13.39 5.68 4.99 13.29 16.76 11.57	\$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00	16.80 26.00 20.20 481.60 21.40 238.40 6.80 283.60 17.80 89.00 92.60 38.00 46.20 889.80 613.80 96.00 180.00 91.60	1.80  8.32 64.11  3.77 4.00  3.25 35.43 8.74	\$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00	5.00  2.40 27.00  1.00 1,518.20 902.00 36.40 0.60  579.20 1,985.60 364.80 1,275.40 9,221.40	3.90 223.82 28.10 185.00 40.80 85.00 0.84 0.44 10,147.60 4,593.61 5,190.25 93.00 4,795.62 0.35 13,023.83 9,182.20 9,329.60 0.35	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 <b>552.40</b> <b>57,078.60</b> 32,272.60 4,386.60 12,442.00 119.60 7,857.80 <b>89,677.40</b> 23,150.60 36,238.80 30,288.00 <b>67,864.60</b>	2.68 1.55 1.10 1.39 1.44 1.73 0.49 0.61 1.35 1.15 1.26 0.91 1.30 2.69	476.19 476.19 474.70 476.00 474.40 476.19 476.19 476.19 475.03 473.19 476.00 475.71	834.80 235.80 17,748.80 347,046.40 33,259.00 141,256.40 36,725.60 17,322.00 118,483.40 86,135.80 26,801.40 31,835.80 27,498.60 19,604.60
Palencia Salamanca Segovia Soria Valladolid Zamora MADRID (total) CASTILLA-LA MANCHA (total) Albacete Ciudad Real Cuenca Guadalajara Toledo C. VALENCIANA (total) Alicante Castellon Valencia		<b>416.67</b> 416.67 416.67 416.67	<b>65,325.60</b> 12,880.20 5,149.80 47,295.60	14.81 1.31 3.46 6.84 9.39 9.82 13.39 5.68 4.99 13.29 16.76	500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00 500.00	16.80 26.00 20.20 481.60 21.40 238.40 6.80 283.60 17.80 89.00 92.60 38.00 46.20 889.80 613.80 96.00 180.00	1.80  8.32 64.11  3.77 4.00  3.25  35.43  8.74	\$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00 \$00.00	5.00  2.40 27.00 1.00 1,518.20 902.00 36.40 0.60  579.20 1,985.60 365.40 344.80 1,275.40	3.90 223.82 28.10 185.00 40.80 85.00 0.84 0.44 10,147.60 4,593.61 5,190.25 93.00 4,795.62 0.35 13,023.83 9,182.20 9,329.60	238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10 238.10	6.80 652.00 23.60 370.40 32.40 123.80 552.40 57,078.60 32,272.60 4,386.60 12,442.00 119.60 7,857.80 89,677.40 23,150.60 36,238.80 30,288.00	2.68 1.55 1.10 1.39 1.44 1.73 0.49 0.61 1.35 1.15 1.26 0.91 1.30	476.19 476.19 474.70 476.00 474.40 476.19 476.19 476.19 475.03 473.19 476.00 475.71	834.80 235.80 17,748.80 347,046.40 33,259.00 141,256.40 36,725.60 17,322.00 118,483.40 86,135.80 26,801.40 31,835.80 27,498.60

Caceres		416.67	2.60		500.00	8.60		500.00	511.00	301.20	238.10	377.40	0.99	391.64	74,344.60
ANDALUCIA (total)	819.39	416.67	58,340.80	26.21	500.00	570.40	88.50	500.00	4,228.80	0.28	238.10	147,118.00	3.41	461.06	1,516,060.80
Almeria		416.67	4,646.20		500.00	28.60		500.00	40.60	9,250.60	238.10	54,610.40	3.14	475.13	18,109.00
Cadiz		416.67	2,016.00		500.00	15.00		500.00	67.40	177.00	238.10	201.40	2.22	476.16	21,883.00
Cordoba		416.67	10,641.20		500.00	77.80		500.00	331.20	678.40	238.10	801.40	3.82	473.43	338,550.20
Granada	7.71	416.67	867.80	18.26	500.00	292.00	15.20	500.00	720.60	23,122.03	238.10	71,544.20	2.58	476.17	184,185.60
Huelva		416.67	11,312.00		500.00	25.00		500.00	722.00	315.20	238.10	368.60	1.16	447.34	32,622.80
Jaen	7.52	416.67	4.80	20.08	500.00	64.80	19.40	500.00	203.20	1,577.78	238.10	3,030.20	3.48	475.99	581,771.80
Malaga		416.67	4,464.40		500.00	52.40		500.00	120.20	3,504.20	238.10	14,837.60	2.90	464.12	124,778.40
Sevilla		416.67	24,388.40		500.00	14.80		500.00	2,023.60	2,527.20	238.10	1,724.20	4.03	385.52	214,160.00
CANARIAS (total)	5.98	416.67	1,075.20	5.55	500.00	321.20	7.31	500.00	117.60	0.23	238.10	203.00	1.76	406.41	217.00
Las Palmas	7.20	416.67	637.80	9.65	500.00	137.40	10.46	500.00	51.20	9.73	238.10	40.40	1.65	394.29	181.40
S.C. de Tenerife	4.42	416.67	437.40	3.15	500.00	183.80	5.33	500.00	66.40	35.68	238.10	162.60	2.40	468.16	35.60

## Mean Annual Temperature (°C)

Greece	
GREECE (total)	14.00
EASTERN MACEDONIA & THRACE (total)	12.00
Rodopi	12.00
Drama	11.00
Evros	12.00
Thasos	13.00
Kavala	13.00
Xanthi	12.00
CENTRAL MACEDONIA (total)	12.00
Thessaloniki	13.00
Imathia	12.00
Kilkis	13.00
Pella	12.00
Pieria	12.00
Serres	12.00
Chalkidiki	13.00
WESTERN MACEDONIA (total)	10.00
Kozani	11.00
Grevena	11.00
Kastoria	9.00
Florina	10.00
EPIRUS (total)	13.00
Ioannina	11.00
Arta	14.00
Thesprotia	14.00
Preveza	14.00
THESSALY (total)	12.00
Larissa	12.00
Karditsa	12.00
Magnesia	13.00
Sporades Islands	13.00
Trikala	12.00
CENTRAL GREECE (total)	12.00
Pthiotida	12.00
Viotia	13.00
Evia	14.00
Evritania	10.00
Fokida	11.00
IONIAN ISLANDS (total)	16.00
Corfu	16.00
Zakynthos	16.00
Ithaka	16.00
Kefallonia	16.00

Lefkada	16.00
WESTERN GREECE (total)	14.00
Achaia	13.00
Etoloakarnania	14.00
Ilia	16.00
PELOPONNESE (total)	13.00
Arkadia	12.00
Argolida	12.00
Korinthia	12.00
Lakonia	15.00
Mesinia	15.00
ATTICA (total)	14.00
Athens Central Section	14.00
Athens North Section	14.00
Athens West Section	14.00
Athens South Section	13.00
Athens East Section	14.00
West Attica	14.00
Piraeus	16.00
Attica Islands	16.00
NORTHERN AEGEAN (total)	15.00
Lesvos	14.00
Ikaria	15.00
Limnos	14.00
Samos	15.00
Chios	15.00
SOUTHERN AEGEAN (total)	16.00
Syros	16.00
Andros	16.00
Santorini	16.00
Kalimnos	16.00
Karpathos	16.00
Kythnos	16.00
Kos	16.00
Milos	16.00
Mykonos	16.00
Naxos	16.00
Paros	16.00
Rhodes	16.00
Tinos	16.00
CRETE (total)	14.00
Heraklion	15.00
Lasithi	14.00
Rethymno	14.00
Chania	15.00

## Mean Annual Temperature (°C)

Italy	
ITALIA (total)	9.00
PIEMONTE (total)	9.00
Torino	7.00
Vercelli	8.00
Novara	10.00
Cuneo	8.00
Asti	10.00
Alessandria	10.00
Biella	9.00
Verbano Cusio Ossola	6.00
VALLE D' AOSTA (total)	4.00
Aosta	4.00
LOMBARDIA (total)	9.00
Varese	10.00
Como	9.00
Sondrio	4.00
Milano	10.00
Bergamo	8.00
Brescia	9.00
Pavia	10.00
Cremona	10.00
Mantova	11.00
Lecco	9.00
Lodi	10.00
Monza e della Brianza	10.00
LIGURIA (total)	11.00
Imperia	11.00
Savona	10.00
Genova	10.00
La Spezia	11.00
TRENTINO ALTO ADIGE (total)	6.00
Bolzano/Bozen	5.00
Trento	6.00
VENETO (total)	10.00
Verona	10.00
Vicenza	10.00
Belluno	6.00
Treviso	11.00
Venezia	11.00
Padova	11.00
Rovigo	11.00
FRIULLI VENEZIA GIULIA (total)	10.00
Udine	9.00

Trieste 11.00 Pordenone 10.00 EMILIA ROMAGNA (total) 10.00 Piacenza 9.00 Parma 9.00 Reggio nell' Emilia 9.00 Modena 10.00 Bologna 10.00 Ferrara 11.00 Ravenna 11.00 Forlì Cesena 10.00 Rimini 10.00 TOSCANA (total) 11.00 Massa Carrara 11.00 Pistoia 10.00 Firenze 11.00 Livorno 13.00 Pisa 12.00 Arezzo 10.00 Siena 11.00 Grosseto 13.00 Prato 11.00 UMBRIA (total) 12.00 Perugia 11.00 Derugia 11.00 Terni 12.00 MARCHE (total) 11.00 Macerata 11.00 Ancona 11.00 Macerata 11.00 Ancona 11.00 Fermo 11.00 Fermo 11.00 LAZIO (total) 13.00 Frosinone 13.00 Frosinone 13.00 Frosinone 13.00 Frosinone 13.00 Frosinone 13.00 Pescara 11.00 Chieti 11.00 Pescara 11.00 Pescara 11.00 Pescara 11.00 Chieti 11.00 MOLISE (total) 10.00 Pescara 11.00 Pescara 11.00 Pescara 11.00 Chieti 11.00 MOLISE (total) 10.00 Pescara 11.00 MOLISE (total) 11.000 Pescara 11.00 MOLISE (total) 11.000 Pescara 11.000 MOLISE (total) 11.000 Pescara 11.000 MOLISE (total) 11.000		
Pordenone         10.00           EMILIA ROMAGNA (total)         10.00           Piacenza         9.00           Parma         9.00           Reggio nell' Emilia         9.00           Modena         10.00           Bologna         10.00           Ferrara         11.00           Ravenna         10.00           Forlì Cesena         10.00           Rimini         10.00           TOSCANA (total)         11.00           Massa Carrara         11.00           Lucca         11.00           Pistoia         10.00           Firenze         11.00           Livorno         13.00           Pisa         12.00           Arezzo         10.00           Grosseto         13.00           Prato         11.00           UMBRIA (total)         12.00           Perugia         11.00           Terni         12.00           MARCHE (total)         11.00           Pesaro e Urbino         10.00           Ascoli Piceno         10.00           Fermo         11.00           LAZIO (total)         13.00           Viterbo	Gorizia	11.00
EMILIA ROMAGNA (total)         10.00           Piacenza         9.00           Parma         9.00           Reggio nell' Emilia         9.00           Modena         10.00           Bologna         10.00           Ferrara         11.00           Ravenna         10.00           Kimini         10.00           TOSCANA (total)         11.00           Massa Carrara         11.00           Lucca         11.00           Pistoia         10.00           Firenze         11.00           Livorno         13.00           Pisa         12.00           Arezzo         10.00           Siena         11.00           Grosseto         13.00           Prato         11.00           UMBRIA (total)         12.00           Perugia         11.00           Terni         12.00           MARCHE (total)         11.00           Pesaro e Urbino         10.00           Ascoli Piceno         10.00           Fermo         11.00           LAZIO (total)         13.00           Viterbo         13.00           Rieti         1		
Piacenza       9.00         Parma       9.00         Reggio nell' Emilia       9.00         Modena       10.00         Bologna       10.00         Ferrara       11.00         Ravenna       11.00         Forlì Cesena       10.00         Rimini       10.00         TOSCANA (total)       11.00         Massa Carrara       11.00         Lucca       11.00         Pistoia       10.00         Firenze       11.00         Livorno       13.00         Pisa       12.00         Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         L'Aquila       9.00         Teramo       10.00 </td <td></td> <td></td>		
Parma         9.00           Reggio nell' Emilia         9.00           Modena         10.00           Bologna         11.00           Ferrara         11.00           Ravenna         11.00           Forlì Cesena         10.00           Rimini         10.00           TOSCANA (total)         11.00           Massa Carrara         11.00           Lucca         11.00           Pistoia         10.00           Firenze         11.00           Livorno         13.00           Pisa         12.00           Arezzo         10.00           Siena         11.00           Grosseto         13.00           Prato         11.00           UMBRIA (total)         12.00           Perugia         11.00           Terni         12.00           MARCHE (total)         11.00           Ascoli Piceno         10.00           Fermo         11.00           LAZIO (total)         13.00           Viterbo         13.00           Rieti         11.00           Roma         14.00           L'Aquila         9.00	` ,	
Reggio nell' Emilia       9.00         Modena       10.00         Bologna       10.00         Ferrara       11.00         Ravenna       10.00         Forlì Cesena       10.00         Rimini       10.00         TOSCANA (total)       11.00         Massa Carrara       11.00         Lucca       11.00         Pistoia       10.00         Firenze       11.00         Livorno       13.00         Pisa       12.00         Arezzo       10.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         L'Aquila       9.00         Teramo	110.0011=0	
Modena       10.00         Bologna       10.00         Ferrara       11.00         Ravenna       11.00         Forlì Cesena       10.00         Rimini       10.00         TOSCANA (total)       11.00         Massa Carrara       11.00         Lucca       11.00         Pistoia       10.00         Firenze       11.00         Livorno       13.00         Pisa       12.00         Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         L'Aquila       9.00         Teramo       10.00 </td <td></td> <td></td>		
Bologna         10.00           Ferrara         11.00           Ravenna         11.00           Forlì Cesena         10.00           Rimini         10.00           TOSCANA (total)         11.00           Massa Carrara         11.00           Lucca         11.00           Pistoia         10.00           Firenze         11.00           Livorno         13.00           Pisa         12.00           Arezzo         10.00           Siena         11.00           Grosseto         13.00           Prato         11.00           UMBRIA (total)         12.00           Perugia         11.00           Terni         12.00           MARCHE (total)         11.00           Pesaro e Urbino         10.00           Ancona         11.00           Macerata         11.00           Ascoli Piceno         10.00           Fermo         11.00           LAZIO (total)         13.00           Viterbo         13.00           Rieti         11.00           Roma         14.00           L'Aquila         9.00		
Ferrara         11.00           Ravenna         11.00           Forlì Cesena         10.00           Rimini         10.00           TOSCANA (total)         11.00           Massa Carrara         11.00           Lucca         11.00           Pistoia         10.00           Firenze         11.00           Livorno         13.00           Pisa         12.00           Arezzo         10.00           Siena         11.00           Grosseto         13.00           Prato         11.00           UMBRIA (total)         12.00           Perugia         11.00           Terni         12.00           MARCHE (total)         11.00           Pesaro e Urbino         10.00           Ancona         11.00           Macerata         11.00           Ascoli Piceno         10.00           Fermo         11.00           LAZIO (total)         13.00           Viterbo         13.00           Rieti         11.00           Roma         14.00           L'Aquila         9.00           Teramo         10.00		
Ravenna       11.00         Forlì Cesena       10.00         Rimini       10.00         TOSCANA (total)       11.00         Massa Carrara       11.00         Lucca       11.00         Pistoia       10.00         Firenze       11.00         Livorno       13.00         Pisa       12.00         Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         MOLISE (total)		
Forlì Cesena         10.00           Rimini         10.00           TOSCANA (total)         11.00           Massa Carrara         11.00           Lucca         11.00           Pistoia         10.00           Firenze         11.00           Livorno         13.00           Pisa         12.00           Arezzo         10.00           Siena         11.00           Grosseto         13.00           Prato         11.00           UMBRIA (total)         12.00           MARCHE (total)         11.00           Pesaro e Urbino         10.00           Ancona         11.00           Macerata         11.00           Ascoli Piceno         10.00           Fermo         11.00           LAZIO (total)         13.00           Viterbo         13.00           Rieti         11.00           Roma         14.00           Latina         15.00           Frosinone         13.00           ABRUZZO (total)         10.00           L'Aquila         9.00           Teramo         10.00           Pescara         11.00	Ferrara	
Rimini       10.00         TOSCANA (total)       11.00         Massa Carrara       11.00         Lucca       11.00         Pistoia       10.00         Firenze       11.00         Livorno       13.00         Pisa       12.00         Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.	11011 011110	11.00
TOSCANA (total)       11.00         Massa Carrara       11.00         Lucca       11.00         Pistoia       10.00         Firenze       11.00         Livorno       13.00         Pisa       12.00         Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00		10.00
Massa Carrara       11.00         Pistoia       10.00         Firenze       11.00         Livorno       13.00         Pisa       12.00         Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00		10.00
Lucca       11.00         Pistoia       10.00         Firenze       11.00         Livorno       13.00         Pisa       12.00         Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	TOSCANA (total)	11.00
Pistoia       10.00         Firenze       11.00         Livorno       13.00         Pisa       12.00         Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Massa Carrara	11.00
Firenze       11.00         Livorno       13.00         Pisa       12.00         Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Lucca	11.00
Livorno       13.00         Pisa       12.00         Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Pistoia	10.00
Pisa       12.00         Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Firenze	11.00
Arezzo       10.00         Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Livorno	13.00
Siena       11.00         Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Pisa	12.00
Grosseto       13.00         Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Arezzo	10.00
Prato       11.00         UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Siena	11.00
UMBRIA (total)       12.00         Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Grosseto	13.00
Perugia       11.00         Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Prato	11.00
Terni       12.00         MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	UMBRIA (total)	12.00
MARCHE (total)       11.00         Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Perugia	11.00
Pesaro e Urbino       10.00         Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Terni	12.00
Ancona       11.00         Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	MARCHE (total)	11.00
Macerata       11.00         Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Pesaro e Urbino	10.00
Ascoli Piceno       10.00         Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Ancona	11.00
Fermo       11.00         LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Macerata	11.00
LAZIO (total)       13.00         Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Ascoli Piceno	10.00
Viterbo       13.00         Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Fermo	11.00
Rieti       11.00         Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	LAZIO (total)	13.00
Roma       14.00         Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Viterbo	13.00
Latina       15.00         Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Rieti	11.00
Frosinone       13.00         ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Roma	14.00
ABRUZZO (total)       10.00         L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Latina	15.00
L'Aquila       9.00         Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	Frosinone	13.00
Teramo       10.00         Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	ABRUZZO (total)	10.00
Pescara       11.00         Chieti       11.00         MOLISE (total)       12.00	L'Aquila	9.00
Chieti         11.00           MOLISE (total)         12.00	Teramo	10.00
MOLISE (total) 12.00	Pescara	11.00
	Chieti	11.00
Campobasso 12.00	MOLISE (total)	12.00
	Campobasso	12.00

Isernia	11.00
CAMPANIA (total)	13.00
Caserta	14.00
Benevento	13.00
Napoli	15.00
Avellino	12.00
Salerno	13.00
PUGLIA (total)	14.00
Foggia	13.00
Bari	13.00
Taranto	14.00
Brindisi	14.00
Lecce	15.00
Barletta Andria Trani	14.00
BASILICATA (total)	13.00
Potenza	12.00
Matera	14.00
CALABRIA (total)	14.00
Cosenza	13.00
Catanzaro	14.00
Reggio di Calabria	14.00
Crotone	14.00
Vibo Valentia	14.00
SICILIA (total)	15.00
Trapani	16.00
Palermo	14.00
Messina	14.00
Agrigento	16.00
Caltanissetta	16.00
Enna	14.00
Catania	15.00
Ragusa	16.00
Siracusa	16.00
SARDEGNA (total)	14.00
Sassari	14.00
Nuoro	13.00
Cagliari	15.00
Oristano	15.00
Olbia Tempio	14.00
Ogliastra	13.00
Medio Campidano	15.00
Carbonia Iglesias	15.00

## Mean Annual Temperature (°C)

Spain	
ESPANA (total)	11.00
GALICIA (total)	12.00
A Coruna	13.00
Lugo	12.00
Ourense	12.00
Pontevedra	13.00
PAIS VASCO (total)	12.00
Alava	11.00
Guipuzcoa	12.00
Vizcaya	13.00
P. DE ASTURIAS (total)	11.00
CANTABRIA (total)	12.00
NAVARRA (total)	11.00
LA RIOJA (total)	11.00
ARAGON (total)	11.00
Huesca	11.00
Teruel	11.00
Zaragoza	12.00
CATALUNA (total)	12.00
Barcelona	12.00
Girona	12.00
Lleida	10.00
Tarragona	13.00
BALEARES (total)	16.00
CASTILLA Y LEON (total)	11.00
Avila	11.00
Burgos	10.00
Leon	9.00
Palencia	10.00
Salamanca	12.00
Segovia	11.00
Soria	10.00
Valladolid	12.00
Zamora	11.00
MADRID (total)	12.00
CASTILLA-LA MANCHA (total)	12.00
Albacete	12.00
Ciudad Real	14.00
Cuenca	12.00
Guadalajara	11.00
Toledo	14.00
C. VALENCIANA (total)	13.00
Alicante	15.00

Castellon	12.00
Valencia	13.00
R. DE MURCIA (total)	14.00
EXTREMADURA (total)	15.00
Badajoz	15.00
Caceres	14.00
ANDALUCIA (total)	16.00
Almeria	14.00
Cadiz	18.00
Cordoba	16.00
Granada	13.00
Huelva	17.00
Jaen	15.00
Malaga	15.00
Sevilla	17.00
CANARIAS (total)	11.00
Las Palmas	11.00
S.C. de Tenerife	11.00

l <sub>Y</sub>	
Increase of yield due to:	5%
only fertigation	5.00%
only mulching	5.00%
only cover crops	5.00%
fertigation & mulching	10.00%
fertigation & cover crops	10.00%
cover crops & mulching	8.00%
fertigation & mulching & cover crops	12.00%

		Content	t	Ī
		R <sub>N</sub> , R <sub>K</sub> , R	P	
Nitrogen fertilizers	Ammonium bicarbonate	17.718%	N	_
	Ammonium nitrate	34.998%	N	_
	Ammonium sulphate	21.200%	N	
	Ammonium sulphate nitrate (ASN)	26.000%	N	
	Anhydrous ammonia	82.245%	N	
	Calcium ammonium nitrate (CAN)	27.000%	N	
	Calcium nitrate	15.000%	N	
	Urea	46.646%	N	
	Urea ammonium nitrate solution (UAN) 32	32.000%	N	
	Urea ammonium nitrate solution (UAN) 30	30.000%	N	
	Urea ammonium nitrate solution (UAN) 28	28.000%	N	
Potassium fertilizers	Potassium sulphate	54.055%	K <sub>2</sub> O	
	Muriate of potash (MOP) / Potassium chloride	60.000%	K <sub>2</sub> O	
Phosphorus fertilizers	Rock Phosphate	28.000%	$P_2O_5$	
	Single super phosphate (SSP)	20.000%	$P_2O_5$	
	Triple super phosphate (TSP)	45.000%	$P_2O_5$	
Complex fertilizers	Diammonium phosphate (DAP)	18.000%	N	
	Monoammonium phosphate (MAP)	12.000%	N	

	Estimates of carl	oon emission for p	roduction	, transportation, storage and transfer of fertilizers
		CE	CO <sub>2</sub>	
N	EF <sub>N</sub>	1.300	4.763	tn CO <sub>2</sub> /tn of fertilizer
P <sub>2</sub> O <sub>5</sub>	EF <sub>K</sub>	0.200	0.733	tn CO <sub>2</sub> /tn of fertilizer
K₂O	EF <sub>P</sub>	0.150	0.550	tn CO <sub>2</sub> /tn of fertilizer
K <sub>2</sub> O	EF <sub>P</sub>			
		CE Cai	bon Equiva	alent
	Source:			
	R. Lal. Carbon en	nission from farm o	perations.	2004 (Table 5)

## **Fertilization strategy**

	Greece			Italy		Spa	iin	
TM <sub>N</sub>	range	mean value	range		mean value	range		mean value
N	(tn/ha/year)	(tn/ha/year)	(tn/ha/yea	ar)	(tn/ha/year)	(tn/ha/year)		(tn/ha/year)
Orange	0.1200 0.3000	0.2100	0.1400	0.1700	0.1550	0.1200	0.2500	0.1850
Apple	0.2000 0.3000	0.2500	0.0850	0.1350	0.1100	0.2000	0.2200	0.2100
Peach	0.1000 0.2000	0.1500	0.0800	0.1300	0.1050	0.1000	0.2000	0.1500
Almond	0.1000 0.1500	0.1250	0.0900	0.1400	0.1150	0.0750	0.1250	0.1000
Olive	0.0867 0.1734	0.1300	0.0700	0.1150	0.0925	0.0800	0.0900	0.0850
	Greece			Italy		Spa	iin	
$TM_P$	range	mean value	range		mean value	range		mean value
P <sub>2</sub> O <sub>5</sub>	(tn/ha/year)	(tn/ha/year)	(tn/ha/yea	ar)	(tn/ha/year)	(tn/ha/year)		(tn/ha/year)
Orange	0.0600 0.0900	0.0750	0.0180	0.0250	0.0215	0.0600	0.1000	0.0800
Apple	0.0500 0.0800	0.0650	0.0070	0.0300	0.0185	0.0500	0.0800	0.0650
Peach	0.0400 0.0600	0.0500	0.0500	0.0900	0.0700	0.0400	0.0600	0.0500
Almond	0.0200 0.0240	0.0220	0.0200	0.0400	0.0300	0.0200	0.0240	0.0220
Olive	0.0173 0.0312	0.0243	0.0450	0.0950	0.0700	0.0001	0.0002	0.0001
	Greece			Italy		Spa	in	
$TM_K$	range	mean value	range		mean value	range		mean value
K <sub>2</sub> O	(tn/ha/year)	(tn/ha/year)	(tn/ha/yea	ar)	(tn/ha/year)	(tn/ha/year)		(tn/ha/year)
Orange	0.0500 0.0900	0.0700	0.1400	0.2500	0.1950	0.0500	0.0900	0.0700
Apple	0.1500 0.3000	0.2250	0.1250	0.1850	0.1550	0.1500	0.2500	0.2000
Peach	0.1000 0.2000	0.1500	0.0700	0.1300	0.1000	0.0600	0.0700	0.0650
Almond	0.1000 0.1500	0.1250	0.1200	0.2000	0.1600	0.0200	0.0320	0.0260
Olive	0.1734 0.3468	0.2601	0.0420	0.1100	0.0760	0.0010 (	0.0020	0.0015

If cover crops by the Leguminosae family are used, the requirements for Nitrogen-fertilizers are reduced by:

N<sub>L</sub>

0.08

tn N/ha/year for all species

	$RF_f\_FGT$	
If <b>fertigation</b> is used, there is a	15.00%	reduction (average value) on the quantity of fertilizers used

Pesticides categories		
Herbicides	Н	include herbicides, dessicants, defoliants
Insecticides	I	include insecticides, acaricides, nematocides, mineral
Fungicides	F	include fungicides, bactericides, seed treatment
Plant Growth Regulators	GR	

### References

- [1] Lal, R., "Carbon emission from farm operations", Environment International, Elsevier, pp. 981-990, 2004 (doi:10.1016/j.envint.2004.03.005)
- Audsley, E., Stacey, K., Parsons, D.J., Williams, A.G., Cranfield University, "Estimation of the greenhouse gas emissions from agricultural pesticide manufacture and use", August 2009
- [3] Green, M.B., "Energy in pesticide manufacture, distribution and use", Energy in Plant Nutrition and Pest Control, Elsevier, Amsterdam, p.165-177, 1987

ED <sub>H_ai</sub> , ED <sub>I_ai</sub> , E	D <sub>F_ai</sub> , ED <sub>GR_ai</sub>	Value of CO <sub>2</sub> emis	sions due to production, formulation	, packaging
MJ/Kg a.i.	Source	Kg CO₂/Kg a.i.	Active Ingredient (a.i.)	Category
		24.550	Herbicides (general)	Н
107.00	[2] (Table 8)	14.118	2,4-D	Н
155.00	[2] (p. 13)	20.451	2,4,5-T	Н
297.50	[2] (p. 13)	39.253	Alachlor	Н
453.60	[2] (p. 13)	59.850	Bentazon	Н
160.80	[2] (p. 13)	21.217	Butylate	н
190.00	[2] (p. 13)	25.069	Chloramben	Н
385.40	[2] (p. 13)	50.851	Chlorsulfuron	Н
221.00	[2] (Table 8)	29.160	Cyanazine	Н
315.00	[2] (p. 13)	41.563	Dicamba	Н
100.00	[2] (p. 13)	13.194	Dinoseb	Н
420.00	[2] (Table 8)	55.417	Diquat	Н
294.50	[2] (p. 13)	38.858	Diuron	Н
179.80	[2] (p. 13)	23.724	EPTC	Н
538.00	[2] (p. 13)	70.986	Fluazifop-butyl	Н
374.60	[2] (p. 13)	49.426	Fluometuron	н
474.00	[2] (Table 8)	62.542	Glyphosate	Н
310.00	[2] (Table 8)	40.903	Linuron	Н
148.00	[2] (Table 8)	19.528	MCPA	Н.
295.80	[2] (p. 13)	39.029	Metolachlor	Н.
479.40	[2] (p. 13)	63.254	Paraquat	Н
310.00	[2] (p. 13)	40.903	Propachlor	Н
171.00	[2] (Table 8)	22.563	Trifluralin	Н
240.00	[2] (p. 13)	31.667	Propanil	Н
302.00	[2] (Table 8)	39.847	Bromoxynil	н
302.00	[2] (Table 8)	39.847	Carbetamide	н
291.00	[2] (Table 8)	38.396	Chloridazon	Н
367.00	[2] (Table 8)	48.424	Chlorotoluron	Н
432.00	[2] (Table 8)	57.000	Clopyralid	Н
540.00	[2] (Table 8)	71.250	Diflufenican	н
367.00	[2] (Table 8)	48.424	Ethofumesate	н
691.00	[2] (Table 8)	91.174	Florasulam	Н
648.00	[2] (Table 8)	85.500	Flufenacet	Н
518.00	[2] (Table 8)	68.347	Fluroxypyr	Н
691.00	[2] (Table 8)	91.174	lodosulfuron-methyl-sodium	Н Н
378.00	[2] (Table 8)	49.875	Isoproturon	Н
194.00	[2] (Table 8)	25.597	Mecoprop-P	Н
659.00	[2] (Table 8)	86.951	Mesosulfuron-methyl	н
691.00	[2] (Table 8)	91.174	Mesotrione	н н
432.00	[2] (Table 8)	57.000	Metamitron	н
388.00	[2] (Table 8)	51.194	Metazachlor	Н.
518.00	[2] (Table 8)	68.347	Metsulfuron-methyl	Н
594.00	[2] (Table 8)	78.375	Nicosulfuron	Н.
421.00	[2] (Table 8)	55.549	Pendimethalin	Н
345.00	[2] (Table 8)	45.521	Phenmedipham	Н
561.00	[2] (Table 8)	74.021	Propaguizafop	Н
410.00	[2] (Table 8)	54.097	Propyzamide	Н.
+10.00	[2] (10010-0)	54.037	TTOPYZamilde	

626.00	[2] (Table 8)	82.597	Prosulfuron	Н
540.00	[2] (Table 8)	71.250	Thifensulfuron-methyl	Н
270.00	[2] (Table 8)	35.625	Tri-allate	Н
540.00	[2] (Table 8)	71.250	Tribenuron-methyl	Н
432.00	[2] (Table 8)	57.000	Triclopyr	Н
680.00	[2] (Table 8)	89.722	Trifloxystrobin	Н
		20.153	Insecticides (general)	I
180.00	[2] (p. 13)	23.750	Methyl parathion	I
229.00	[2] (p. 13)	30.215	Phorate	I
474.00	[2] (p. 13)	62.542	Carbofuran	1
173.00	[2] (p. 13)	22.826	Carbaryl	I
78.00	[2] (p. 13)	10.292	Toxaphene	I
600.00	[2] (Table 8)	79.167	Cypermethrin	I
270.20	[2] (p. 13)	35.651	Chlordimeform	I
248.80	[2] (p. 13)	32.828	Malathion	I
158.00	[2] (p. 13)	20.847	Parathion	I
89.80	[2] (p. 13)	11.849	Methoxychlor	I
226.00	[2] (Table 8)	29.819	1,3-dichloropropene	T.
518.00	[2] (Table 8)	68.347	Alpha-cypermethrin	I I
324.00	[2] (Table 8)	42.750	Chlorpyrifos	I I
334.00	[2] (Table 8)	44.069	Ethoprophos	I I
529.00	[2] (Table 8)	69.799	Lambda-cyhalothrin	I
148.00	[2] (Table 8)	19.528	Metaldehyde	I
345.00	[2] (Table 8)	45.521	Oxamyl	I
486.00	[2] (Table 8)	64.125	Tau-fluvalinate	I
615.00	[2] (Table 8)	81.146	Zeta-cypermethrin	ı
		15.756	Fungicides (general)	F
101.00	[2] (p. 13)	13.326	Ferbam	F
119.00	[2] (p. 13)	15.701	Maneb	F
135.00	[2] (p. 13)	17.813	Captan	F
417.00	[2] (p. 13)	55.021	Benomyl	F
615.00	[2] (Table 8)	81.146	Azoxystrobin	F
713.00	[2] (Table 8)	94.076	Boscalid	F
410.00	[2] (Table 8)	54.097	Carbendazim	F
313.00	[2] (Table 8)	41.299	Chlorothalonil	F
442.00	[2] (Table 8)	58.319	Cymoxanil	F
551.00	[2] (Table 8)	72.701	Cyproconazole	F
637.00	[2] (Table 8)	84.049	Cyprodinil	F
626.00	[2] (Table 8)	82.597	Epoxiconazole	F
475.00	[2] (Table 8)	62.674	Fenpropimorph	F
594.00	[2] (Table 8)	78.375	Fluazinam	F
637.00	[2] (Table 8)	84.049	Fluoxastrobin	F
529.00	[2] (Table 8)	69.799	Flusilazole	F
518.00	[2] (Table 8)	68.347	Kresoxim-methyl	F
280.00	[2] (Table 8)	36.944	Mancozeb	F
659.00	[2] (Table 8)	86.951	Metalaxyl-M	F
615.00	[2] (Table 8)	81.146	Metconazole	F
713.00	[2] (Table 8)	94.076	Metrafenone	F
453.00	[2] (Table 8)	59.771	Prochloraz	F
464.00	[2] (Table 8)	61.222	Propamocarb hydrochloride	F
475.00	[2] (Table 8)	62.674	Prothioconazole	F
173.00	[=] (. abic 0)	02.074	1.501110001102010	•

F	Pyraclostrobin	92.625	[2] (Table 8)	702.00
F	Spiroxamine	88.271	[2] (Table 8)	669.00
F	Sulphur	15.756		
F	Tebuconazole	72.701	[2] (Table 8)	551.00
GR	Growth Regulators (general)	34.833	[2] (Table 4)	264.00
GR	Chlormequat	35.625	[2] (Table 8)	270.00
GR	Ethephon	25.597	[2] (Table 8)	194.00
GR	Imazaquin	68.347	[2] (Table 8)	518.00
GR	Maleic hydrazide	19.924	[2] (Table 8)	151.00
GR	Trinexapac-ethyl	76.924	[2] (Table 8)	583.00

# **Currently applied pesticides practices**

Orange		TM <sub>ai</sub>				
Type of pesticide	Active Ingredient (a.i.)	Total Annual Quantity of a.i. (Kg a.i./ha/year)	Kg CO₂/Kg a.i.	Kg CO₂/ha/year	tn CO₂/ha/year	_
Н	Glyphosate	6.7500	62.542	422.156	0.42216	
			Herbicides Total	422.156	0.42216	tn CO₂/ha/year
I	Acetamiprid	0.2000	20.153	4.031	0.00403	_
ı	Parrafinic oil	14.7750	20.153	297.761	0.29776	_
ı	Abamectin	0.0180	20.153	0.363	0.00036	_
	Deltamethrin	0.0125	20.153	0.252	0.00025	
			Insecticides Total	302.407	0.30241	tn CO₂/ha/year
						_
F	Copper	1.5000	15.756	23.634	0.02363	
			Fungicides Total	23.634	0.02363	tn CO₂/ha/year
GR					0.00000	
			Plant Growth Reg. Total	0.000	0.00000	tn CO₂/ha/year

Apple		$TM_{ai}$				
Type of pesticide	Active Ingredient (a.i.)	Total Annual Quantity of a.i. (Kg a.i./ha/year)	Kg CO₂/Kg a.i.	Kg CO₂/ha/year	tn CO₂/ha/year	_
Н	Glyphosate	6.7500	62.542	422.156	0.42216	
			Herbicides Total	422.156	0.42216	tn CO₂/ha/year
						_
ı	Acetamiprid	0.1400	20.153	2.821	0.00282	_
ı	Deltamethrin	0.0250	20.153	0.504	0.00050	_
ı	Beta-cyfluthrin	0.0250	20.153	0.504	0.00050	_
ı	Abamectin	0.0360	20.153	0.726	0.00073	_
ı	Hexythiazox	0.0500	20.153	1.008	0.00101	
			Insecticides Total	5.562	0.00556	tn CO₂/ha/year
						_
F	Difeconazole	0.2250	15.756	3.545	0.00355	_
F	Trifloxystrobin	0.1500	89.722	13.458	0.01346	_
F	Cyprodinil	0.5000	84.049	42.024	0.04202	_
F	Myclobutanil	0.1920	15.756	3.025	0.00303	_
F	Dodine	0.8000	15.756	12.605	0.01260	_
F	Kresoxim methyl	0.3000	15.756	4.727	0.00473	_
F	Dithianon	0.4200	15.756	6.618	0.00662	_
F	Tebuconazole	0.3000	72.701	21.810	0.02181	
			Fungicides Total	107.812	0.10781	tn CO₂/ha/year
GR					0.00000	
			Plant Growth Reg. Total	0.000	0.00000	tn CO₂/ha/year

Peach		TM <sub>ai</sub>				
Type of pesticide	Active Ingredient (a.i.)	Total Annual Quantity of a.i. (Kg a.i./ha/year)	Kg CO₂/Kg a.i.	Kg CO₂/ha/year	tn CO₂/ha/year	_
Н	Glyphosate	8.1000	62.542	506.588	0.50659	_
			Herbicides Total	506.588	0.50659	tn CO₂/ha/year
						_
ı	Paraffinic oil	9.8500	20.153	198.508	0.19851	_
ı	Acetamiprid	0.0600	20.153	1.209	0.00121	_
ı	Abamectin	0.0180	20.153	0.363	0.00036	_
ı	Chlorantraniliprole	0.1200	20.153	2.418	0.00242	
			Incontinidos Total	202.498	0.20250	tn CO₂/ha/year
			Insecticides Total	202.498	0.20230	til CO <sub>2</sub> / lia/ yeal
			insecticides Total	202.436	0.20230	
F	Ziram	2.2800	15.756	35.924	0.03592	
F F	Ziram Captan	2.2800 2.4900				
F F			15.756	35.924	0.03592	— — —
F	Captan	2.4900	15.756 17.813	35.924 44.353	0.03592 0.04435	— — —
F	Captan Thiophanate-methyl	2.4900 0.7000	15.756 17.813 15.756	35.924 44.353 11.029	0.03592 0.04435 0.01103	— — — —
F	Captan Thiophanate-methyl Myclobutanil	2.4900 0.7000 0.0960	15.756 17.813 15.756 15.756	35.924 44.353 11.029 1.513	0.03592 0.04435 0.01103 0.00151	tn CO <sub>2</sub> /ha/year
F	Captan Thiophanate-methyl Myclobutanil	2.4900 0.7000 0.0960	15.756 17.813 15.756 15.756 15.756	35.924 44.353 11.029 1.513 31.512	0.03592 0.04435 0.01103 0.00151 0.03151	- - - - -
F	Captan Thiophanate-methyl Myclobutanil	2.4900 0.7000 0.0960	15.756 17.813 15.756 15.756 15.756	35.924 44.353 11.029 1.513 31.512	0.03592 0.04435 0.01103 0.00151 0.03151	- - - - -

Almond		$TM_{ai}$				
Type of pesticide	Active Ingredient (a.i.)	Total Annual Quantity of a.i. (Kg a.i./ha/year)	Kg CO₂/Kg a.i.	Kg CO₂/ha/year	tn CO₂/ha/year	
Н	Glyphosate	6.7500	62.542	422.156	0.42216	
			Herbicides Total	422.156	0.42216	tn CO₂/ha/year
						_
ı	Parrafinic oil	19.7000	20.153	397.015	0.39702	_
ı	Deltamethrin	0.0250	20.153	0.504	0.00050	
			Insecticides Total	397.519	0.39752	tn CO₂/ha/year
						_
F	Copper	3.3750	15.756	53.177	0.05318	
			Fungicides Total	53.177	0.05318	tn CO₂/ha/year
GR					0.00000	
			Plant Growth Reg. Total	0.000	0.00000	tn CO₂/ha/year

Olive		$TM_{ai}$				
Type of pesticide	Active Ingredient (a.i.)	Total Annual Quantity of a.i. (Kg a.i./ha/year)	Kg CO₂/Kg a.i.	Kg CO₂/ha/year	tn CO₂/ha/year	_
Н	Glyphosate	6.7500	62.542	422.156	0.42216	_
			Herbicides Total	422.156	0.42216	tn CO₂/ha/year
						_
ı	Lamda cyhalothrin	0.0400	20.153	0.806	0.00081	_
ı	Pyriproxyfen	0.3000	20.153	6.046	0.00605	_
ı	Thiacloprid	0.3600	20.153	7.255	0.00726	
			Insecticides Total	14.107	0.01411	tn CO₂/ha/year
-	Dodine	1.6320	15.756	25.714	0.02571	_
F	Copper	9.0000	15.756	141.804	0.14180	_
			Fungicides Total	167.518	0.16752	tn CO₂/ha/year
						_
GR					0.00000	
			Plant Growth Reg. Total	0.000	0.00000	tn CO₂/ha/year

# Reduction of Herbicides consumption if cover crops and/or mulching are used

RF <sub>H</sub>	cover crops	mulching
Orange	90.00%	20.00%
Apple	60.00%	20.00%
Peach	90.00%	20.00%
Almond	90.00%	20.00%
Olive	90.00%	20.00%

# Reduction of Insecticides consumption if insects monitoring and/or mass trapping are applied

RF <sub>I</sub>	monitoring	mass trapping
Orange	60.00%	90.00%
Apple	50.00%	50.00%
Peach	40.00%	50.00%
Almond	70.00%	30.00%
Olive	60.00%	70.00%

		CO <sub>2</sub> Emission Factors			
		Electricity generation (Greece 2016)	0.000623	tn CO₂/KWh	Source
	EF <sub>EL</sub>	Electricity generation (Italy 2016)	0.000256	tn CO <sub>2</sub> /KWh	European Environment Agency
		Electricity generation (Spain 2016)	0.000265	tn CO₂/KWh	
		Electricity generation (input to Algorithm)	0.000623	tn CO <sub>2</sub> /KWh	

Fossil Fuel	Diesel	Gasoline	Source
Net Calorific Value [NCV] (GJ/tn)	43.00	44.30	IPCC Guidelines for National Greenhouse Gas Inventories, Vol. 2, Chapter 1 [Table 1.2], 2006
Carbon content (Kg C/GJ)	20.20	18.90	IPCC Guidelines for National Greenhouse Gas Inventories, Vol. 2, Chapter 1 [Table 1.3], 2006
Density (Kg/m³)	832.00	745.00	JRC, TANK-TO-WHEELS (TTW) Report, Version 3, October 2008 [Table 2.1]
CO <sub>2</sub> emissions			
Mobile combustion (Kg CO <sub>2</sub> /TJ)	74,100.00	69,300.00	IPCC Guidelines for National Greenhouse Gas Inventories, Vol. 2, Chapter 3 [Table 3.2.1], 2006
Mobile combustion (Kg CO <sub>2</sub> /GJ)	74.10	69.30	
WTT [Well To Tank] (Kg CO <sub>2</sub> /GJ)	14.70	13.10	JRC, WELL-TO-TANK (WTT) Report, Version 4a, January 2014, doi:10.2790/95629
CO <sub>2</sub> Emissions (Kg CO <sub>2</sub> /lt)	3.18	2.72	
CO <sub>2</sub> Emissions (tn CO <sub>2</sub> /lt)	0.003177	0.002719	
	<b>EF</b> <sub>D</sub>	<b>EF</b> <sub>G</sub>	

Fuel	Wood	Diesel	Source
Net Calorific Value [NCV] (GJ/tn)	15.60	43.00	PCC Guidelines for National Greenhouse Gas Inventories, Vol. 2, Chapter 1 [Table 1.2], 2006
Carbon content (Kg C/GJ)	30.50	20.20	IPCC Guidelines for National Greenhouse Gas Inventories, Vol. 2, Chapter 1 [Table 1.3], 2006
Density (Kg/m³)		832.00	JRC, TANK-TO-WHEELS (TTW) Report, Version 3, October 2008 [Table 2.1]
CO <sub>2</sub> emissions			
Stationary combustion (Kg CO <sub>2</sub> /TJ)	112,000.00	74,100.00	PCC Guidelines for National Greenhouse Gas Inventories, Vol. 2, Chapter 2 [Tables 2.3, 2.4, 2.5], 2006
Stationary combustion (Kg CO <sub>2</sub> /GJ)	112.00	74.10	
WTT [Well To Tank] (Kg CO <sub>2</sub> /GJ)		14.70	JRC, WELL-TO-TANK (WTT) Report, Version 4a, January 2014, doi:10.2790/95629
CO <sub>2</sub> Emissions (Kg CO <sub>2</sub> /lt)		3.18	
CO <sub>2</sub> Emissions (tn CO <sub>2</sub> /lt)		0.003177	7
1 tn of Wood is equal in terms of NCV to	0.3628	tn of Diesel	= 436.04651 lt of Diesel
Burning 1 tn of Wood* as solid fuel saves	1.38528	tn CO <sub>2</sub>	that would be emitted if Diesel was used

<sup>\*</sup>Fresh Wood, not Dry Wood

**EF**<sub>GE</sub>: Global carbon intensity of electricity generated (2018 value)

475.000 gCO<sub>2</sub>/KWh 0.475 KgCO<sub>2</sub>/KWh

**Source**: International Energy Agency, "Global Energy &  $CO_2$  Status Report, The latest trends in energy and emissions in 2018", 2019

1.00	MJ	= 0.2777777778 KWh	K <sub>2</sub>
K <sub>1</sub>	3,66419	mass conversion coefficient from C to CO <sub>2</sub>	

	Typical Annual consumptions of fossil fuels & electricity					
	TM <sub>D</sub>	TM <sub>G</sub>	TM <sub>EL</sub>			
Greece	Diesel (lt/ha/year)	Gasoline (lt/ha/year)	Electricity (KWh/ha/year)			
Orange	187.50	12.50	280.00			
Apple	758.45	47.97	170.00			
Peach	433.33	20.00	180.00			
Almond	250.00	20.00	113.00			
Olive	141.10	25.00	14.29			
Italy	Diesel (lt/ha/year)	Gasoline (lt/ha/year)	Electricity (KWh/ha/year)			
Orange	460.00	12.50	280.00			
Apple	810.00	47.97	170.00			
Peach	440.00	20.00	180.00			
Almond	220.00	20.00	113.00			
Olive	270.00	25.00	14.29			
Spain	Diesel (lt/ha/year)	Gasoline (lt/ha/year)	Electricity (KWh/ha/year)			
Orange	187.50	12.50	280.00			
Apple	758.45	47.97	170.00			
Peach	433.33	20.00	180.00			
Almond	250.00	20.00	113.00			
Olive	141.10	25.00	14.29			

# Reduction of Diesel consumption if fertigation is applied

	$\mathbf{RF}_{D_{FGT}}$
	%
Orange	12.00%
Apple	5.00%
Peach	12.00%
Almond	20.00%
Olive	14.00%

	RF <sub>EL_m</sub>	
If mulching is applied, a	30.00%	reduction on the consumption of irrigation water is achieved and therefore the same reduction on the electricity demands (electricity is mainly used for the operation of the irrigation pumps)

# Coefficients

Symbol	Value	Unit	Definition
C <sub>w</sub>	0.4750	o tn C/tn of dry wood	carbon content of wood
K <sub>1</sub>	3.6641	9	mass conversion coefficient from C to CO <sub>2</sub>

## **Atomic Masses**

Element	Symbol	Value
Carbon	С	12.01070
Oxygen	0	15.99940
Nitrogen	N	14.00670
Hydrogen	Н	1.00794
Sulfur	S	32.06500
Calcium	Ca	40.07800
Potassium	K	39.09830
Phosphorus	Р	30.97376
Chlorine	Cl	35.45300

## **Molecular Masses**

Molecule	Symbol	Value
Carbon dioxide	$CO_2$	44.00950
Ammonium bicarbonate	NH <sub>4</sub> HCO <sub>3</sub>	79.05530
Ammonium nitrate	$NH_4NO_3$	80.04336
Ammonium sulphate	$(NH_4)_2SO_4$	132.13952
Ammonium sulphate nitrate (ASN)	$2NH_4NO_3 \times (NH_4)_2SO_4$	292.22624
Anhydrous ammonia	$NH_3$	17.03052
Calcium ammonium nitrate (CAN)	5Ca(NO <sub>3</sub> ) <sub>2</sub> x NH <sub>4</sub> NO <sub>3</sub> •10H <sub>2</sub> O	1,080.63516
Calcium nitrate	$Ca(NO_3)_2$	164.08780
Urea	$CH_4N_2O$	60.05526
Potassium sulphate	$K_2SO_4$	174.25920
Potassium chloride	KCI	74.55130
Diammonium phosphate		





# Annex III CO<sub>2</sub>RCCT runs





Run 1 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



#### **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Orange
Geographical area of the cultivation:	GREECE (total)

#### **CO2 Annual Removal Capacity**

R1.1	ARC	<b>273,802.4302</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	<b>218,437.3456</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>55,365.0845</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	'als	AR <sub>BW</sub>	<b>300,878.0321</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	1 CO	AS <sub>s</sub>	<b>7,223.6095</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>363,466.7262</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>308,101.6417</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

b. The following are defined as fallen biomass: fallen leaves, fallen fruits (naturally fallen or as a result of a thinning process), other fallen biomass (e.g. almond hulls) as well as prunings which are left in the field.

S	AE <sub>f</sub>	<b>37,063.1211</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers
si i	AE <sub>p</sub>	25,353.3549 tn CO2/year	CO2 Annual Emissions due to the use of pesticides
z ig	AE <sub>ff&amp;e</sub>	<b>27,247.8201</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
ш	TAE	<b>89,664.2960</b> tn CO2/year	CO2 Total Annual Emissions
		·	
R4.1	AE <sub>D</sub>	20,184.8514 tn CO2/year	CO2 Annual Emissions due to the use of diesel
R4.2	$AE_G$	1,151.9053 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
R4.3	AE <sub>EL</sub>	5,911.0634 tn CO2/year	CO2 Annual Emissions due to the use of electricity
R4.4	AE <sub>ff&amp;e</sub>	<b>27,247.8201</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
R	4.2 4.3	AE <sub>p</sub> AE <sub>ffse</sub> TAE  4.1 AE <sub>D</sub> AE <sub>G</sub> AE <sub>G</sub> AE <sub>G</sub> AE <sub>G</sub> AE <sub>E</sub>	AE <sub>p</sub> 25,353.3549 tn CO2/year  AE <sub>ffac</sub> 27,247.8201 tn CO2/year  TAE 89,664.2960 tn CO2/year  4.1 AE <sub>0</sub> 20,184.8514 tn CO2/year  4.2 AE <sub>6</sub> 1,151.9053 tn CO2/year  4.3 AE <sub>E1</sub> 5,911.0634 tn CO2/year

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	80,021.1785 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	٥٥	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_m}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>80,021.1785</b> tn CO2/year	CO2 Total Annual Gain

#### CO2 Removal Capacity Indexes

R6.1 ARC area 8.08012 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
---

R6.2	ARCproduct	0.34901	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>product</sub>	0.34901		CO2 Annual Removal Capacity per unit of narvested fruits  CO2 Annual Removal Capacity per tree unit	(Br is ilicidued)
K0.5	Anc <sub>tree</sub>	0.01812	tn CO2/tree/year	CO2 Affilian Removal Capacity per tree unit	
R7.1	ARCarea	6.44625	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	0.27844	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARC <sub>tree</sub>	0.01446	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	(St. 15 tibe mistaced)
10.5	Arretree	0.01440	th cozytrecyyeur	CO274midat temoval cupacity per tree unit	
R8.1	TAE/TAR	0.24669	Total Annual CO2 Emissions/ Total Annu	ial CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.29102	Total Annual CO2 Emissions/ Total Annu		(BF is not included)
					·
R9.1	TAR <sub>area</sub>	10.72618	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	0.46330	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.02405	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	9.09232	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	0.39273	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.02039	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	1.63387	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.07057	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.00366	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
200	4.0	0.6771		CO2 Associal Description and discharge description of translation of the Co2 Associal Description of the Co2 Associal Descript	
R12.1	AR <sub>BW_area</sub>	8.87914	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	0.38352	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.01991	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
D42.4	A.C.	0.24247	to CO2/h astona house	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.1 R13.2	AS <sub>S_area</sub>	0.21317	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.3	AS <sub>S_product</sub>	0.00921 0.00048	tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
K13.3	AS <sub>S_tree</sub>	0.00048	til CO2/tilee/year	CO2 Affilian Storage in soin as carbon or the fanen biomass per tree unit	
R14.1	TAE <sub>area</sub>	2.64606	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2	TAE <sub>product</sub>	0.11429	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
R14.3	TAE <sub>tree</sub>	0.00593	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
	uee				·
R15.1					
	AE <sub>f area</sub>	1.09376	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	<u> </u>
R15.2	AE <sub>f_area</sub>	1.09376 0.04724	tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
	AE <sub>f_product</sub>			·	
R15.2		0.04724	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.2	AE <sub>f_product</sub> AE <sub>f_tree</sub>	0.04724	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.2 R15.3	$AE_{f\_product}$ $AE_{f\_tree}$ $AE_{p\_area}$	0.04724 0.00245	tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit	
R15.2 R15.3	AE <sub>f_product</sub> AE <sub>f_tree</sub>	0.04724 0.00245 0.74820	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	·
R15.2 R15.3 R16.1 R16.2	AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub>	0.04724 0.00245 0.74820 0.03232	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R15.2 R15.3 R16.1 R16.2	AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub>	0.04724 0.00245 0.74820 0.03232	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R15.2 R15.3 R16.1 R16.2 R16.3	AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_tree</sub> AE <sub>p_tree</sub>	0.04724 0.00245 0.74820 0.03232 0.00168	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R15.2 R15.3 R16.1 R16.2 R16.3	AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub>	0.04724 0.00245 0.74820 0.03232 0.00168	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3	AE <sub>I product</sub> AE <sub>I tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>II8e_area</sub> AE <sub>II8e_tree</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180	tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3	AE <sub>f, product</sub> AE <sub>f, tree</sub> AE <sub>p, area</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>f, tree</sub> AE <sub>ff&amp;e, area</sub> AE <sub>ff&amp;e, tree</sub> AE <sub>ff&amp;e, tree</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2	AE <sub>I, product</sub> AE <sub>I, tree</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>ff&amp;e, area</sub> AE <sub>ff&amp;e, tree</sub> AE <sub>ff&amp;e, tree</sub> AE <sub>ff, product</sub> AE <sub>ff, product</sub> AE <sub>ff, product</sub> AE <sub>ff, product</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180 0.59567 0.02573	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/tree/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3	AE <sub>f, product</sub> AE <sub>f, tree</sub> AE <sub>p, area</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>f, tree</sub> AE <sub>ff&amp;e, area</sub> AE <sub>ff&amp;e, tree</sub> AE <sub>ff&amp;e, tree</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	·
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff8e, area</sub> AE <sub>ff8e, tree</sub> AE <sub>D, area</sub> AE <sub>D, product</sub> AE <sub>D, product</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180 0.59567 0.02573 0.00134	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of pertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>fise area</sub> AE <sub>fise product</sub> AE <sub>fise area</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180 0.59567 0.02573 0.00134	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of pertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fiesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2	AE <sub>f, product</sub> AE <sub>f, tree</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>f, tree</sub> AE <sub>ff, tree</sub> AE <sub>ff, tree</sub> AE <sub>ff, tree</sub> AE <sub>ff, product</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180 0.59567 0.02573 0.00134	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tree/year tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  CO2 Annual Emissions due to the use of festil fuels & electricity per unit of cultivated area  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  CO2 Annual Emissions due to the use of diesel per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>fise area</sub> AE <sub>fise product</sub> AE <sub>fise area</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180 0.59567 0.02573 0.00134	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of pertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fiesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>f, product</sub> AE <sub>f, tree</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>f, tree</sub> AE <sub>ff, tree</sub> AE <sub>ff, tree</sub> AE <sub>ff, tree</sub> AE <sub>D, product</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180 0.59567 0.02573 0.00134	tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>I product</sub> AE <sub>I tree</sub> AE <sub>P, product</sub> AE <sub>P, product</sub> AE <sub>P, product</sub> AE <sub>P, product</sub> AE <sub>M®e, product</sub> AE <sub>M®e, tree</sub> AE <sub>D, product</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180 0.59567 0.02573 0.00134 0.03399 0.00147 0.00008	tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2 R19.3 R19.1 R19.2 R19.3	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p product</sub> AE <sub>p product</sub> AE <sub>p product</sub> AE <sub>f tree</sub> AE <sub>ff&amp;e area</sub> AE <sub>ff&amp;e product</sub> AE <sub>ff&amp;e product</sub> AE <sub>ff&amp;e product</sub> AE <sub>ff area</sub> AE <sub>D product</sub> AE <sub>D product</sub> AE <sub>D product</sub> AE <sub>G area</sub> AE <sub>G product</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180 0.59567 0.02573 0.00134 0.03399 0.00147 0.00008	tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>I product</sub> AE <sub>I tree</sub> AE <sub>P, product</sub> AE <sub>P, product</sub> AE <sub>P, product</sub> AE <sub>P, product</sub> AE <sub>M®e, product</sub> AE <sub>M®e, tree</sub> AE <sub>D, product</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180 0.59567 0.02573 0.00134 0.03399 0.00147 0.00008	tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2 R19.3 R19.1 R19.2 R19.3	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p product</sub> AE <sub>p product</sub> AE <sub>p product</sub> AE <sub>f tree</sub> AE <sub>ff&amp;e area</sub> AE <sub>ff&amp;e product</sub> AE <sub>ff&amp;e product</sub> AE <sub>ff&amp;e product</sub> AE <sub>ff area</sub> AE <sub>D product</sub> AE <sub>D product</sub> AE <sub>D product</sub> AE <sub>G area</sub> AE <sub>G product</sub>	0.04724 0.00245 0.74820 0.03232 0.00168 0.80410 0.03473 0.00180 0.59567 0.02573 0.00134 0.03399 0.00147 0.00008	tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit	

R21.2	TAG <sub>product</sub>	0.10200	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00530	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	2.36149	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.10200	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00530	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit
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Run 2 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



#### **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Apple
Geographical area of the cultivation:	GREECE (total)

#### CO2 Annual Removal Capacity

R:	1.1	ARC	<b>28,514.7385</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R:	1.2	ARC	<b>9,768.3514</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>18,746.3871</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>58,442.8502</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	20 E	AS <sub>s</sub>	<b>2,069.4325</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	Rei	TAR	<b>79,258.6698</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>60,512.2827</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	SI	AE <sub>f</sub>	<b>15,212.9910</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers
R3.2	2 .5	AE <sub>p</sub>	<b>5,980.9490</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides
R3.3	S ig	AE <sub>ff&amp;e</sub>	<b>29,549.9912</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
R3.4	ü	TAE	<b>50,743.9312</b> tn CO2/year	CO2 Total Annual Emissions
	R4.1	AE <sub>D</sub>	26,910.2182 tn CO2/year	CO2 Annual Emissions due to the use of diesel
	R4.2	AE <sub>G</sub>	1,456.9426 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
	R4.3	AE <sub>EL</sub>	1,182.8304 tn CO2/year	CO2 Annual Emissions due to the use of electricity
	R4.4	AE <sub>ff&amp;e</sub>	<b>29,549.9912</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity

R5.1		AG <sub>N-f LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5 R5.6	302 jain	AG <sub>WF</sub>	12,245.5992 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_m}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	12,245.5992 tn CO2/year	CO2 Total Annual Gain

CO2 Remova	al Capacity	Indexes
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R6.1 ARC <sub>area</sub> 2.55319 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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R6.2	ARC <sub>product</sub>	0.11286	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.2	ARC <sub>product</sub>	0.00345		CO2 Annual Removal Capacity per unit or narvested fruits  CO2 Annual Removal Capacity per tree unit	(Br is included)
110.3	Anctree	0.00343	tn CO2/tree/year	CO2 Ailliuai nelliuvai Capacity per tree uliit	
R7.1	ARCarea	0.87465	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	0.03866	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARCtree	0.00118	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	(b) is not included)
117.5	Anctree	0.00110	tir cozytree/year	CO2 Annual Nemovar Capacity per tree unit	
R8.1	TAE/TAR	0.64023	Total Annual CO2 Emissions/ Total Ann	nual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.83857	Total Annual CO2 Emissions/ Total Ann		(BF is not included)
	,				
R9.1	TAR <sub>area</sub>	7.09678	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	0.31371	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.00960	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	5.41824	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	0.23951	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.00733	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	1.67854	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.07420	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.00227	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	5.23294	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	0.23132	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.00708	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.18530	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.00819	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0.00025	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
	745	4.5.4050		COO Table Associal Engineers associated with and associated	
R14.1	TAE	4.54358	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2 R14.3	TAE <sub>product</sub>	0.20085	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
K14.3	TAC <sub>tree</sub>	0.00615	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
R15.1	AE <sub>f area</sub>	1.36216	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2		0.06021	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f_product</sub>	0.00021	tn CO2/triol yield/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
K13.5	ALf_tree	0.00184	tir CO2/ tree/ year	CO2 Minual Emissions due to the dae of refuncers per dee unit	
R16.1	AE <sub>p_area</sub>	0.53553	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.02367	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p tree</sub>	0.00072	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
	p_dee				
R17.1	AE <sub>ff&amp;e area</sub>	2.64589	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R17.2	AE <sub>ff&amp;e_product</sub>	0.11696	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00358	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R18.1	AE <sub>D area</sub>	2.40953	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.2				CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
1/10.2		0.10651	tn CO2/tn of yield/year	COE / William Emissions due to the doe of dieser per diffe of that costed wates	
R18.3	AE <sub>D_product</sub>		tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
	AE <sub>D_product</sub>	0.10651		·	
	AE <sub>D_product</sub>	0.10651		CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.3	AE <sub>D_product</sub> AE <sub>D_tree</sub>	0.10651 0.00326	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
R18.3	$AE_{D\_product}$ $AE_{D\_tree}$ $AE_{G\_area}$	0.10651 0.00326 0.13045	tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.3 R19.1 R19.2	$\begin{array}{c} AE_{D\_product} \\ AE_{D\_tree} \\ \\ AE_{G\_area} \\ \\ AE_{G\_product} \end{array}$	0.10651 0.00326 0.13045 0.00577 0.00018	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit	
R18.3 R19.1 R19.2	$\begin{array}{c} AE_{D\_product} \\ AE_{D\_tree} \\ \\ AE_{G\_area} \\ \\ AE_{G\_product} \end{array}$	0.10651 0.00326 0.13045 0.00577	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R19.1 R19.2 R19.3	AE <sub>D_tree</sub> AE <sub>G_area</sub> AE <sub>G_product</sub> AE <sub>G_tree</sub>	0.10651 0.00326 0.13045 0.00577 0.00018	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit	
R18.3  R19.1  R19.2  R19.3  R20.1	AE <sub>D_product</sub> AE <sub>D_tree</sub> AE <sub>G_area</sub> AE <sub>G_product</sub> AE <sub>G_tree</sub>	0.10651 0.00326 0.13045 0.00577 0.00018	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
R18.3  R19.1  R19.2  R19.3  R20.1  R20.2	AE <sub>D</sub> product  AE <sub>D</sub> tree  AE <sub>G</sub> area  AE <sub>G</sub> product  AE <sub>G</sub> tree  AE <sub>E</sub> tree  AE <sub>EL</sub> product	0.10651 0.00326 0.13045 0.00577 0.00018 0.10591 0.00468	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of electricity per unit of cultivated area CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	

R21.2	TAG <sub>product</sub>	0.04847	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00148	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
				·
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
				·
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	1.09646	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.04847	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00148	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
				·
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 3 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



#### **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Peach
Geographical area of the cultivation:	GREECE (total)

#### CO2 Annual Removal Capacity

R1.1	ARC	<b>309,250.4976</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	<b>280,021.5420</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>29,228.9555</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	'als	AR <sub>BW</sub>	<b>403,407.7541</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	2 E	AS <sub>s</sub>	<b>2,719.3361</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>435,356.0457</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>406,127.0902</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	ıs	AE <sub>f</sub>	<b>32,746.2619</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers		
R3.2	22 Sior	AE <sub>p</sub>	32,738.8993 tn CO2/year	CO2 Annual Emissions due to the use of pesticides		
R3.3	CC mis	AE <sub>ff&amp;e</sub>	<b>60,620.3870</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity		
R3.4	ш	TAE	<b>126,105.5482</b> tn CO2/year	CO2 Total Annual Emissions		
	R4.1	AE <sub>D</sub>	54,078.6348 tn CO2/year	CO2 Annual Emissions due to the use of diesel		
	R4.2	AE <sub>G</sub>	2,136.5813 tn CO2/year	CO2 Annual Emissions due to the use of gasoline		
	R4.3	AE <sub>EL</sub>	4,405.1709 tn CO2/year	CO2 Annual Emissions due to the use of electricity		
	R4.4	AE <sub>ff&amp;e</sub>	<b>60,620.3870</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity		

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	23,146.9701 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	٥٥	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_m}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>23,146.9701</b> tn CO2/year	CO2 Total Annual Gain

R6.1 ARC area 7.87242 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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ACC_strate	R6.2	ARCproduct	0.50127	tn CO2/tn of violal/viola	CO2 Annual Removal Canacity nor unit of harvested fruits	(BF is included)
All Micros 1, 1288 to 10/20 Amendment of CO Amendment of Color Amendme						(Br is included)
March	K0.3	Anctree	0.01792	tir COZ/tree/year	COZ Annual Kemoval Capacity per tree unit	
March	D7 1	ARC	7 12025	th CO2/hastara/year	CO3 Appuial Removal Canacity pay unit of cultivated area	
Main						(RE is not included)
18   18   18   18   18   18   18   18						(Br is not included)
TATATION   1,00000000000000000000000000000000000	K/.5	ARCtree	0.01623	tii CO2/tree/year	CO2 Amitual Removal Capacity per tree unit	
TATATION   1,00000000000000000000000000000000000	DQ 1	TAE/TAD	0.28966	Total Annual CO2 Emissions / Total An	nual CO2 Removals	(RE is included)
1.0   1.0						, ,
17.						(21.10.110.110.110.11)
17.	R9.1	TAR <sub>area</sub>	11.08262	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
17 Aug., 0.0222 to 10.002/heckper					·	(BF is included)
1.00   TAN_mark   19.3385   19.002/hocken/year   CO2 Total Annual Removals per unit of cultivated area   100   1						
Mary						
Mary	R10.1	TAR <sub>area</sub>	10.33855	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
TAR	R10.2	TAR <sub>product</sub>	0.65830			(BF is not included)
ABLY JAMES 0,0025 15 CO2/hee/pear CO2 Annual Removal due to the production of first blomass per unit of Parvested Fuels  102 Annual Removal due to the production of first blomass per unit of Cultivated area  102 Annual Removal due to the production of wood blomass per unit of Cultivated area  103 Annual Removal due to the production of wood blomass per unit of Cultivated area  104 Annual Removal due to the production of wood blomass per unit of Cultivated area  105 Annual Removal due to the production of wood blomass per unit of Cultivated area  106 Annual Removal due to the production of wood blomass per unit of Cultivated area  107 Annual Removal due to the production of wood blomass per unit of Cultivated area  108 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of two blomass per unit of Cultivated area  109 Annual Removal due to the production of two blomass per unit of Cultivated area  109 Annual Removal due to the production of the fallien blomass per unit of Cultivated area  109 Annual Removal due to the sold of Entire blomass per unit of Cultivated area  100 Annual Removal due to the sold of Entire blomass per unit of Cultivated area  100 Annual Removal due to the sold of Entire blomas per unit of Cultivated area  100 Annual Emissions due to the sold of Entire per unit of Cultivated area  100 Annual Emissions due to the sold of Entire per unit of Cultivated area  100 Annual Emissions due to the sold of Entire per unit of Cultivated area  100 Annual Emissions due to the sold of Entire per unit of Cultivated	R10.3					
ABLY JAMES 0,0025 15 CO2/hee/pear CO2 Annual Removal due to the production of first blomass per unit of Parvested Fuels  102 Annual Removal due to the production of first blomass per unit of Cultivated area  102 Annual Removal due to the production of wood blomass per unit of Cultivated area  103 Annual Removal due to the production of wood blomass per unit of Cultivated area  104 Annual Removal due to the production of wood blomass per unit of Cultivated area  105 Annual Removal due to the production of wood blomass per unit of Cultivated area  106 Annual Removal due to the production of wood blomass per unit of Cultivated area  107 Annual Removal due to the production of wood blomass per unit of Cultivated area  108 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of wood blomass per unit of Cultivated area  109 Annual Removal due to the production of two blomass per unit of Cultivated area  109 Annual Removal due to the production of two blomass per unit of Cultivated area  109 Annual Removal due to the production of the fallien blomass per unit of Cultivated area  109 Annual Removal due to the sold of Entire blomass per unit of Cultivated area  100 Annual Removal due to the sold of Entire blomass per unit of Cultivated area  100 Annual Removal due to the sold of Entire blomas per unit of Cultivated area  100 Annual Emissions due to the sold of Entire per unit of Cultivated area  100 Annual Emissions due to the sold of Entire per unit of Cultivated area  100 Annual Emissions due to the sold of Entire per unit of Cultivated area  100 Annual Emissions due to the sold of Entire per unit of Cultivated						
AND PROPERTY OF THE PROPERTY O	R11.1	AR <sub>BF_area</sub>	0.74407	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
12.1 All process 0.002160 to COZ/Intest/priesr COZ Annual Removal due to the production of froit bornass per unit of cultivated area  12.2 All process 0.002160 to COZ/Intestry/par COZ Annual Removal due to the production of wood bornass per unit of cultivated area  12.3 All process 0.002160 to COZ/Intestry/par COZ Annual Removal due to the production of wood bornass per unit of cultivated area  12.4 All process 0.002160 to COZ/Intestry/par COZ Annual Removal due to the production of wood bornass per unit of cultivated area  12.5 All process 0.002160 to COZ/Intestry/par COZ Annual Storage in soil as curbon of the falles biomass per unit of universited fruits  12.5 All process 0.000160 to COZ/Intestry/par COZ Annual Storage in soil as curbon of the falles biomass per unit of universited fruits  12.5 All process 0.000160 to COZ/Intestry/par COZ Annual Storage in soil as curbon of the falles biomass per unit of CoZ/Intestry and COZ	R11.2		0.04738	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
After a control of the control of th	R11.3		0.00169	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
After a control of the control of th						
1833 AS, seed of control of the fallent biomass per tree unit of the production of vocab biomass per tree unit of control of the fallent biomass per tree unit	R12.1	AR <sub>BW area</sub>	10.26933	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
All Meyers 0,0038 in CO2/tree/year CO2 Annual Emovaled use to the production of vood biomass per tree unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area (CO2 Annual Storage in soil as carbon of the fallen biomass per uni	R12.2	AR <sub>BW_product</sub>	0.65389	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
AS years	R12.3		0.02338	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
AS years						
AS <sub>2,001</sub> 0,00016 to CO2/tree/year  CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit  CO2 Total Annual Emissions per unit of cultivated area  (CO2 Total Annual Emissions per unit of cultivated area  (CO2 Total Annual Emissions per unit of cultivated area  (CO2 Total Annual Emissions per unit of cultivated area  (CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area  (CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area  (CO2 Annual Emissions due to the use of fertilizers per unit of Annual Emissions due to the use of fertilizers per unit of Annual Emissions due to the use of fertilizers per unit of Annual Emissions due to the use of fertilizers per unit of Annual Emissions due to the use of fertilizers per unit of Annual Emissions due to the use of fertilizers per unit of Annual Emissions due to the use of pertilizers per unit of Annual Emissions due to the use of pertilizers per unit of Annual Emissions due to the use of pertilizers per unit of Annual Emissions due to the use of pertilizers per unit of Annual Emissions due to the use of pertilizers per unit of Annual Emissions due to the use of pertilizers per unit of Annual Emissions due to the use of pertilizers per unit of Annual Emissions due to the use of pertilizers per unit of Annual Emissions due to the use of pertilizers per unit of Annual Emissions due to the use of pertilizers per unit of Annual Emissions due to the use of pertilizers per unit of Annual Emissions due to the use of fessil fuels & electricity per unit of Annual Emissions due to the use of fessil fuels & electricity per unit of Annual Emissions due to the use of fessil fuels & electricity per unit of Annual Emissions due to the use of fessil fuels & electricity per unit of Cultivated area  (CO2 Annual Emissions due to the use of fessil fuels & electricity per unit of Cultivated area  (CO2 Annual Emissions due to the use of fessil fuels per unit of Cultivated area  (CO2 Annual Emissions due to the use of electric	R13.1	AS <sub>S_area</sub>	0.06922	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
AS <sub>a, prev</sub> 0,00016 to CO2/tree/year CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit  176 <sub>eve</sub> 3,21020 tn CO2/hectare/year CO2 Total Annual Emissions per unit of cultivated area 1742 TAE <sub>eve</sub> 0,00731 tn CO2/hectare/year CO2 Total Annual Emissions per unit of the vested fruits 1745 TAE <sub>eve</sub> 0,00731 tn CO2/hectare/year CO2 Total Annual Emissions per tree unit  1815 AE <sub>eve</sub> 0,00731 tn CO2/hectare/year CO2 Annual Emissions due to the use of fertilizers per unit of furtivated area 1815 AE <sub>eve</sub> 0,00398 tn CO2/hectare/year CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits 1815 AE <sub>eve</sub> 0,00398 tn CO2/hectare/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area 1816 AE <sub>eve</sub> 0,00398 tn CO2/hectare/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits 1816 AE <sub>eve</sub> 0,00390 tn CO2/hectare/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits 1816 AE <sub>eve</sub> 0,00390 tn CO2/hectare/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits 1817 AE <sub>eve</sub> 1,1438 tn CO2/hectare/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits 1818 AE <sub>eve</sub> 0,00390 tn CO2/hectare/year CO2 Annual Emissions due to the use of fossif fuels & electricity per unit of harvested fruits 1819 AE <sub>eve</sub> 1,1438 tn CO2/hectare/year CO2 Annual Emissions due to the use of fossif fuels & electricity per unit of cultivated area 1810 AE <sub>eve</sub> 0,00350 tn CO2/hectare/year CO2 Annual Emissions due to the use of fossif fuels & electricity per unit of cultivated area 1811 AE <sub>eve</sub> 0,00350 tn CO2/hectare/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area 1812 AE <sub>eve</sub> 0,00350 tn CO2/hectare/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area 1813 AE <sub>eve</sub> 0,00350 tn CO2/hectare/year CO2 Annual Emissions due to the use of gesoline per unit of harvested fruits 1813 AE <sub>eve</sub> 0,00350 tn CO2/hectare/year CO2 Annual Emissions due to	R13.2	AS <sub>S_product</sub>	0.00441	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
TAE_product 1AE_product 1AE_pr	R13.3		0.00016	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
TAE_product 1AE_product 1AE_pr						
TAE <sub>vec</sub> 0.00731 tn CO2/tree/year CO2 Annual Emissions gue to the use of fertilizers per unit of cultivated area  1.52 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area  1.53 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of fertilizers per unit of autivated area  1.54 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of autivated area  1.55 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  1.54 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of autivated area  1.54 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of autivated area  1.54 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of autivated area  1.54 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area  1.54 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of autivated area  1.55 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of autivated area  1.55 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of autivated area  1.55 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of autivated area  1.56 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of autivated area  1.56 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of autivated area  1.57 AE <sub>vec</sub> 0.00354 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of autivated area  1.58 AE <sub>vec</sub> 0.00354 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  1.58 AE <sub>vec</sub> 0.00005	R14.1		3.21020	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
TAE <sub>vec</sub> 0.00731 tn CO2/tree/year CO2 Annual Emissions gue to the use of fertilizers per unit of cultivated area  1.52 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area  1.53 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of fertilizers per unit of autivated area  1.54 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of autivated area  1.55 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  1.54 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of autivated area  1.54 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of autivated area  1.54 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of autivated area  1.54 AE <sub>vec</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area  1.54 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of autivated area  1.55 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of autivated area  1.55 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of autivated area  1.55 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of autivated area  1.56 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of autivated area  1.56 AE <sub>vec</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of autivated area  1.57 AE <sub>vec</sub> 0.00354 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of autivated area  1.58 AE <sub>vec</sub> 0.00354 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  1.58 AE <sub>vec</sub> 0.00005	R14.2	TAE <sub>product</sub>	0.20441	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
AE protect 0.05308 tn CO2/In of yield/year CO2 Annual Emissions due to the use of fertillizers per unit of harvested fruits  AE protect 0.05308 tn CO2/In of yield/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  RIS.1 AE protect 0.05307 tn CO2/In of yield/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  RIS.2 AE protect 0.05307 tn CO2/In of yield/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  RIS.3 AE protect 0.05307 tn CO2/In of yield/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  RIS.4 AE protect 0.05307 tn CO2/In of yield/year CO2 Annual Emissions due to the use of possification per unit of cultivated area  RIS.4 AE protect 0.05926 tn CO2/In of yield/year CO2 Annual Emissions due to the use of fossif fuels & electricity per unit of harvested fruits  RIS.3 AE protect 0.05936 tn CO2/Interlyvear CO2 Annual Emissions due to the use of fossif fuels & electricity per tree unit  RIS.4 AE protect 0.05936 tn CO2/Interlyvear CO2 Annual Emissions due to the use of diesel per unit of cultivated area  RIS.5 AE protect 0.05936 tn CO2/Interlyvear CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  RIS.5 AE protect 0.05936 tn CO2/Interlyvear CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  RIS.5 AE protect 0.05939 tn CO2/Interlyvear CO2 Annual Emissions due to the use of diesel per unit of cultivated area  RIS.5 AE protect 0.05949 tn CO2/Interlyvear CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  RIS.5 AE protect 0.00346 tn CO2/Interlyvear CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  RIS.5 AE protect 0.00346 tn CO2/Interlyvear CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  RIS.5 AE protect 0.00346 tn CO2/Interlyvear CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  RIS.5 AE protect 0.00014 tn CO2/Interlyvear CO	R14.3	TAE <sub>tree</sub>	0.00731	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
AE protect 0.05308 tn CO2/In of yield/year CO2 Annual Emissions due to the use of fertillizers per unit of harvested fruits  AE protect 0.05308 tn CO2/In of yield/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  RIS.1 AE protect 0.05307 tn CO2/In of yield/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  RIS.2 AE protect 0.05307 tn CO2/In of yield/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  RIS.3 AE protect 0.05307 tn CO2/In of yield/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  RIS.4 AE protect 0.05307 tn CO2/In of yield/year CO2 Annual Emissions due to the use of possification per unit of cultivated area  RIS.4 AE protect 0.05926 tn CO2/In of yield/year CO2 Annual Emissions due to the use of fossif fuels & electricity per unit of harvested fruits  RIS.3 AE protect 0.05936 tn CO2/Interlyvear CO2 Annual Emissions due to the use of fossif fuels & electricity per tree unit  RIS.4 AE protect 0.05936 tn CO2/Interlyvear CO2 Annual Emissions due to the use of diesel per unit of cultivated area  RIS.5 AE protect 0.05936 tn CO2/Interlyvear CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  RIS.5 AE protect 0.05936 tn CO2/Interlyvear CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  RIS.5 AE protect 0.05939 tn CO2/Interlyvear CO2 Annual Emissions due to the use of diesel per unit of cultivated area  RIS.5 AE protect 0.05949 tn CO2/Interlyvear CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  RIS.5 AE protect 0.00346 tn CO2/Interlyvear CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  RIS.5 AE protect 0.00346 tn CO2/Interlyvear CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  RIS.5 AE protect 0.00346 tn CO2/Interlyvear CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  RIS.5 AE protect 0.00014 tn CO2/Interlyvear CO						
AE <sub>1. tree</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of fertilizers per tree unit  AE <sub>2. stree</sub> 0.83342 tn CO2/hectare/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  RI6.1 AE <sub>2. tree</sub> 0.05307 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  RI6.3 AE <sub>2. tree</sub> 0.00190 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  RI7.1 AE <sub>TRE. probett</sub> 0.09826 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area  RI7.1 AE <sub>TRE. probett</sub> 0.09826 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  RI7.1 AE <sub>TRE. probett</sub> 0.09826 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  RI8.1 AE <sub>3. probett</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  RI8.2 AE <sub>3. probett</sub> 0.08766 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  RI8.2 AE <sub>3. probett</sub> 0.08766 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  RI8.3 AE <sub>3. probett</sub> 0.09313 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  RI8.3 AE <sub>3. probett</sub> 0.00345 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  RI8.3 AE <sub>3. probett</sub> 0.00345 tn CO2/thectare/year CO2 Annual Emissions due to the use of gasoline per unit of Litivated area  RI8.3 AE <sub>3. probett</sub> 0.00345 tn CO2/thectare/year CO2 Annual Emissions due to the use of gasoline per unit of Litivated area  RI8.3 AE <sub>3. probett</sub> 0.00346 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  RI8.3 AE <sub>4. probett</sub> 0.00016 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested f	R15.1		0.83360	tn CO2/hectare/year	·	
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R16.2 AE <sub>p. product</sub> 0.05307 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  R17.1 AE <sub>file, prea</sub> 1.54318 tn CO2/hectare/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area  R17.2 AE <sub>file, prea</sub> 0.00351 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  R17.3 AE <sub>file, tree</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  R18.1 AE <sub>p. preduct</sub> 0.09826 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  R18.2 AE <sub>p. preduct</sub> 0.00351 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  R18.3 AE <sub>p. preduct</sub> 0.08766 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  R18.3 AE <sub>p. preduct</sub> 0.00313 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  R19.1 AE <sub>g. preduct</sub> 0.05439 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  R19.2 AE <sub>g. preduct</sub> 0.00346 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of ruitivated area  R19.3 AE <sub>g. preduct</sub> 0.00346 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of fultivated area  R20.1 AE <sub>g. preduct</sub> 0.0012 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of fultivated area  R20.2 AE <sub>g. preduct</sub> 0.00214 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of fultivated area  CO2 Annual Emissions due to the use of electricity per unit of fultivated area  CO2 Annual Emissions due to the use of electricity per unit of fultivated area  CO3 Annual Emissions due to the use of electricity per unit of harvested fruits  CO3 Annual Emissions due to the use of electricity per tree unit	R15.3	AE <sub>f_tree</sub>	0.00190	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
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R21.1 TAG <sub>area</sub> 0.58924 tn CO2/hectare/year CO2 Total Annual Gain per unit of cultivated area	R20.3	AE <sub>EL_tree</sub>	0.00026	tn CO2/tree/year	LOZ Annual Emissions due to the use of electricity per tree unit	
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	R21.1	IAG <sub>area</sub>	0.58924	tn CO2/hectare/year	COZ TOTAL Annual Gain per unit of cultivated area	

R21.2	TAG <sub>product</sub>	0.03752	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00134	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
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R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	0.58924	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.03752	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00134	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 4 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



#### **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Almond
Geographical area of the cultivation:	GREECE (total)

#### CO2 Annual Removal Capacity

R	R1.1	ARC	137,228.7802 tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R	R1.2	ARC	<b>70,436.9178</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>66,791.8624</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>101,010.9724</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	1 CO	AS <sub>s</sub>	<b>2,304.6118</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>170,107.4467</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	103,315.5843 tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	SI	AE <sub>f</sub>	<b>9,047.2559</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers				
R3.2	Si Si	AE <sub>p</sub>	11,608.7189 tn CO2/year	CO2 Annual Emissions due to the use of pesticides				
R3.3	C Simis	AE <sub>ff&amp;e</sub>	12,222.6918 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity				
R3.4	ш	TAE	<b>32,878.6665</b> tn CO2/year	CO2 Total Annual Emissions				
	R4.1	AE <sub>D</sub>	10,563.0311 tn CO2/year	CO2 Annual Emissions due to the use of diesel				
	R4.2	AE <sub>G</sub>	723.3709 tn CO2/year	CO2 Annual Emissions due to the use of gasoline				
	R4.3	AE <sub>EL</sub>	936.2898 tn CO2/year	CO2 Annual Emissions due to the use of electricity				
	R4.4	AE <sub>ff&amp;e</sub>	<b>12,222.6918</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity				

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5		AG <sub>WF</sub>	16,335.0994 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_m}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	16,335.0994 tn CO2/year	CO2 Total Annual Gain

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R6.2	ARC <sub>product</sub>	4.47259	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>product</sub>	0.03700		CO2 Annual Removal Capacity per unit or narvested truits  CO2 Annual Removal Capacity per tree unit	(BF is included)
K0.5	Anc <sub>tree</sub>	0.03700	tn CO2/tree/year	CO2 Allituar Removar Capacity per tree unit	
R7.1	ARCarea	5.29610	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	2.29570	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARCtree	0.01899	tn CO2/tree/year	CO2 Annual Removal Capacity per unit	(b) is not included)
117.5	Arretree	0.01033	til CO2/tiee/year	CO2 Annual Nemovar Capacity per tree unit	
R8.1	TAE/TAR	0.19328	Total Annual CO2 Emissions/ Total A	nnual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.31824	Total Annual CO2 Emissions/ Total A		(BF is not included)
	,				
R9.1	TAR <sub>area</sub>	12.79026	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	5.54418	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.04586	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
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R10.1	TAR <sub>area</sub>	7.76823	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	3.36729	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.02786	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
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R11.1	AR <sub>BF area</sub>	5.02204	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	2.17690	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF tree</sub>	0.01801	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW area</sub>	7.59495	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	3.29217	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW tree</sub>	0.02723	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
			,		
R13.1	AS <sub>S area</sub>	0.17328	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.07511	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
13.3	AS <sub>S tree</sub>	0.00062	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
				·	
R14.1	TAE <sub>area</sub>	2.47212	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2	TAE <sub>product</sub>	1.07159	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
R14.3	TAE <sub>tree</sub>	0.00886	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
R15.1	AE <sub>f_area</sub>	0.68026	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2	AE <sub>f_product</sub>	0.29487	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f tree</sub>	0.00244	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
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R16.1	AE <sub>p_area</sub>	0.87285	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.37835	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p tree</sub>	0.00313	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
R17.1	AE <sub>ff&amp;e_area</sub>	0.91902	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R17.2	AE <sub>ff&amp;e_product</sub>	0.39836	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
17.3	AE <sub>ff&amp;e_tree</sub>	0.00330	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
18.1	AE <sub>D_area</sub>	0.79423	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
18.2	AE <sub>D_product</sub>	0.34427	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
18.3	AE <sub>D_tree</sub>	0.00285	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
R19.1	AE <sub>G_area</sub>	0.05439	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
19.2	AE <sub>G_product</sub>	0.02358	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
19.3	AE <sub>G_tree</sub>	0.00020	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit	
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R20.1	AE <sub>EL_area</sub>	0.07040	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
R20.2	AE <sub>EL product</sub>	0.03052	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
R20.3	AE <sub>EL tree</sub>	0.00025	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit	
R21.1	TAG <sub>area</sub>	1.22823	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area	
	ulca				

R21.2	TAG <sub>product</sub>	0.53240	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00440	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
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R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	1.22823	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.53240	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00440	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 5 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



#### **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Olive
Geographical area of the cultivation:	GREECE (total)

#### **CO2 Annual Removal Capacity**

F	R1.1	ARC	<b>4,937,594.8670</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
F	R1.2	ARC	<b>3,047,921.1645</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>1,889,673.7025</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	als	AR <sub>BW</sub>	<b>4,549,120.3612</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	100 E	AS <sub>s</sub>	<b>54,879.4248</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	Rei	TAR	<b>6,493,673.4886</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>4,603,999.7860</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

b. The following are defined as fallen biomass: fallen leaves, fallen fruits (naturally fallen or as a result of a thinning process), other fallen biomass (e.g. almond hulls) as well as prunings which are left in the field.

CO2 Annual Emissions due to the use of pesticides CO2 Annual Emissions due to the use of fossil fuels & electricity
CO2 Annual Emissions due to the use of fossil fuels & electricity
CO2 Total Annual Emissions
CO2 Annual Emissions due to the use of diesel
CO2 Annual Emissions due to the use of gasoline
CO2 Annual Emissions due to the use of electricity
CO2 Annual Emissions due to the use of fossil fuels & electricity

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	$AG_WF$	1,028,169.7216 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>1,028,169.7216</b> tn CO2/year	CO2 Total Annual Gain

#### **CO2 Removal Capacity Indexes**

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R6.2	ARCproduct	1.44476	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>tree</sub>	0.03494	tn CO2/tree/year	CO2 Annual Removal Capacity per unit or narvested iruits  CO3 Annual Removal Capacity per tree unit	(Br is iliciadea)
NO.3	Arretree	0.03494	til CO2/tree/year	CO2 Affilian Removal Capacity per tree unit	
R7.1	ARCarea	3.73945	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	0.89183	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARC <sub>tree</sub>	0.02157	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	(St. 13 filet meladed)
10.5	Arrotree	0.02137	th cozytree/year	CO27/minut removal capacity per tree unit	
R8.1	TAE/TAR	0.23963	Total Annual CO2 Emissions/ Total An	nual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.33798	Total Annual CO2 Emissions/ Total An		(BF is not included)
			•		
R9.1	TAR <sub>area</sub>	7.96698	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	1.90008	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.04595	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	5.64857	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	1.34715	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.03258	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	2.31841	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.55293	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.01337	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	5.58124	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	1.33109	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.03219	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.06733	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.01606	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0.00039	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
R14.1	TAE <sub>area</sub>	1.90913	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.1		0.45532	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of cultivated area  CO2 Total Annual Emissions per unit of harvested fruits	
R14.3	TAE <sub>product</sub>	0.01101	tn CO2/trre/year	CO2 Total Annual Emissions per unit of narvested ruits  CO2 Total Annual Emissions per tree unit	
114.5	tree	0.01101	ti cozytree/year	eoz rotarziman emissions per tree ania	
R15.1	AE <sub>f area</sub>	0.78020	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2	AE <sub>f_product</sub>	0.18607	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f tree</sub>	0.00450	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
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R16.1	AE <sub>p_area</sub>	0.60378	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.14400	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p tree</sub>	0.00348	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
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R17.1	AE <sub>ff&amp;e_area</sub>	0.52515	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	<u> </u>
R17.2	AE <sub>ff&amp;e_product</sub>	0.12525	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00303	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R18.1	AE <sub>D_area</sub>	0.44826	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.2	AE <sub>D_product</sub>	0.10691	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.3	AE <sub>D_tree</sub>	0.00259	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
R19.1	AE <sub>G_area</sub>	0.06799	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R19.2	AE <sub>G_product</sub>	0.01621	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R19.3	AE <sub>G_tree</sub>	0.00039	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit	
R20.1	AE <sub>EL_area</sub>	0.00890	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
R20.2	AE <sub>EL_product</sub>	0.00212	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
			tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit	
R20.3	AE <sub>EL_tree</sub>	0.00005	tii CO2/tiee/yeai	CO2 Affilian Emissions due to the use of electricity per tree unit	
	AE <sub>EL_tree</sub>	1.26145	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area	

R21.2	TAG <sub>product</sub>	0.30085	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00728	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
				<u> </u>
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
			·	·
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
				·
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
				<u> </u>
R26.1	AG <sub>WF_area</sub>	1.26145	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.30085	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00728	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
				<u> </u>
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 6 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



#### **Results**

Country where the Tool is applied:	Italy
Species of tree crop:	Orange
Geographical area of the cultivation:	ITALIA (total)

#### CO2 Annual Removal Capacity

R1.1	ARC	<b>600,979.7346</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	<b>544,000.5018</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>56,979.2328</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	'als	AR <sub>BW</sub>	<b>791,664.1442</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	2 E	AS <sub>s</sub>	<b>20,504.5275</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>869,147.9045</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	812,168.6717 tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	SI	AE <sub>f</sub>	<b>72,708.7712</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers	
R3.2	Si Si	AE <sub>p</sub>	<b>63,163.2304</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides	
R3.3	n is	AE <sub>ff&amp;e</sub>	132,296.1683 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	
R3.4	ш	TAE	<b>268,168.1699</b> tn CO2/year	CO2 Total Annual Emissions	
	R4.1	AE <sub>D</sub>	123,370.4116 tn CO2/year	CO2 Annual Emissions due to the use of diesel	
	R4.2	AE <sub>G</sub>	2,869.7605 tn CO2/year	CO2 Annual Emissions due to the use of gasoline	
	R4.3	AE <sub>EL</sub>	6,055.9962 tn CO2/year	CO2 Annual Emissions due to the use of electricity	
	R4.4	AE <sub>ff&amp;e</sub>	<b>132,296.1683</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	30 ja ja	AG <sub>WF</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>0.0000</b> tn CO2/year	CO2 Total Annual Gain

CO2 Remova	I Capacity	Indexes
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7.11888 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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R6.2	ARCproduct	0.34106	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)		
R6.3	ARC <sub>tree</sub>	0.02966		CO2 Annual Removal Capacity per unit or narvested fruits  CO2 Annual Removal Capacity per tree unit	(BF is included)		
NO.3	Anctree	0.02300	tn CO2/tree/year	COZ Antiual nemoval capacity per tree unit			
R7.1	ARC <sub>area</sub>	6.44393	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area			
R7.2	ARC <sub>product</sub>	0.30873	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)		
R7.3	ARC <sub>tree</sub>	0.02685	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	(b) is not included)		
K7.3	Anc <sub>tree</sub>	0.02063	til CO2/tree/year	COZ Affitian Removal Capacity per tree unit			
R8.1	TAE/TAR	0.30854	Total Annual CO2 Emissions/ Total A	nnual CO2 Removals	(BF is included)		
R8.2	TAE/TAR	0.33019	Total Annual CO2 Emissions/ Total A		(BF is not included)		
R9.1	TAR <sub>area</sub>	10.29545	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area			
R9.2	TAR <sub>product</sub>	0.49325	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)		
R9.3	TAR <sub>tree</sub>	0.04290	tn CO2/tree/year	CO2 Total Annual Removals per tree unit			
				·			
R10.1	TAR <sub>area</sub>	9.62050	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area			
R10.2	TAR <sub>product</sub>	0.46091	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)		
R10.3	TAR <sub>tree</sub>	0.04009	tn CO2/tree/year	CO2 Total Annual Removals per tree unit			
R11.1	AR <sub>BF_area</sub>	0.67494	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area			
R11.2	AR <sub>BF_product</sub>	0.03234	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits			
R11.3	AR <sub>BF_tree</sub>	0.00281	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit			
R12.1	AR <sub>BW_area</sub>	9.37762	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area			
R12.2	AR <sub>BW_product</sub>	0.44928	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits			
R12.3	AR <sub>BW_tree</sub>	0.03907	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit			
R13.1	AS <sub>S_area</sub>	0.24289	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area			
R13.2	AS <sub>S_product</sub>	0.01164	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits			
R13.3	AS <sub>S_tree</sub>	0.00101	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit			
R14.1	TAE <sub>area</sub>	3.17657	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area			
R14.2	TAE <sub>product</sub>	0.15219	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits			
R14.3	TAE <sub>tree</sub>	0.01324	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	·		
DAT 4	AF	0.00427	t CO2/bt/	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	<del> </del>		
R15.1 R15.2	AE <sub>f_area</sub>	0.86127	tn CO2/hectare/year	CO2 Annual Emissions due to the use of Fertilizers per unit of Columbia due and Co2 Annual Emissions due to the use of fertilizers per unit of harvested fruits			
R15.2	AE <sub>f_product</sub>	0.04126 0.00359	tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of Fertilizers per unit of Harvested Hulls  CO2 Annual Emissions due to the use of fertilizers per tree unit			
K15.5	AE <sub>f_tree</sub>	0.00559	tii CO2/tree/year	COZ Affilian Emissions due to the use of fertilizers per tree unit			
R16.1	AE <sub>p_area</sub>	0.74820	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area			
R16.2	AE <sub>p_product</sub>	0.03585	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits			
R16.3	AE <sub>p tree</sub>	0.00312	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit			
1120.5	p_tree	0.00312	ti coz, tree, year	constraints and confidence of periodic periodic and			
R17.1	AE <sub>ff&amp;e area</sub>	1.56711	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area			
R17.2	AE <sub>ff&amp;e_product</sub>	0.07508	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits			
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00653	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit			
	noc_tree		, ,				
R18.1	AE <sub>D area</sub>	1.46138	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area			
R18.2	AE <sub>D_product</sub>	0.07001	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits			
R18.3	AE <sub>D tree</sub>	0.00609	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit			
			•				
R19.1	AE <sub>G_area</sub>	0.03399	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area			
R19.2	AE <sub>G_product</sub>	0.00163	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits			
R19.3	AE <sub>G_tree</sub>	0.00014	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit			
R20.1	AE <sub>EL_area</sub>	0.07174	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area			
R20.2	AE <sub>EL_product</sub>	0.00344	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits			
R20.3	AE <sub>EL_tree</sub>	0.00030	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit			
R21.1	TAG <sub>area</sub>	0.00000	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area			

R21.2	TAG <sub>product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00000	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
				·
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
			·	
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 7 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



#### **Results**

Country where the Tool is applied:	Italy
Species of tree crop:	Apple
Geographical area of the cultivation:	ITALIA (total)

#### **CO2 Annual Removal Capacity**

R1.1	ARC	<b>373,378.7555</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	<b>144,814.5249</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>228,564.2306</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	z /als	AR <sub>BW</sub>	<b>313,581.0816</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	0 E	AS <sub>s</sub>	<b>35,736.5972</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	Rei	TAR	<b>577,881.9094</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>349,317.6789</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	SI	AE <sub>f</sub>	32,607.3504 tn CO2/year	CO2 Annual Emissions due to the use of fertilizers					
R3.2	Si Si	AE <sub>p</sub>	28,041.4722 tn CO2/year	CO2 Annual Emissions due to the use of pesticides					
R3.3	ე ౙ	AE <sub>ff&amp;e</sub>	143,854.3313 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity					
R3.4	ш	TAE	<b>204,503.1540</b> tn CO2/year	CO2 Total Annual Emissions					
	R4.1	AE <sub>D</sub>	134,742.9319 tn CO2/year	CO2 Annual Emissions due to the use of diesel					
	R4.2	AE <sub>G</sub>	6,830.8249 tn CO2/year	CO2 Annual Emissions due to the use of gasoline					
	R4.3	AE <sub>EL</sub>	2,280.5745 tn CO2/year	CO2 Annual Emissions due to the use of electricity					
	R4.4	AE <sub>ff&amp;e</sub>	<b>143,854.3313</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity					

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	٥٥	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>0.0000</b> tn CO2/year	CO2 Total Annual Gain

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R6.2	ARCproduct	0.15784	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)	
R6.3	ARC <sub>product</sub>	0.15784		CO2 Annual Removal Capacity per unit of narvested fruits  CO2 Annual Removal Capacity per tree unit	(Br is included)	
NO.3	Arretree	0.00528	tn CO2/tree/year	CO2 Annual nemoval Capacity per tree unit		
R7.1	ARCarea	2.76564	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area		
R7.2	ARC <sub>product</sub>	0.06122	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)	
R7.3	ARCtree	0.00122	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	(b) is not included)	
к/.5	Anc <sub>tree</sub>	0.00203	til CO2/tree/year	COZ Affitual Nemoval Capacity per tree unit		
R8.1	TAE/TAR	0.35388	Total Annual CO2 Emissions/ Total A	nnual CO2 Removals	(BF is included)	
R8.2	TAE/TAR	0.58544	Total Annual CO2 Emissions/ Total A		(BF is not included)	
				Utal Allitual CO2 Emissionsy Total Allitual CO2 Removals (ar 1) of the model of the control of t		
R9.1	TAR <sub>area</sub>	11.03628	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area		
R9.2	TAR <sub>product</sub>	0.24429	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)	
R9.3	TAR <sub>tree</sub>	0.00818	tn CO2/tree/year	CO2 Total Annual Removals per tree unit		
	uee		, , ,	Learning and a second a second and a second		
R10.1	TAR <sub>area</sub>	6.67121	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area		
R10.2	TAR <sub>product</sub>	0.14767	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)	
R10.3	TAR <sub>tree</sub>	0.00494	tn CO2/tree/year	CO2 Total Annual Removals per tree unit		
	ucc		, , ,	Lea		
R11.1	AR <sub>BF area</sub>	4.36508	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area		
R11.2	AR <sub>BF_product</sub>	0.09662	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits		
R11.3	AR <sub>BF tree</sub>	0.00323	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit		
	br_uee		, , ,	<u> </u>		
R12.1	AR <sub>BW area</sub>	5.98871	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area		
R12.2	AR <sub>BW_product</sub>	0.13256	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits		
R12.3	AR <sub>BW tree</sub>	0.00444	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit		
	ov_acc		, , ,			
R13.1	AS <sub>S area</sub>	0.68249	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area		
R13.2	AS <sub>S_product</sub>	0.01511	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits		
R13.3	AS <sub>S tree</sub>	0.00051	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit		
	<u> </u>					
R14.1	TAE <sub>area</sub>	3.90556	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area		
R14.2	TAE <sub>product</sub>	0.08645	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits		
R14.3	TAE <sub>tree</sub>	0.00289	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit		
			•		•	
R15.1	AE <sub>f_area</sub>	0.62273	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area		
R15.2	AE <sub>f_product</sub>	0.01378	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	·	
R15.3	AE <sub>f tree</sub>	0.00046	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit		
				·		
R16.1	AE <sub>p_area</sub>	0.53553	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area		
R16.2	AE <sub>p_product</sub>	0.01185	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits		
R16.3	AE <sub>p_tree</sub>	0.00040	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit		
R17.1	AE <sub>ff&amp;e_area</sub>	2.74730	tn CO2/hectare/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area			
R17.2	AE <sub>ff&amp;e_product</sub>	0.06081	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits		
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00204	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit		
R18.1	AE <sub>D_area</sub>	2.57330	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area		
R18.2	AE <sub>D_product</sub>	0.05696	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits		
R18.3	AE <sub>D_tree</sub>	0.00191	tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per tree unit			
R19.1	$AE_{G\_area}$	0.13045	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area		
R19.2	AE <sub>G_product</sub>	0.00289	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R19.3	AE <sub>G_tree</sub>	0.00010	tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit			
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R20.1	AE <sub>EL_area</sub>	0.04355	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area		
R20.2	AE <sub>EL_product</sub>	0.00096	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
R20.3	AE <sub>EL_tree</sub>	0.00003	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit		
R21.1	TAG <sub>area</sub>	0.00000	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area		

R21.2	TAG <sub>product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00000	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
				·
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
			·	
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 8 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Italy
Species of tree crop:	Peach
Geographical area of the cultivation:	ITALIA (total)

### CO2 Annual Removal Capacity

R1.	1 ARC	<b>174,357.0409</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.	2 ARC	-45,766.2368 tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		AR <sub>BF</sub>	<b>220,123.2777</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	'als	AR <sub>BW</sub>	136,114.8504 tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	2 E	AS <sub>s</sub>	<b>18,578.3688</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>374,816.4969</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>154,693.2192</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	S	AE <sub>f</sub>	<b>41,373.6158</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers	
R3.2	22 sion	AE <sub>p</sub>	<b>56,860.3099</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides	
R3.3	2 5	AE <sub>ff&amp;e</sub>	102,225.5303 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	
R3.4	ш	TAE	<b>200,459.4560</b> tn CO2/year	CO2 Total Annual Emissions	
			<u> </u>		
	R4.1	AE <sub>D</sub>	95,368.4640 tn CO2/year	CO2 Annual Emissions due to the use of diesel	
	R4.2	AE <sub>G</sub>	3,710.7746 tn CO2/year	CO2 Annual Emissions due to the use of gasoline	
	R4.3	AE <sub>EL</sub>	3,146.2918 tn CO2/year	CO2 Annual Emissions due to the use of electricity	
	R4.4	AE <sub>ff&amp;e</sub>	<b>102,225.5303</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5		AG <sub>WF</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_m}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		$AG_{D_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>0.0000</b> tn CO2/year	CO2 Total Annual Gain

CO2 Remova	Capacity	Indexes
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R6.1 ARC <sub>srea</sub> 2.55560 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area	
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R6.2	ARCproduct	0.12263	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)	
R6.3					(BF is included)	
K0.3	ARC <sub>tree</sub>	0.00393	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit		
R7.1	ARCarea	-0.67081	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area		
R7.2		-0.03219	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of cultivated area  CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)	
R7.3	ARC <sub>product</sub>	-0.03219	tn CO2/tree/year	CO2 Annual Removal Capacity per trint of flarvested fruits  CO2 Annual Removal Capacity per tree unit	(Br is not included)	
K/.5	ARCtree	-0.00103	tii CO2/tree/year	CO2 Allitual Removal Capacity per tree unit		
R8.1	TAE/TAR	0.53482	Total Annual CO2 Emissions/ Total A	nnial CO2 Removals	(BF is included)	
R8.2	TAE/TAR	1.29585	Total Annual CO2 Emissions/ Total A		(BF is not included)	
NOIL	TAL/ TAIL	1.23303	Total Annual Co2 Emissions/ Total A	mildi COZ NEMOVID	(b) is not included)	
R9.1	TAR <sub>area</sub>	5.49378	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area		
R9.2	TAR <sub>product</sub>	0.26362	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)	
R9.3	TAR <sub>tree</sub>	0.00845	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	, , , , , , , , , , , , , , , , , , , ,	
	tree					
R10.1	TAR <sub>area</sub>	2.26738	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area		
R10.2	TAR <sub>product</sub>	0.10880	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)	
R10.3	TAR <sub>tree</sub>	0.00349	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	, , , , , , , , , , , , , , , , , , , ,	
112010	ree	0.000.5	th cozytree/year	eos rotarramento ao per recentr		
R11.1	AR <sub>BF area</sub>	3.22640	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area		
R11.2	AR <sub>BF_product</sub>	0.15482	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits		
R11.3	AR <sub>BF tree</sub>	0.00496	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit		
	· · · · br_tree		555/1.05///55			
R12.1	AR <sub>BW area</sub>	1.99507	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area		
R12.2	AR <sub>BW_product</sub>	0.09573	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits		
R12.3	AR <sub>BW tree</sub>	0.00307	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit		
NIZZIO .	bw_tree	3.00307	th obe, thee, year			
R13.1	AS <sub>s area</sub>	0.27231	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area		
R13.2	AS <sub>S_product</sub>	0.01307	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits		
R13.3	AS <sub>S tree</sub>	0.00042	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit		
	- 3_uee		, , ,			
R14.1	TAE <sub>area</sub>	2.93819	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area		
R14.2	TAE <sub>product</sub>	0.14099	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits		
R14.3	TAE <sub>tree</sub>	0.00452	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit		
R15.1	AE <sub>f area</sub>	0.60642	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area		
R15.2	AE <sub>f_product</sub>	0.02910	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits		
R15.3	AE <sub>f tree</sub>	0.00093	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit		
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R16.1	AE <sub>p_area</sub>	0.83342	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area		
R16.2	AE <sub>p_product</sub>	0.03999	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits		
R16.3	AE <sub>p tree</sub>	0.00128	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit		
R17.1	AE <sub>ff&amp;e_area</sub>	1.49835	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area		
R17.2	AE <sub>ff&amp;e_product</sub>	0.07190	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits		
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00231	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit		
R18.1	AE <sub>D_area</sub>	1.39784	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area		
R18.2	AE <sub>D_product</sub>	0.06708	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits		
R18.3	AE <sub>D_tree</sub>	0.00215	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit		
R19.1	AE <sub>G_area</sub>	0.05439	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area		
R19.2	AE <sub>G_product</sub>	0.00261	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits		
R19.3	AE <sub>G_tree</sub>	0.00008	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit		
R20.1	AE <sub>EL_area</sub>	0.04612	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area		
R20.2	AE <sub>EL_product</sub>	0.00221	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits		
R20.3	AE <sub>EL_tree</sub>	0.00007 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit				
R21.1	TAG <sub>area</sub>	0.00000	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area		

R21.2	TAG <sub>product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00000	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
				·
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
			·	
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 9 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Italy
Species of tree crop:	Almond
Geographical area of the cultivation:	ITALIA (total)

## **CO2 Annual Removal Capacity**

R:	1.1	ARC	- <b>59,731.1118</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R:	1.2	ARC	-81,652.8940 tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		AR <sub>BF</sub>	<b>21,921.7821</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>33,705.5152</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	ğ ç	AS <sub>s</sub>	19,143.5479 tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	Rei	TAR	<b>74,770.8453</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>52,849.0632</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

b. The following are defined as fallen biomass: fallen leaves, fallen fruits (naturally fallen or as a result of a thinning process), other fallen biomass (e.g. almond hulls) as well as prunings which are left in the field.

S AE <sub>f</sub>	<b>38,249.5774</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers	
AE <sub>p</sub>	<b>50,760.3447</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides	
AE <sub>ff&amp;e</sub>	<b>45,492.0351</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	
TAE	134,501.9571 tn CO2/year	CO2 Total Annual Emissions	
	· ·		
1 AE <sub>D</sub>	40,645.4093 tn CO2/year	CO2 Annual Emissions due to the use of diesel	
2 AE <sub>G</sub>	3,163.0152 tn CO2/year	CO2 Annual Emissions due to the use of gasoline	
3 AE <sub>EL</sub>	1,683.6106 tn CO2/year	CO2 Annual Emissions due to the use of electricity	
.4 AE <sub>ff&amp;e</sub>	<b>45,492.0351</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	
	1 AE <sub>D</sub> 2 AE <sub>G</sub> 3 AE <sub>EL</sub>	AE <sub>ffSe</sub> AE <sub>ffSe</sub> A5,492.0351  tn CO2/year  TAE  134,501.9571  tn CO2/year  1 AE <sub>D</sub> 40,645.4093 tn CO2/year  AE <sub>G</sub> 3,163.0152 tn CO2/year  AE <sub>Et</sub> 1,683.6106 tn CO2/year	AE <sub>ffse</sub> 45,492.0351 tn CO2/year CO2 Annual Emissions due to the use of fossil fuels & electricity  TAE 134,501.9571 tn CO2/year CO2 Annual Emissions  1 AE <sub>D</sub> 40,645.4093 tn CO2/year CO2 Annual Emissions due to the use of diesel  2 AE <sub>6</sub> 3,163.0152 tn CO2/year CO2 Annual Emissions due to the use of gasoline  3 AE <sub>EL</sub> 1,683.6106 tn CO2/year CO2 Annual Emissions due to the use of electricity

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5 R5.6	3ain	AG <sub>WF</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	ا ت	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>0.0000</b> tn CO2/year	CO2 Total Annual Gain

## CO2 Removal Capacity Indexes

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R6.2	ARCproduct	-0.75679	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)	
R6.3					(Br is included)	
K0.3	ARC <sub>tree</sub>	-0.00380	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit		
R7.1	ARC <sub>area</sub>	-1.40407	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area		
R7.1		-1.03453	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of cultivated area  CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)	
R7.2	ARC <sub>product</sub>	-0.00520	tn CO2/tree/year	CO2 Annual Removal Capacity per unit of narvested truts  CO2 Annual Removal Capacity per tree unit	(Br is not included)	
K/.5	ARCtree	-0.00520	tii CO2/tree/year	COZ Annual kemovar Capacity per tree unit		
R8.1	TAE/TAR	1.79886	Total Annual CO2 Emissions/ Total A	onual CO2 Removals	(BF is included)	
R8.2	TAE/TAR	2.54502	Total Annual CO2 Emissions/ Total A		(BF is not included)	
NOIL	TALJ TAK	2.54502	Total Almad CO2 Emissions/ Total Al	Total Annual CO2 Emissions/ Total Annual CO2 Removals		
R9.1	TAR <sub>area</sub>	1.28573	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area		
R9.2	TAR <sub>product</sub>	0.94734	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)	
R9.3	TAR <sub>tree</sub>	0.00476	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	, , , , , , , , , , , , , , , , , , , ,	
	tree					
R10.1	TAR <sub>area</sub>	0.90877	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area		
R10.2	TAR <sub>product</sub>	0.66959	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)	
R10.3	TAR <sub>tree</sub>	0.00337	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	, , , , , , , , , , , , , , , , , , , ,	
112010	tree	0.00007	an dozy aree, year	jede redramed remotas per recedim		
R11.1	AR <sub>BF area</sub>	0.37696	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area		
R11.2	AR <sub>BF_product</sub>	0.27775	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits		
R11.3	AR <sub>BF tree</sub>	0.00140	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit		
	br_tree		3.1. 0.2.7, 1. 0.3, 7, 2.1.			
R12.1	AR <sub>BW area</sub>	0.57958	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area		
R12.2	AR <sub>BW_product</sub>	0.42705	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits		
R12.3	AR <sub>BW tree</sub>	0.00215	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit		
112210	Bw_tree	0.00213	an odzy aree, year			
R13.1	AS <sub>S area</sub>	0.32918	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area		
R13.2	AS <sub>S_product</sub>	0.24255	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits		
R13.3	AS <sub>S tree</sub>	0.00122	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit		
	5_000					
R14.1	TAE <sub>area</sub>	2.31283	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area		
R14.2	TAE <sub>product</sub>	1.70413	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits		
R14.3	TAE <sub>tree</sub>	0.00857	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit		
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R15.1	AE <sub>f_area</sub>	0.65772	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	·	
R15.2	AE <sub>f_product</sub>	0.48462	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits		
R15.3	AE <sub>f tree</sub>	0.00244	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit		
R16.1	AE <sub>p_area</sub>	0.87285	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area		
R16.2	AE <sub>p_product</sub>	0.64313	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits		
R16.3	AE <sub>p_tree</sub>	0.00323	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit		
R17.1	AE <sub>ff&amp;e_area</sub>	0.78226	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area		
R17.2	AE <sub>ff&amp;e_product</sub>	0.57638	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits		
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00290	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit		
R18.1	AE <sub>D_area</sub>	0.69892	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area		
R18.2	AE <sub>D_product</sub>	0.51497	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits		
R18.3	AE <sub>D_tree</sub>	0.00259	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit		
R19.1	AE <sub>G_area</sub>	0.05439	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area		
R19.2	AE <sub>G_product</sub>	0.04008	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits		
R19.3	AE <sub>G_tree</sub>	0.00020	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit		
R20.1	AE <sub>EL_area</sub>	0.02895	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area		
R20.2	AE <sub>EL_product</sub>	0.02133	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits		
R20.3	AE <sub>EL_tree</sub>	0.00011	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit		
R21.1	TAG <sub>area</sub>	0.00000	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area		
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R21.2	TAG <sub>product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00000	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
				·
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
			·	
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 10 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Italy
Species of tree crop:	Olive
Geographical area of the cultivation:	ITALIA (total)

### CO2 Annual Removal Capacity

F	R1.1	ARC	<b>280,958.5780</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
F	R1.2	ARC	-432,427.2651 tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		AR <sub>BF</sub>	<b>713,385.8431</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>1,765,110.9643</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	1 CO	AS <sub>s</sub>	<b>135,218.3339</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>2,613,715.1412</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>1,900,329.2981</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

D2 Annual Emissions due to the use of pesticides D2 Annual Emissions due to the use of fossil fuels & electricity
·
O2 Total Annual Emissions
22 Annual Emissions due to the use of diesel
D2 Annual Emissions due to the use of gasoline
22 Annual Emissions due to the use of electricity
O2 Annual Emissions due to the use of fossil fuels & electricity
)2 )2

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_{m}}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>0.0000</b> tn CO2/year	CO2 Total Annual Gain

vated area	CO2/hectare/year	0.24894	ARC <sub>area</sub>	R6.1
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R6.2	ARCproduct	0.10169	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.2	ARC <sub>product</sub>	0.00160		CO2 Annual Removal Capacity per unit or narvested fruits  CO2 Annual Removal Capacity per tree unit	(BF IS ITICIdaed)
110.3	Anctree	0.00100	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R7.1	ARC <sub>area</sub>	-0.38314	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	-0.15651	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARC <sub>tree</sub>	-0.00246	tn CO2/tree/year	CO2 Annual Removal Capacity per time unit	(b) is not included)
K7.3	Anc <sub>tree</sub>	-0.00246	til CO2/tree/year	CO2 Allitual Removal Capacity per tree unit	
R8.1	TAE/TAR	0.89251	Total Annual CO2 Emissions/ Total Ann	nual CO2 Removals	(BF is included)
R8.2	TAE/TAR	1.22755	Total Annual CO2 Emissions/ Total An		(BF is not included)
	,				
R9.1	TAR <sub>area</sub>	2.31582	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	0.94598	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.01485	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	1.68374	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	0.68779	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.01079	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	0.63208	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.25820	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.00405	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	1.56394	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	0.63885	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.01003	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.11981	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.04894	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0.00077	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
	TAE	2.05500		CONTRACTOR	
R14.1	TAE	2.06688	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2 R14.3	TAE <sub>product</sub>	0.84430	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
K14.3	TAE <sub>tree</sub>	0.01325	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
R15.1	AE <sub>f area</sub>	0.53369	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	· · · · · · · · · · · · · · · · · · ·
R15.2		0.21801	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f_product</sub>	0.00342	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
K13.5	ALf_tree	0.00342	til CO2/ tree/ year	eoz zamau zmosono ade to the ade or refuncio per tree unit	
R16.1	AE <sub>p_area</sub>	0.60378	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.24664	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p tree</sub>	0.00387	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
	p_dee		,		
R17.1	AE <sub>ff&amp;e area</sub>	0.92941	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R17.2	AE <sub>ff&amp;e_product</sub>	0.37965	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00596	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R18.1	AE <sub>D_area</sub>	0.85777	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.1 R18.2		0.85777 0.35039	tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
	$\begin{array}{c} AE_{D\_area} \\ AE_{D\_product} \\ AE_{D\_tree} \end{array}$			·	
R18.2	AE <sub>D_product</sub>	0.35039	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.2	AE <sub>D_product</sub>	0.35039	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.2 R18.3	AE <sub>D_product</sub> AE <sub>D_tree</sub>	0.35039 0.00550	tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R18.2 R18.3 R19.1 R19.2	$AE_{D\_product}$ $AE_{D\_tree}$ $AE_{G\_area}$	0.35039 0.00550 0.06799	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.2 R18.3	$\begin{array}{c} AE_{D\_product} \\ AE_{D\_tree} \\ \\ AE_{G\_area} \\ \\ AE_{G\_product} \end{array}$	0.35039 0.00550 0.06799 0.02777 0.00044	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit	
R18.2 R18.3 R19.1 R19.2	$\begin{array}{c} AE_{D\_product} \\ AE_{D\_tree} \\ \\ AE_{G\_area} \\ \\ AE_{G\_product} \end{array}$	0.35039 0.00550 0.06799 0.02777 0.00044	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>D_tree</sub> AE <sub>G_area</sub> AE <sub>G_tree</sub>	0.35039 0.00550 0.06799 0.02777 0.00044	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of electricity per unit of cultivated area CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
R18.2 R18.3 R19.1 R19.2 R19.3 R20.1	AE <sub>D_tree</sub> AE <sub>G_area</sub> AE <sub>G_tree</sub> AE <sub>G_tree</sub>	0.35039 0.00550 0.06799 0.02777 0.00044	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.2 R18.3 R19.1 R19.2 R19.3 R20.1 R20.1	AE <sub>D</sub> product  AE <sub>D</sub> tree  AE <sub>G</sub> area  AE <sub>G</sub> product  AE <sub>G</sub> tree  AE <sub>EL</sub> area  AE <sub>EL</sub> product	0.35039 0.00550 0.06799 0.02777 0.00044 0.00366 0.00150	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tred/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of electricity per unit of cultivated area CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	

R21.2	TAG <sub>product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00000	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
				·
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
			·	
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 11 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Spain
Species of tree crop:	Orange
Geographical area of the cultivation:	ESPANA (total)

### CO2 Annual Removal Capacity

F	R1.1	ARC	<b>1,302,842.7452</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
F	R1.2	ARC	<b>1,072,596.5436</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		AR <sub>BF</sub>	230,246.2016 tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>1,364,264.0835</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	1 CO	AS <sub>s</sub>	<b>41,334.9536</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>1,635,845.2386</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>1,405,599.0370</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 was balance between (a) the total quantity of CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	SI	AE <sub>f</sub>	<b>134,041.4468</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers				
R3.2	Si Si	AE <sub>p</sub>	102,509.8573 tn CO2/year	CO2 Annual Emissions due to the use of pesticides				
R3.2 R3.3	S iš	AE <sub>ff&amp;e</sub>	<b>96,451.1893</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity				
R3.4	ш	TAE	333,002.4934 tn CO2/year	CO2 Total Annual Emissions				
	R4.1	AE <sub>D</sub>	81,612.3250 tn CO2/year	CO2 Annual Emissions due to the use of diesel				
	R4.2	AE <sub>G</sub>	4,657.4366 tn CO2/year	CO2 Annual Emissions due to the use of gasoline				
	R4.3	AE <sub>EL</sub>	10,181.4277 tn CO2/year	CO2 Annual Emissions due to the use of electricity				
	R4.4	AE <sub>ff&amp;e</sub>	<b>96,451.1893</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity				
	R4.4	AE <sub>ff&amp;e</sub>	<b>96,451.1893</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity				

R5.1		AG <sub>N-f LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5 R5.6	302	AG <sub>WF</sub>	316,618.9769 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	١	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>316,618.9769</b> tn CO2/year	CO2 Total Annual Gain

O2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area	ARC <sub>area</sub> 9.50916 tn CO2/hectare/year	ARC,
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R6.2	ARCproduct	0.39933	to CO2/to of viold/voor	CO3 Appurel Removal Copposity and variety of horocottod fruits	(BF is included)
R6.3	ARC <sub>product</sub>	0.02282	tn CO2/trop (vegr	CO2 Annual Removal Capacity per unit of harvested fruits CO2 Annual Removal Capacity per tree unit	(Br is included)
K6.3	ARCtree	0.02282	tn CO2/tree/year	CO2 Annual Kemoval Capacity per tree unit	
R7.1	ARCarea	7.82865	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2		0.32876			(BF is not included)
_	ARC		tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(br is not included)
R7.3	ARC <sub>tree</sub>	0.01879	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R8.1	TAE/TAR	0.20357	Total Annual CO2 Emissions/ Total An	nual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.23691	Total Annual CO2 Emissions/ Total An		(BF is not included)
	,				(=: :: :: :: :: :: :: :: :: :: :: :: :: :
R9.1	TAR <sub>area</sub>	11.93967	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	0.50140	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.02865	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
				·	
R10.1	TAR <sub>area</sub>	10.25916	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	0.43083	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.02462	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	1.68052	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.07057	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.00403	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	9.95746	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	0.41816	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.02390	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
	••				
R13.1	AS <sub>S_area</sub>	0.30169	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2 R13.3	AS <sub>S_product</sub>	0.01267 0.00072	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits  CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
K13.3	AS <sub>S_tree</sub>	0.00072	tn CO2/tree/year	COZ Annual storage in son as carbon of the fallen biomass per tree unit	
R14.1	TAE <sub>area</sub>	2.43051	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2	TAE <sub>product</sub>	0.10207	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
R14.3	TAE <sub>tree</sub>	0.00583	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
1114.5	tree	0.00303	th cozytice/year	COL TOTAL CHINDS BY THE GIVE	<del></del>
R15.1	AE <sub>f area</sub>	0.97834	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	-
R15.2	AE <sub>f_product</sub>	0.04108	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f tree</sub>	0.00235	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
_	1_000		• • • • • • • • • • • • • • • • • • • •		
R16.1	AE <sub>p_area</sub>	0.74820	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.03142	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p_tree</sub>	0.00180	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
R17.1	AE <sub>ff&amp;e_area</sub>	0.70398	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R17.2	AE <sub>ff&amp;e_product</sub>	0.02956	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00169	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R18.1	AE <sub>D_area</sub>	0.59567	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.2	AE <sub>D_product</sub>	0.02501	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.3	AE <sub>D_tree</sub>	0.00143	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
D40.4	AF	0.02200	to CO2/1t/	CO2 Annual Emissions due to the use of socilies now usit of sultivated area	
R19.1	AE <sub>G_area</sub>	0.03399	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R19.2	AE <sub>G_product</sub>	0.00143	tn CO2/troo/veor	CO2 Annual Emissions due to the use of gasoline per unit or narvested fruits  CO2 Annual Emissions due to the use of gasoline per tree unit	
R19.3	AE <sub>G_tree</sub>	0.00008	tn CO2/tree/year	CO2 Antitual Ethissions due to the use of Rasonine her rise fillit	
	ΛE	0.07431	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
P20 1		0.07431		**	
R20.1	AE <sub>EL_area</sub>	0.00312	tn CO2/tn of viold/year		
R20.2	AE <sub>EL_product</sub>	0.00312	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
		0.00312 0.00018	tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per unit of narvested fruits  CO2 Annual Emissions due to the use of electricity per tree unit	
R20.2	AE <sub>EL_product</sub>				

R21.2	TAG <sub>product</sub>	0.09705	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00555	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
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R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	2.31093	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.09705	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00555	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 12 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Spain
Species of tree crop:	Apple
Geographical area of the cultivation:	ESPANA (total)

### **CO2 Annual Removal Capacity**

R	R1.1	ARC	<b>61,950.7916</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R	R1.2	ARC	<b>21,310.9162</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

## Analysis

R2.1		AR <sub>BF</sub>	<b>40,639.8753</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	'als	AR <sub>BW</sub>	138,479.5387 tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	100 E	AS <sub>s</sub>	<b>5,468.9824</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	Rei	TAR	<b>184,588.3965</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>143,948.5211</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	S	AE <sub>f</sub>	<b>33,189.1349</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers	
R3.2	S ig	AE <sub>p</sub>	<b>15,350.2453</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides	
R3.3	S ig	AE <sub>ff&amp;e</sub>	<b>74,098.2247</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	
R3.4	ш	TAE	<b>122,637.6049</b> tn CO2/year	CO2 Total Annual Emissions	
	R4.1	AE <sub>D</sub>	69,065.7032 tn CO2/year	CO2 Annual Emissions due to the use of diesel	
	R4.2	AE <sub>G</sub>	3,739.2772 tn CO2/year	CO2 Annual Emissions due to the use of gasoline	
	R4.3	AE <sub>EL</sub>	1,293.2443 tn CO2/year	CO2 Annual Emissions due to the use of electricity	
	R4.4	AE <sub>ff&amp;e</sub>	<b>74,098.2247</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	
				·	

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	30 ja	AG <sub>WF</sub>	20,253.3357 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	٥٥	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_{m}}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		$AG_{D_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>20,253.3357</b> tn CO2/year	CO2 Total Annual Gain

R6.1 ARC <sub>area</sub> 2.16131 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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R6.2	ARCproduct	0.11311	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>tree</sub>	0.00436		CO2 Annual Removal Capacity per unit or narvested truits  CO2 Annual Removal Capacity per tree unit	(Br is included)
NO.3	Anctree	0.00430	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R7.1	ARCarea	0.74348	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	0.03891	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARCtree	0.00150	tn CO2/tree/year	CO2 Annual Removal Capacity per time of narvested mats	(b) is not included)
K7.3	Anc <sub>tree</sub>	0.00130	tii CO2/tree/year	COZ Allitual Kemioval Capacity per tree unit	
R8.1	TAE/TAR	0.66438	Total Annual CO2 Emissions/ Total A	nnual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.85195	Total Annual CO2 Emissions/ Total Ai		(BF is not included)
	•				
R9.1	TAR <sub>area</sub>	6.43982	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	0.33702	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.01300	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
				·	
R10.1	TAR <sub>area</sub>	5.02200	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	0.26282	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.01014	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
					, 
R11.1	AR <sub>BF_area</sub>	1.41782	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.07420	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.00286	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	4.83120	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	0.25283	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.00975	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.19080	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.00999	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0.00039	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
R14.1	TAE <sub>area</sub>	4.27851	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2	TAE <sub>product</sub>	0.22391	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
R14.3	TAE <sub>tree</sub>	0.00864	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
				CO2 Appel Facing and the Advance of Coatiling and Coatiling and the Advance of Coatiling and Coa	<u> </u>
R15.1	AE <sub>f_area</sub>	1.15788	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2	AE <sub>f_product</sub>	0.06060	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f_tree</sub>	0.00234	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
R16.1	۸۲	0.52552	to CO3/bastara/vaar	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_area</sub>	0.53553 0.02803	tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of chickacted area  CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p_product</sub>	0.00108		CO2 Annual Emissions due to the use of pesticides per tree unit	
1/10.3	AE <sub>p_tree</sub>	0.00108	tn CO2/tree/year	CO2 Avinual Emissions due to the use of pesticues per dee unit	
R17.1	AE <sub>ff&amp;e area</sub>	2.58510	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R17.1	AE <sub>ff&amp;e_area</sub> AE <sub>ff&amp;e_product</sub>	0.13529	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.2	AE <sub>ff&amp;e_tree</sub>	0.00522	tn CO2/tri or yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
.117.13	-π&e_tree	0.00322	C. COZ/CCC/year	and the second s	
R18.1	AE <sub>D area</sub>	2.40953	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.2	AE <sub>D_product</sub>	0.12610	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.3	AE <sub>D tree</sub>	0.00487	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
	n_rtee	2.00.07			
R19.1	AE <sub>G_area</sub>	0.13045	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R19.2	AE <sub>G product</sub>	0.00683	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R19.3	AE <sub>G tree</sub>	0.00026	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit	
		0.00020	cozy a coyy car	and the second s	
R20.1	AE <sub>EL_area</sub>	0.04512	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
R20.2	AE <sub>EL product</sub>	0.00236	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
R20.3	AE <sub>EL tree</sub>	0.00009	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit	
	cr_tree	2.0000	, ,		
	TAG <sub>area</sub>	0.70659	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area	
R21.1					

R21.2	TAG <sub>product</sub>	0.03698	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00143	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
				·
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	0.70659	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.03698	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00143	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 13 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Spain
Species of tree crop:	Peach
Geographical area of the cultivation:	ESPANA (total)

### **CO2 Annual Removal Capacity**

R	1.1	ARC	<b>1,304.2763</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R	1.2	ARC	-53,900.6287 tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		AR <sub>BF</sub>	<b>55,204.9049</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>78,832.4621</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	1 CO	AS <sub>s</sub>	<b>5,432.7932</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>139,470.1603</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>84,265.2553</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	SI	AE <sub>f</sub>	<b>35,081.2235</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers
R3.2	S ig	AE <sub>p</sub>	<b>37,155.6876</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides
R3.3	S ig	AE <sub>ff&amp;e</sub>	<b>65,928.9729</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
R3.4	ш	TAE	138,165.8840 tn CO2/year	CO2 Total Annual Emissions
	R4.1	AE <sub>D</sub>	61,374.3561 tn CO2/year	CO2 Annual Emissions due to the use of diesel
		, t=D	01,374.3301 til CO2/yeal	COZ ATITIDAT ETHISSIONS due to the use of diesel
	R4.2	AE <sub>G</sub>	2,424.8264 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
	R4.2 R4.3			
		AE <sub>G</sub>	2,424.8264 tn CO2/year	CO2 Annual Emissions due to the use of gasoline

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	28,659.8430 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	٥٥	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_m}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	28,659.8430 tn CO2/year	CO2 Total Annual Gain

CO2 F	Removal	Capacity	Indexes
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R6.1 ARC area 0.02926 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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	ARCproduct	0.00112	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.2 R6.3	ARC <sub>product</sub>	0.00112		CO2 Annual Removal Capacity per unit or narvested truits  CO2 Annual Removal Capacity per tree unit	(Br is ilicidaed)
NO.3	Anctree	0.0000	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R7.1	ARC <sub>area</sub>	-1.20901	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	-0.04626	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of cuttivated area	(BF is not included)
R7.3	ARC <sub>tree</sub>	-0.00242	tn CO2/tree/year	CO2 Annual Removal Capacity per unit of halvested natis	(b) is not included)
K7.3	Anc <sub>tree</sub>	-0.00242	til CO2/tiee/year	COZ Annual Kemovar Capacity per tree unit	
R8.1	TAE/TAR	0.99065	Total Annual CO2 Emissions/ Total Ann	ual CO2 Removals	(BF is included)
R8.2	TAE/TAR	1.63965	Total Annual CO2 Emissions/ Total Ann		(BF is not included)
	,				
R9.1	TAR <sub>area</sub>	3.12837	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	0.11970	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.00626	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	1.89010	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	0.07232	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.00378	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	1.23827	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.04738	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.00248	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	1.76824	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	0.06766	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.00354	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.12186	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.00466	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0.00024	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
R14.1	TAE <sub>area</sub>	3.09911	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2	TAE <sub>product</sub>	0.11858	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
R14.3	TAE <sub>tree</sub>	0.00620	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
	<u> </u>				
R15.1	AE <sub>f_area</sub>	0.78689	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2	AE <sub>f_product</sub>	0.03011	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f_tree</sub>	0.00157	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
R16.1	AE <sub>p_area</sub>				
		0.83342	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.03189	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.2 R16.3				the state of the s	
R16.3	AE <sub>p_product</sub> AE <sub>p_tree</sub>	0.03189 0.00167	tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit	
R16.3	AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ff&amp;e_area</sub>	0.03189 0.00167 1.47881	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R16.3 R17.1 R17.2	AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ff&amp;e_area</sub> AE <sub>ff&amp;e_product</sub>	0.03189 0.00167 1.47881 0.05658	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R16.3	AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ff&amp;e_area</sub>	0.03189 0.00167 1.47881	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R16.3 R17.1 R17.2 R17.3	AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ff&amp;e_area</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_tree</sub>	0.03189 0.00167 1.47881 0.05658 0.00296	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R17.1 R17.2 R17.3	AE <sub>p_tree</sub> AE <sub>ff&amp;e_area</sub> AE <sub>ff&amp;e_tree</sub> AE <sub>ff&amp;e_tree</sub>	0.03189 0.00167 1.47881 0.05658 0.00296	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R16.3  R17.1  R17.2  R17.3  R18.1  R18.2	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>H&amp;e, area</sub> AE <sub>H&amp;e, product</sub> AE <sub>H&amp;e, product</sub> AE <sub>D, area</sub> AE <sub>D, product</sub>	0.03189 0.00167 1.47881 0.05658 0.00296 1.37665 0.05267	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R17.1 R17.2 R17.3 R18.1	AE <sub>p_tree</sub> AE <sub>ff&amp;e_area</sub> AE <sub>ff&amp;e_tree</sub> AE <sub>ff&amp;e_tree</sub>	0.03189 0.00167 1.47881 0.05658 0.00296	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	_
R16.3  R17.1  R17.2  R17.3  R18.1  R18.2  R18.3	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff&amp;e, area</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, tree</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, tree</sub>	0.03189 0.00167 1.47881 0.05658 0.00296 1.37665 0.05267 0.00275	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year tn CO2/tree/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3	AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ffRe_product</sub> AE <sub>ffRe_product</sub> AE <sub>ffRe_product</sub> AE <sub>ffRe_tree</sub> AE <sub>D_product</sub> AE <sub>D_product</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub> AE <sub>D_tree</sub>	0.03189 0.00167 1.47881 0.05658 0.00296 1.37665 0.05267 0.00275	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R16.3  R17.1  R17.2  R17.3  R18.1  R18.2  R18.3  R19.1  R19.2	AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff_e_product</sub>	0.03189 0.00167 1.47881 0.05658 0.00296 1.37665 0.05267 0.00275	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/hectare/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R16.3  R17.1  R17.2  R17.3  R18.1  R18.2  R18.3  R19.1	AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ffRe_product</sub> AE <sub>ffRe_product</sub> AE <sub>ffRe_product</sub> AE <sub>ffRe_tree</sub> AE <sub>D_product</sub> AE <sub>D_product</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub> AE <sub>D_tree</sub>	0.03189 0.00167 1.47881 0.05658 0.00296 1.37665 0.05267 0.00275	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R16.3  R17.1  R17.2  R17.3  R18.1  R18.2  R18.3  R19.1  R19.2  R19.3	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>H&amp;e, area</sub> AE <sub>H&amp;e, product</sub> AE <sub>H&amp;e, tree</sub> AE <sub>O, area</sub> AE <sub>O, product</sub>	0.03189 0.00167 1.47881 0.05658 0.00296 1.37665 0.05267 0.00275 0.05439 0.00208 0.00011	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tnectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>H&amp;e, area</sub> AE <sub>H&amp;e, product</sub> AE <sub>H&amp;e, tree</sub> AE <sub>D, product</sub>	0.03189 0.00167 1.47881 0.05658 0.00296 1.37665 0.05267 0.00275 0.05439 0.00208 0.00011	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit	
R16.3  R17.1  R17.2  R17.3  R18.1  R18.2  R18.3  R19.1  R19.2  R19.3  R20.1  R20.2	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff&amp;e, area</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, tree</sub> AE <sub>D, area</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, tree</sub> AE <sub>G, product</sub> AE <sub>G, tree</sub> AE <sub>G, tree</sub> AE <sub>EL, product</sub>	0.03189 0.00167 1.47881 0.05658 0.00296 1.37665 0.05267 0.00275 0.05439 0.00208 0.00011	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/thectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per tree unit	
R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>H&amp;e, area</sub> AE <sub>H&amp;e, product</sub> AE <sub>H&amp;e, tree</sub> AE <sub>D, product</sub>	0.03189 0.00167 1.47881 0.05658 0.00296 1.37665 0.05267 0.00275 0.05439 0.00208 0.00011	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit	
R16.3  R17.1  R17.2  R17.3  R18.1  R18.2  R18.3  R19.1  R19.2  R19.3  R20.1  R20.2	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff&amp;e, area</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, tree</sub> AE <sub>D, area</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, tree</sub> AE <sub>G, product</sub> AE <sub>G, tree</sub> AE <sub>G, tree</sub> AE <sub>EL, product</sub>	0.03189 0.00167 1.47881 0.05658 0.00296 1.37665 0.05267 0.00275 0.05439 0.00208 0.00011	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/thectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per tree unit	

R21.2	TAG <sub>product</sub>	0.02460	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00129	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	0.64285	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.02460	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00129	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 14 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Spain
Species of tree crop:	Almond
Geographical area of the cultivation:	ESPANA (total)

## **CO2 Annual Removal Capacity**

R	1.1	ARC	<b>471,849.6289</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R	1.2	ARC	<b>55,887.4182</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		AR <sub>BF</sub>	<b>415,962.2107</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	'als	AR <sub>BW</sub>	<b>1,074,842.6145</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	2 E	AS <sub>s</sub>	<b>100,949.4920</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>1,591,754.3172</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	1,175,792.1065 tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	S	AE <sub>f</sub>	<b>251,313.4729</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers			
R3.2		AE <sub>p</sub>	<b>432,868.4828</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides			
R3.3	S ig	AE <sub>ff&amp;e</sub>	435,722.7326 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity			
R3.4	ш	TAE	<b>1,119,904.6884</b> tn CO2/year	CO2 Total Annual Emissions			
	R4.1	AE <sub>D</sub>	393,876.6476 tn CO2/year	CO2 Annual Emissions due to the use of diesel			
	R4.2	$AE_G$	26,973.2131 tn CO2/year	CO2 Annual Emissions due to the use of gasoline			
	R4.3	AE <sub>EL</sub>	14,872.8719 tn CO2/year	CO2 Annual Emissions due to the use of electricity			
	R4.4	AE <sub>ff&amp;e</sub>	<b>435,722.7326</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity			

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	$AG_{WF}$	504,751.3747 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>504,751.3747</b> tn CO2/year	CO2 Total Annual Gain

R6.1 ARC <sub>area</sub> 0.95145 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area		
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R6.2	ARC <sub>product</sub>	2.46938	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>tree</sub>	0.00400	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
		0.44050		Tools to to the state of the st	
R7.1	ARC <sub>area</sub>	0.11269	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	(DE to weak to alloy dead)
R7.2	ARCproduct	0.29248	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARC <sub>tree</sub>	0.00047	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R8.1	TAE/TAR	0.70357	Total Annual CO2 Emissions/ Total Annual C	O Removals	(BF is included)
R8.2	TAE/TAR	0.95247	Total Annual CO2 Emissions/ Total Annual C		(BF is not included)
	· ·				
R9.1	TAR <sub>area</sub>	3.20967	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	8.33028	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.01348	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	2.37091	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	6.15339	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.00996	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	0.83876	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	2.17690	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.00352	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
				Tools to the design of the second of the sec	
R12.1	AR <sub>BW_area</sub>	2.16735	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	5.62508	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.00910	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S area</sub>	0.20356	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2		0.52831	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of califyrated area	
R13.3	AS <sub>S_product</sub> AS <sub>S_tree</sub>	0.00085	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
1123.5	TOS_tree	0.00003	th cozytice/year	COL THIRD STORE WAS A STORE THE THIRD STORE STOR	
R14.1	TAE <sub>area</sub>	2.25822	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.1 R14.2	TAE <sub>area</sub>	2.25822 5.86091	tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of cultivated area CO2 Total Annual Emissions per unit of harvested fruits	
R14.2	TAE <sub>product</sub>	5.86091	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
R14.2	TAE <sub>product</sub>	5.86091	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R14.2 R14.3 R15.1 R15.2	TAE <sub>product</sub> TAE <sub>tree</sub> AE <sub>f_area</sub>	5.86091 0.00948 0.50676 1.31522	tn CO2/tn of yield/year tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R14.2 R14.3	TAE <sub>product</sub> TAE <sub>tree</sub>	5.86091 0.00948 0.50676	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R14.2 R14.3 R15.1 R15.2 R15.3	TAE <sub>tree</sub> AE <sub>f_area</sub> AE <sub>f_tree</sub>	5.86091 0.00948 0.50676 1.31522 0.00213	tn CO2/tr of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit	
R14.2 R14.3 R15.1 R15.2 R15.3	TAE <sub>tree</sub> AE <sub>f_area</sub> AE <sub>f_tree</sub> AE <sub>f_tree</sub>	5.86091 0.00948 0.50676 1.31522 0.00213	tn CO2/tr of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R14.2 R14.3 R15.1 R15.2 R15.3	TAE <sub>product</sub> TAE <sub>rree</sub> AE <sub>f_area</sub> AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_product</sub> AE <sub>p_product</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R14.2 R14.3 R15.1 R15.2 R15.3	TAE <sub>tree</sub> AE <sub>f_area</sub> AE <sub>f_tree</sub> AE <sub>f_tree</sub>	5.86091 0.00948 0.50676 1.31522 0.00213	tn CO2/tr of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3	TAE <sub>product</sub> TAE <sub>tree</sub> AE <sub>f_area</sub> AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_area</sub> AE <sub>p_product</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3	TAE <sub>product</sub> TAE <sub>tree</sub> AE <sub>f_area</sub> AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>p_tree</sub> AE <sub>f_tree</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3	TAE <sub>product</sub> TAE <sub>tree</sub> AE <sub>Larea</sub> AE <sub>L product</sub> AE <sub>L tree</sub> AE <sub>p-product</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits  CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area  CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits  CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3	TAE <sub>product</sub> TAE <sub>tree</sub> AE <sub>f_area</sub> AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>p_tree</sub> AE <sub>f_tree</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3	TAE <sub>product</sub> TAE <sub>ree</sub> AE <sub>f_area</sub> AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits  CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area  CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits  CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3	TAE <sub>product</sub> TAE <sub>rree</sub> AE <sub>f_area</sub> AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367 0.87861 2.28031 0.00369	tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3	TAE <sub>product</sub> TAE <sub>ree</sub> AE <sub>f_area</sub> AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367 0.87861 2.28031 0.00369	tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.1	TAE <sub>product</sub> TAE <sub>tree</sub> AE <sub>f_area</sub> AE <sub>f_tree</sub> AE <sub>f_tree</sub> AE <sub>p_product</sub> AE <sub>p_product</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_tree</sub> AE <sub>ff&amp;e_tree</sub> AE <sub>ff&amp;e_tree</sub> AE <sub>ff&amp;e_tree</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367 0.87861 2.28031 0.00369	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3	TAE <sub>product</sub> TAE <sub>tree</sub> AE <sub>f_area</sub> AE <sub>f_tree</sub> AE <sub>f_tree</sub> AE <sub>p_product</sub> AE <sub>p_product</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_tree</sub> AE <sub>ff&amp;e_tree</sub> AE <sub>ff&amp;e_tree</sub> AE <sub>ff&amp;e_tree</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367 0.87861 2.28031 0.00369	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Total Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.1 R18.2 R18.3	TAE <sub>product</sub> TAE <sub>tree</sub> AEI <sub>_area</sub> AEI <sub>_tree</sub> AEI <sub>_tree</sub> AE <sub>p_area</sub> AI <sub>p_poduct</sub> AE <sub>p_tree</sub> AE <sub>p_tree</sub> AEI <sub>Ree_area</sub> AEIRee_area AEIRee_tree  AED_area AED_product AEIRe_product	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367 0.87861 2.28031 0.00369 0.79423 2.06131 0.00334	tn CO2/trof yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/trof yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year tn CO2/tree/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/trof yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3	TAE <sub>product</sub> TAE <sub>tree</sub> AE <sub>f_area</sub> AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>f_product</sub> AE <sub>f_product</sub> AE <sub>f_product</sub> AE <sub>f_product</sub> AE <sub>f_product</sub> AE <sub>f_area</sub> AE <sub>ff&amp;e_tree</sub> AE <sub>ff&amp;e_tree</sub> AE <sub>f_orea</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367 0.87861 2.28031 0.00369 0.79423 2.06131 0.00334	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area  CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits  CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R14.2 R14.3 R15.1 R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2	TAE <sub>product</sub> TAE <sub>tree</sub> AE <sub>I_area</sub> AE <sub>I_product</sub> AE <sub>I_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>f_tree</sub> AE <sub>f_broduct</sub> AE <sub>f_tree</sub> AE <sub>f_Broduct</sub> AE <sub>f_tree</sub> AE <sub>f_Broduct</sub>	5.86091 0.00948 0.50676 1.31522 0.00213 0.87285 2.26537 0.00367 0.87861 2.28031 0.00369 0.79423 2.06131 0.00334	tn CO2/tree/year	CO2 Total Annual Emissions per unit of harvested fruits CO2 Annual Emissions per tree unit  CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
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R21.2	TAG <sub>product</sub>	2.64156	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00427	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
			•	
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	1.01780	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	2.64156	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00427	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 15 Agricultural practice: Conventional

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Spain
Species of tree crop:	Olive
Geographical area of the cultivation:	ESPANA (total)

### **CO2 Annual Removal Capacity**

R1.1	ARC	<b>17,268,559.0164</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	<b>13,717,511.3640</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		AR <sub>BF</sub>	<b>3,551,047.6525</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>16,840,922.0217</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	1 CO	AS <sub>s</sub>	<b>592,428.0450</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>20,984,397.7192</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>17,433,350.0667</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

AE <sub>p</sub> 1,466,719.2017 tn CO2/year AE <sub>ff&amp;p</sub> 1,263,296.6183 tn CO2/year	CO2 Annual Emissions due to the use of pesticides
AE <sub>40</sub> 1.263.296.6183 tn CO2/year	
	CO2 Annual Emissions due to the use of fossil fuels & electricity
TAE 3,715,838.7028 tn CO2/year	CO2 Total Annual Emissions
AE <sub>D</sub> 1,088,927.5929 tn CO2/year	CO2 Annual Emissions due to the use of diesel
AE <sub>G</sub> 165,156.0398 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
<b>AE</b> <sub>EL</sub> 9,212.9855 tn CO2/year	CO2 Annual Emissions due to the use of electricity
AE <sub>ff&amp;e</sub> 1,263,296.6183 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
A Al	E <sub>D</sub> 1,088,927.5929 tn CO2/year E <sub>6</sub> 165,156.0398 tn CO2/year E <sub>8</sub> 9,212.9855 tn CO2/year

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	7,048,798.7725 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>7,048,798.7725</b> tn CO2/year	CO2 Total Annual Gain

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R7.1 ARC <sub>pres</sub> 5.64687 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area R7.2 ARC <sub>product</sub> 2.13593 tn CO2/tn of yield/year CO2 Annual Removal Capacity per unit of harvested fruits R7.3 ARC <sub>tree</sub> 0.01227 tn CO2/tree/year CO2 Annual Removal Capacity per unit of harvested fruits R8.1 TAE/TAR 0.17708 Total Annual CO2 Emissions/ Total Annual CO2 Removals R8.2 TAE/TAR 0.21315 Total Annual CO2 Emissions/ Total Annual CO2 Removals R8.1 TAR <sub>area</sub> 8.63832 tn CO2/hectare/year CO2 Total Annual Removals per unit of cultivated area R9.2 TAR <sub>product</sub> 3.26744 tn CO2/tr of yield/year CO2 Total Annual Removals per unit of harvested fruits R9.3 TAR <sub>tree</sub> 0.01877 tn CO2/tree/year CO2 Total Annual Removals per unit of harvested fruits R1.1 TAR <sub>area</sub> 8.717652 tn CO2/hectare/year CO2 Total Annual Removals per unit of harvested fruits R1.1 TAR <sub>area</sub> 0.01877 tn CO2/tree/year CO2 Total Annual Removals per unit of harvested fruits R1.1 TAR <sub>area</sub> 0.01877 tn CO2/tree/year CO2 Total Annual Removals per unit of cultivated area	R6.2	ARCproduct	2.68885	to CO2/to of yield/year	CO2 Annual Removal Canacity per unit of harvested fruits	(BF is included)
1						(Br is included)
1972   Adv.	NO.3	Anctree	0.01545	til COZ/tiee/yedl	Los Annual Nemoval Capacity per tree unit	
1982   Mariene   1,1999   16 (10) Ref greetyper   CO Armain Bernoud Capacity per tree unit	D7 1	APC	5 6/697	tn CO2/hectare/year	CO2 Annual Removal Canacity per unit of cultivated area	
ABC						(BF is not included)
1						(b) is not included)
12   747/Feb.   0.3115   Total Annual COT Persolotor Total Annual Emonous per unit of cultivated area   CoT Total Annua	107.5	Arretree	0.01227	tir CO2/ tree/ year	coz Amidai Nemovai Capacity per tree unit	
1.   1.   1.   1.   1.   1.   1.   1.	R8.1	TAF/TAR	0.17708	Total Annual CO2 Emissions/ Total A	nnual CO2 Removals	(BF is included)
TAR						(BF is not included)
1 All						
17 Alignary   0.01977   to CO2/Interlayer   CO2 Total Annual Removals per tree until   CO2 Total Annual Removals per until of cultivated ares   1874   187	R9.1	TAR <sub>area</sub>	8.63832	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
17 Alignary   0.01977   In CONTrective   CO2 Total Annual Removals per tree unit   CO2 Total Annual Removals per tree unit   CO2 Total Annual Removals per unit of cultivated ares   CO2 Total Annual Removals per unit of cultivated ares   CO2 Total Annual Removals per unit of Co2 Total Annual Remo	R9.2	TAR <sub>product</sub>	3.26744	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
174	R9.3		0.01877	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
17 All					·	
Mary   1.45	R10.1	TAR <sub>area</sub>	7.17652	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
111 AS	R10.2	TAR <sub>product</sub>	2.71451	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
All Services   0.65/89   in CO2/Inet yieldyeer   CO2 Annual Removal due to the production of frust blomass per unit of harvested fruits	R10.3	TAR <sub>tree</sub>	0.01559	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
All Services   0.65/89   in CO2/Inet yieldyeer   CO2 Annual Removal due to the production of frust blomass per unit of harvested fruits	_					
ARangement of Control Preserved Control Preserve	R11.1	AR <sub>BF_area</sub>	1.46180	tn CO2/hectare/year		
R121 ARe uses 69326 in CO2/Interpretary CO2 Annual Removal due to the production of wood biomass per unit of autivated area CO2 Annual Removal due to the production of wood biomass per unit of autivated area CO3 Annual Removal due to the production of wood biomass per unit of autivated area CO3 Annual Removal due to the production of wood biomass per unit of autivated area CO3 Annual Removal due to the production of wood biomass per unit of autivated area CO3 Annual Removal due to the production of wood biomass per unit of autivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of cultivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of autivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of autivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of autivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of autivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of autivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of autivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of autivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of autivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of autivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of autivated area CO3 Annual Storage in soil as carbon of the fallers biomass per unit of autivated area CO3 Annual Emissions per unit of autivated area CO3 Annual Emissions per unit of autivated area CO3 Annual Emissions due to the use of fertilizers per unit of cultivated area CO3 Annual Emissions due to the use of fertilizers per unit of autivated area CO3 Annual Emissions due to the use of fertilizers per unit of autivated area CO3 Annual Emissions due to the use of fertilizers per unit of autivated area CO3 Annual Emissions due to the use of festilize	R11.2	AR <sub>BF_product</sub>	0.55293	tn CO2/tn of yield/year	· · · · · · · · · · · · · · · · · · ·	
### APPLICATION OF TAX STATE OF THE POST O	R11.3	AR <sub>BF_tree</sub>	0.00318	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
### APP ### 1.5227 ### 1.002/Ind yeldy/ear   CO2 Annual Removal due to the production of wood binamass per unit of Annexeted fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Storage in soil as carbon of the fallen binamas per unit of cultivated area   ### 1.002/Ind yeldy/ear   CO2 Annual Storage in soil as carbon of the fallen binamas per unit of cultivated area   ### 1.002/Ind yeldy/ear   CO2 Annual Storage in soil as carbon of the fallen binamas per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Storage in soil as carbon of the fallen binamas per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Storage in soil as carbon of the fallen binamas per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Storage in soil as carbon of the fallen binamas per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Storage in soil as carbon of the fallen binamas per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Storage in soil as carbon of the fallen binamas per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Storage in soil as carbon of the fallen binamas per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Storage in soil as carbon of the fallen binamas per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Emissions per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Emissions due to the use of fertilizers per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Emissions due to the use of pertilizers per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Emissions due to the use of pertilizers per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Emissions due to the use of pertilizers per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Emissions due to the use of pesticides per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Emissions due to the use of pesticides per unit of navested fruits   ### 1.002/Ind yeldy/ear   CO2 Annual Emission						
A Regueste  On 1990			6.93264	tn CO2/hectare/year		
133 AS _ rr	_	AR <sub>BW_product</sub>	2.62227	tn CO2/tn of yield/year		
AS_protect 0.0225 to CO2/tro yield/year 0.02 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits  AS_protect 0.02 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits  TAE_protect 0.07 Annual Fruitsions per unit of cultivated area  1.12 TAE_protect 0.07 Annual Fruitsions per unit of cultivated area  1.12 TAE_protect 0.07 Annual Fruitsions per unit of cultivated area  1.12 TAE_protect 0.07 Annual Fruitsions per unit of cultivated area  1.12 TAE_protect 0.07 Annual Fruitsions per unit of cultivated area  1.12 TAE_protect 0.00312 to CO2/tree/year 0.02 Annual Fruitsions per unit of cultivated area  1.12 TAE_protect 0.0032 to CO2/tree/year 0.02 Annual Fruitsions due to the use of fertilizers per unit of cultivated area  1.12 TAE_protect 0.00088 to CO2/tree/year 0.02 Annual Fruitsions due to the use of fertilizers per unit of cultivated area  1.12 TAE_protect 0.00088 to CO2/tree/year 0.02 Annual Fruitsions due to the use of fertilizers per unit of cultivated area  1.12 TAE_protect 0.00088 to CO2/tree/year 0.02 Annual Fruitsions due to the use of fertilizers per unit of cultivated area  1.12 TAE_protect 0.00088 to CO2/tree/year 0.02 Annual Fruitsions due to the use of pesticides per unit of navested fruits  1.12 TAE_protect 0.00088 to CO2/tree/year 0.02 Annual Fruitsions due to the use of pesticides per unit of navested fruits  1.13 TAE_protect 0.00088 to CO2/tree/year 0.02 Annual Ermissions due to the use of pesticides per unit of navested fruits  1.14 TAE_protect 0.00089 to CO2/tree/year 0.02 Annual Ermissions due to the use of pesticides per unit of navested fruits  1.14 TAE_protect 0.00089 to CO2/tree/year 0.00089 to the use of pesticides per unit of cultivated area  1.15 TAE_protect 0.00099 to CO2/tree/year 0.00099 to CO2/tree/year 0.00099 to CO2/tree/year 0.000999 to the use of design per unit of cultivated area  1.15 TAE_protect 0.00099 to CO2/tree/year 0.00099 to CO2/tree/year 0.000999 to the use of design per unit of cultivated area  1.15 TAE_prot	R12.3	AR <sub>BW_tree</sub>	0.01506	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
AS protect						
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R21.1 TAG <sub>area</sub> 2.90167 tn CO2/hectare/year CO2 Total Annual Gain per unit of cultivated area	R21.1	TAG <sub>area</sub>	2.90167	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area	

R21.2	TAG <sub>product</sub>	1.09755	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00631	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
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R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	2.90167	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	1.09755	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00631	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 16 Agricultural practice: Use of cover crops

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Olive
Geographical area of the cultivation:	GREECE (total)

### CO2 Annual Removal Capacity

R1.1	ARC	<b>5,386,163.1879</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	3.402.005.8002 tn CO2/year	CO2 Annual Removal Capacity	(BE is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		AR <sub>BF</sub>	<b>1,984,157.3877</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	'als	AR <sub>BW</sub>	<b>4,549,120.3612</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	2 E	AS <sub>s</sub>	<b>99,284.7535</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>6,632,562.5023</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>4,648,405.1147</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

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AE <sub>p</sub>	<b>182,446.5566</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides
AE <sub>ff&amp;e</sub>	<b>428,036.9286</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
TAE	<b>1,246,399.3145</b> tn CO2/year	CO2 Total Annual Emissions
AE <sub>D</sub>	365,366.0711 tn CO2/year	CO2 Annual Emissions due to the use of diesel
$AE_G$	55,414.5324 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
AE <sub>EL</sub>	7,256.3251 tn CO2/year	CO2 Annual Emissions due to the use of electricity
AE <sub>ff&amp;e</sub>	<b>428,036.9286</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
	AE <sub>D</sub> AE <sub>G</sub> AE <sub>EL</sub>	TAE         1,246,399.3145         tn CO2/year           AE <sub>D</sub> 365,366.0711         tn CO2/year           AE <sub>G</sub> 55,414.5324         tn CO2/year           AE <sub>E</sub> 7,256.3251         tn CO2/year

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	309,679.3070 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	CO2 Gain	AG <sub>WF</sub>	1,028,169.7216 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		$AG_{D\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>1,337,849.0286</b> tn CO2/year	CO2 Total Annual Gain

R6.1 ARCarea 6.60820 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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R6.2	ARC <sub>product</sub>	1.50097	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>tree</sub>	0.03811		CO2 Annual Removal Capacity per unit or narvested fruits  CO2 Annual Removal Capacity per tree unit	(BF IS IIICluded)
NO.3	Anctree	0.03611	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R7.1	ARCarea	4.17387	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	0.94804	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of cultivated area  CO3 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARCtree	0.02407	tn CO2/tree/year	CO2 Annual Removal Capacity per time or harvested mids	(b) is not included)
107.5	Arretree	0.02407	til CO2/tree/year	CO2 Aimban removar capacity per tree unit	
R8.1	TAE/TAR	0.18792	Total Annual CO2 Emissions/ Total Ann	nual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.26813	Total Annual CO2 Emissions/ Total Ann		(BF is not included)
	,				
R9.1	TAR <sub>area</sub>	8.13739	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	1.84830	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.04693	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
					<u> </u>
R10.1	TAR <sub>area</sub>	5.70305	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	1.29537	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.03289	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	2.43433	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.55293	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.01404	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	5.58124	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	1.26771	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.03219	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.12181	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.02767	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0.00070	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
				Team to the team of the team	
R14.1	TAE <sub>area</sub>	1.52919	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2	TAE	0.34733	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
R14.3	TAE <sub>tree</sub>	0.00882	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	<u> </u>
R15.1	AE	0.78020	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2	AE <sub>f_area</sub>	0.17721	tn CO2/fiectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of convace area  CO3 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f_product</sub>	0.00450	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
K13.3	ALf_tree	0.00430	tii CO2/tiee/yeai	CO2 Annual Emissions due to the use of fertilizers per tree unit	
R16.1	AE <sub>p_area</sub>	0.22384	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.05084	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p tree</sub>	0.00129	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
	p_tree	0.00123	602/ 1166/ 1661	1	
R17.1	AE <sub>ff&amp;e area</sub>	0.52515	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	•
R17.2	AE <sub>ff&amp;e_product</sub>	0.11928	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.3			7	· · ·	
			tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
_	AE <sub>ff&amp;e_tree</sub>	0.00303	tn CO2/tree/year	CO2 Annual Emissions due to the use of rossil fuels & electricity per tree unit	
R18.1			tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil ruels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.1 R18.2	AE <sub>ff&amp;e_tree</sub>	0.00303			
	AE <sub>ff&amp;e_tree</sub>	0.00303 0.44826	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.2	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub>	0.00303 0.44826 0.10182	tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.2	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub>	0.00303 0.44826 0.10182	tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.2 R18.3	AE <sub>D_area</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub>	0.00303 0.44826 0.10182 0.00259	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R18.2 R18.3 R19.1 R19.2	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub>	0.00303 0.44826 0.10182 0.00259 0.06799	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.2 R18.3	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub> AE <sub>G_area</sub> AE <sub>G_product</sub>	0.00303 0.44826 0.10182 0.00259 0.06799 0.01544	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R18.2 R18.3 R19.1 R19.2	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub> AE <sub>G_area</sub> AE <sub>G_product</sub>	0.00303 0.44826 0.10182 0.00259 0.06799 0.01544	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>ff, product</sub> AE <sub>D_ product</sub> AE <sub>D_ tree</sub> AE <sub>G_ product</sub> AE <sub>G_ product</sub> AE <sub>G_ product</sub> AE <sub>G_ free</sub> AE <sub>G_ free</sub>	0.00303 0.44826 0.10182 0.00259 0.06799 0.01544 0.00039	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit	
R18.2 R18.3 R19.1 R19.2 R19.3 R20.1	AE <sub>ff, area</sub> AE <sub>D, area</sub> AE <sub>D, product</sub> AE <sub>D, broduct</sub> AE <sub>G, area</sub> AE <sub>G, product</sub> AE <sub>G, tree</sub> AE <sub>G, tree</sub>	0.00303 0.44826 0.10182 0.00259 0.06799 0.01544 0.00039	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.2 R18.3 R19.1 R19.2 R19.3 R20.1 R20.1	AE <sub>fige</sub> tree  AE <sub>D</sub> area AE <sub>D</sub> product AE <sub>D</sub> tree  AE <sub>G</sub> area AE <sub>G</sub> product AE <sub>G</sub> tree  AE <sub>E</sub> tree  AE <sub>E</sub> tree  AE <sub>E</sub> product	0.00303 0.44826 0.10182 0.00259 0.06799 0.01544 0.00039 0.00890 0.00202	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/hectare/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of electricity per unit of cultivated area CO2 Annual Emissions due to the use of electricity per unit of cultivated fruits	

R21.2	TAG <sub>product</sub>	0.37282	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00947	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.37994	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.08630	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00219	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	1.26145	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.28652	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00728	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 17 Agricultural practice: Use of cover crops of the Leguminosae family

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Olive
Geographical area of the cultivation:	GREECE (total)

## **CO2 Annual Removal Capacity**

F	R1.1	ARC	<b>5,696,767.8056</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
F	R1.2	ARC	<b>3,712,610.4180</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		$AR_{BF}$	<b>1,984,157.3877</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>4,549,120.3612</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	ğ ç	AS <sub>s</sub>	<b>99,284.7535</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	Rei	TAR	<b>6,632,562.5023</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>4,648,405.1147</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	SI	AE <sub>f</sub>	<b>325,311.2115</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers
R3.2	Sior	AE <sub>p</sub>	<b>182,446.5566</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides
R3.3	S in	AE <sub>ff&amp;e</sub>	428,036.9286 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
R3.4	ш	TAE	935,794.6967 tn CO2/year	CO2 Total Annual Emissions
_				
	R4.1	AE <sub>D</sub>	365,366.0711 tn CO2/year	CO2 Annual Emissions due to the use of diesel
	R4.2	AE <sub>G</sub>	55,414.5324 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
	R4.3	AE <sub>EL</sub>	7,256.3251 tn CO2/year	CO2 Annual Emissions due to the use of electricity
	R4.4	AE <sub>ff&amp;e</sub>	<b>428,036.9286</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity

R5.1		AG <sub>N-f_LCC</sub>	310,604.6178 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	309,679.3070 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	$AG_{WF}$	1,028,169.7216 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		$AG_{D\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>1,648,453.6464</b> tn CO2/year	CO2 Total Annual Gain

R6.1 ARC area 6.98927 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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R6.2	ARCproduct	1.58752	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.2	ARC <sub>product</sub>	0.04031		CO2 Annual Removal Capacity per unit or narvested fruits  CO2 Annual Removal Capacity per tree unit	(br is included)
10.3	Anctree	0.04031	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R7.1	ARC <sub>area</sub>	4.55494	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	1.03460	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARC <sub>tree</sub>	0.02627	tn CO2/tree/year	CO2 Annual Removal Capacity per time or naivested midts  CO2 Annual Removal Capacity per tree unit	(b) is not included)
10.5	Anctree	0.02027	til CO2/tree/year	CO2 Annual Nemoval Capacity per tree unit	
R8.1	TAE/TAR	0.14109	Total Annual CO2 Emissions/ Total Ann	nual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.20132	Total Annual CO2 Emissions/ Total An		(BF is not included)
	,				(
R9.1	TAR <sub>area</sub>	8.13739	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	1.84830	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.04693	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	5.70305	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	1.29537	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.03289	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	2.43433	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.55293	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.01404	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	5.58124	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	1.26771	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.03219	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.12181	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.02767	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0.00070	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
	TAE			COO Tabel Association associated subjected associated a	
R14.1	TAE	1.14811	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2 R14.3	TAE <sub>product</sub>	0.26078	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
K14.3	TAE <sub>tree</sub>	0.00662	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	<del></del>
R15.1	AE <sub>f area</sub>	0.39912	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2		0.09065	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f_product</sub>	0.00230	tn CO2/tri of yield/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
K13.5	ALf_tree	0.00230	til CO2/ tree/ year	CO2 Annual Emissions due to the date of nertificers per tree diffe	
R16.1	AE <sub>p_area</sub>	0.22384	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.05084	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p tree</sub>	0.00129	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
	p_dee		,		
R17.1	AE <sub>ff&amp;e area</sub>	0.52515	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R17.2	AE <sub>ff&amp;e_product</sub>	0.11928	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.3		0.11520			
		0.00303	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
	AE <sub>ff&amp;e_tree</sub>			CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R18.1				CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.1 R18.2	AE <sub>ff&amp;e_tree</sub>	0.00303	tn CO2/tree/year		
	AE <sub>ff&amp;e_tree</sub>	0.00303 0.44826	tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.2	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub>	0.00303 0.44826 0.10182	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.2	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub>	0.00303 0.44826 0.10182	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.2 R18.3	AE <sub>D_area</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub>	0.00303 0.44826 0.10182 0.00259	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R18.2 R18.3	$\begin{array}{c} AE_{ff\&e\_tree} \\ \\ AE_{D\_area} \\ AE_{D\_product} \\ \\ AE_{D\_tree} \\ \end{array}$	0.00303 0.44826 0.10182 0.00259 0.06799	tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.2 R18.3 R19.1 R19.2	$\begin{array}{c} AE_{ff\&e\_tree} \\ \\ AE_{D\_area} \\ AE_{D\_product} \\ \\ AE_{D\_tree} \\ \\ AE_{G\_area} \\ \\ AE_{G\_product} \end{array}$	0.00303 0.44826 0.10182 0.00259 0.06799 0.01544 0.00039	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit	
R18.2 R18.3 R19.1 R19.2	$\begin{array}{c} AE_{ff\&e\_tree} \\ \\ AE_{D\_area} \\ AE_{D\_product} \\ \\ AE_{D\_tree} \\ \\ AE_{G\_area} \\ \\ AE_{G\_product} \end{array}$	0.00303 0.44826 0.10182 0.00259 0.06799 0.01544 0.00039	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>Be_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub> AE <sub>G_area</sub> AE <sub>G_product</sub> AE <sub>G_product</sub> AE <sub>G_product</sub>	0.00303 0.44826 0.10182 0.00259 0.06799 0.01544 0.00039	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of electricity per unit of cultivated area CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
R18.2 R18.3 R19.1 R19.2 R19.3 R20.1	AE <sub>HSe</sub> tree  AE <sub>D</sub> area AE <sub>D</sub> product AE <sub>D</sub> tree  AE <sub>G</sub> area AE <sub>G</sub> product AE <sub>G</sub> tree  AE <sub>G</sub> tree	0.00303 0.44826 0.10182 0.00259 0.06799 0.01544 0.00039	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.2 R18.3 R19.1 R19.2 R19.3 R20.1 R20.1	AE <sub>HSe</sub> tree  AE <sub>D</sub> area AE <sub>D</sub> product AE <sub>D</sub> product AE <sub>G</sub> area AE <sub>G</sub> product AE <sub>G</sub> tree  AE <sub>EL</sub> area AE <sub>EL</sub> product	0.00303 0.44826 0.10182 0.00259 0.06799 0.01544 0.00039 0.00890 0.00202	tn CO2/tree/year  tn CO2/thectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/thectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of electricity per unit of cultivated area CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	

R21.2	TAG <sub>product</sub>	0.45938	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.01166	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.38108	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.08656	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00220	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
_				
R24.1	AG <sub>H_cc/m_area</sub>	0.37994	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.08630	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00219	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	1.26145	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.28652	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00728	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 18 Agricultural practice: Application of fertilizers through fertigation

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Olive
Geographical area of the cultivation:	GREECE (total)

### CO2 Annual Removal Capacity

R1.1	ARC	<b>5,178,948.7197</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	<b>3,194,791.3321</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		AR <sub>BF</sub>	<b>1,984,157.3877</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>4,549,120.3612</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	1 CO	AS <sub>s</sub>	<b>55,210.9681</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>6,588,488.7169</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>4,604,331.3293</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	S	AE <sub>f</sub>	<b>540,528.4549</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers
R3.2		AE <sub>p</sub>	<b>492,125.8637</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides
R3.3	S ig	AE <sub>ff&amp;e</sub>	376,885.6786 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
R3.4	ш	TAE	1,409,539.9972 tn CO2/year	CO2 Total Annual Emissions
	R4.1	AE <sub>D</sub>	314,214.8212 tn CO2/year	CO2 Annual Emissions due to the use of diesel
	R4.2	$AE_G$	55,414.5324 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
	R4.3	AE <sub>EL</sub>	7,256.3251 tn CO2/year	CO2 Annual Emissions due to the use of electricity
	R4.4	AE <sub>ff&amp;e</sub>	<b>376,885.6786</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	95,387.3744 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	$AG_{WF}$	1,028,169.7216 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_{m}}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	51,151.2500 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>1,174,708.3459</b> tn CO2/year	CO2 Total Annual Gain

R6.1 ARC <sub>area</sub> 6.35397 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area	
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R6.3 ARC <sub>tree</sub> 0.03665 tn CO2/tree/year CO2 Annual Removal Capacity per tree unit  R7.1 ARC <sub>area</sub> 3.91964 tn CO2/trectare/year CO2 Annual Removal Capacity per unit of cultivated area  R7.2 ARC <sub>product</sub> 0.89029 tn CO2/tr of yield/year CO2 Annual Removal Capacity per unit of harvested fruits  R7.3 ARC <sub>tree</sub> 0.02261 tn CO2/tree/year CO2 Annual Removal Capacity per tree unit  R8.1 TAE/TAR 0.21394 Total Annual CO2 Emissions/ Total Annual CO2 Removals  R8.2 TAE/TAR 0.30613 Total Annual CO2 Emissions/ Total Annual CO2 Removals  R9.1 TAR <sub>area</sub> 8.08331 tn CO2/hectare/year CO2 Total Annual Removals per unit of cultivated area  R9.2 TAR <sub>product</sub> 1.83602 tn CO2/tr of yield/year CO2 Total Annual Removals per unit of harvested fruits  R9.3 TAR <sub>tree</sub> 0.04662 tn CO2/tr of yield/year CO2 Total Annual Removals per unit of harvested fruits  R1.4 TAR <sub>area</sub> 5.64898 tn CO2/hectare/year CO2 Total Annual Removals per unit of cultivated area	R6.2	ARC <sub>product</sub>	1.44322	to CO2/to of yield/year	CO2 Annual Removal Canacity por unit of harvested fruits	(BF is included)
1.   Max.   3.998						(Br is iliciadea)
Martin	NO.3	Anctree	0.03003	til COZ/tiee/yedl	CO2 Aillual Removal Capacity per tree unit	
Martine   Mart	D7 1	APC	3 0106/	tn CO2/hectare/year	CO2 Annual Removal Canacity per unit of cultivated area	
ABAC_   0.221   10.						(BF is not included)
1						(b) is not included)
1.   1.   1.   1.   1.   1.   1.   1.	117.5	Arretree	0.02201	tir CO2/ tree/ year	CO2 Allindar Removal capacity per tree unit	
18.2   1.	R8.1	TAF/TAR	0.21394	Total Annual CO2 Emissions/ Total A	nnial CO2 Removals	(BE is included)
1 TAN- 10 1 TAN-					·	
1.5   1.5		,				( 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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10.00   TAR_max	R9.2	TAR <sub>product</sub>	1.83602	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
17.4	R9.3		0.04662	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
12.4   1.4   1.2809   to CO2/to-of-pols/year   CO2 Total Annual Removals per unit of harvested fires						
111	R10.1	TAR <sub>area</sub>	5.64898	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
All	R10.2	TAR <sub>product</sub>	1.28309	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
All Sections 0.5239 in CO2/Proceive/ser  CO2 Annual Removal due to the production of fruit biomass per run of continuence of the section of t	R10.3	TAR <sub>tree</sub>	0.03258	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
Affective of School Processor Occurrence occurrence of School Processor Occurrence occ						
All		AR <sub>BF_area</sub>				
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### Afficial Section   ### CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits   ### CO2 Annual Removal due to the production of wood biomass per unit of calibrated area   ### CO2 Annual Removal due to the production of wood biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of calibrated area   ### CO2 Annual Storage in soil as carbon of the fallen biomass per unit of						
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R18.2 AE <sub>D, product</sub> 0.08756 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  R18.3 AE <sub>D, tree</sub> 0.00222 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  R19.1 AE <sub>G, product</sub> 0.01544 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  R19.3 AE <sub>G, tree</sub> 0.00039 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  R20.1 AE <sub>E, product</sub> 0.00890 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  R20.2 AE <sub>E, product</sub> 0.00005 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  R20.2 AE <sub>E, product</sub> 0.00005 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  R20.3 AE <sub>E, product</sub> 0.00005 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits						
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R19.1 AE <sub>G_prea</sub> 0.00222 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per tree unit of cultivated area  R19.2 AE <sub>G_product</sub> 0.01544 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  R19.3 AE <sub>G_tree</sub> 0.00039 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  R20.1 AE <sub>E_product</sub> 0.00890 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  R20.2 AE <sub>E_product</sub> 0.00020 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  R20.3 AE <sub>E_t product</sub> 0.00005 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  CO3 Annual Emissions due to the use of electricity per tree unit		AE <sub>D_product</sub>		tn CO2/tn of yield/year	·	
R19.2 AE <sub>G_product</sub> 0.01544 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  R19.3 AE <sub>G_tree</sub> 0.00039 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  R20.1 AE <sub>EL_tree</sub> 0.00890 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  R20.2 AE <sub>EL_product</sub> 0.00202 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  R20.3 AE <sub>EL_tree</sub> 0.00005 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	R18.3		0.00222	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
R19.2 AE <sub>G_product</sub> 0.01544 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  R19.3 AE <sub>G_tree</sub> 0.00039 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  R20.1 AE <sub>E_product</sub> 0.00890 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  R20.2 AE <sub>E_product</sub> 0.00202 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  R20.3 AE <sub>E_t_tree</sub> 0.00005 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit						
R19.3 AE <sub>6_tree</sub> 0.00039 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  R20.1 AE <sub>EL_area</sub> 0.00890 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  R20.2 AE <sub>EL_product</sub> 0.00202 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  R20.3 AE <sub>EL_tree</sub> 0.00005 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit						
R20.1 AE <sub>EL_product</sub> 0.00890 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area R20.2 AE <sub>EL_product</sub> 0.00202 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits R20.3 AE <sub>EL_tree</sub> 0.00005 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit						
R20.2 AE <sub>EL product</sub> 0.00202 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  R20.3 AE <sub>EL tree</sub> 0.00005 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	R19.3	AE <sub>G_tree</sub>	0.00039	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit	
R20.2       AE <sub>EL product</sub> 0.00202       tn CO2/tn of yield/year       CO2 Annual Emissions due to the use of electricity per unit of harvested fruits         R20.3       AE <sub>EL tree</sub> 0.00005       tn CO2/tree/year       CO2 Annual Emissions due to the use of electricity per tree unit						
R20.3 AE <sub>EL, tree</sub> 0.00005 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit					· · · · · · · · · · · · · · · · · · ·	
R21.1 TAG <sub>area</sub> 1.44123 tn CO2/hectare/year CO2 Total Annual Gain per unit of cultivated area	R20.3	AE <sub>EL_tree</sub>	0.00005	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit	
R21.1 TAG <sub>area</sub> 1.44123 tn CO2/hectare/year CO2 Total Annual Gain per unit of cultivated area						
	R21.1	TAG <sub>area</sub>	1.44123	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area	

R21.2	TAG <sub>product</sub>	0.32736	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00831	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.11703	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.02658	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00067	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
				·
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
				·
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	1.26145	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.28652	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00728	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 19 Agricultural practice: Use of cover crops of the Leguminosae family

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece	
Species of tree crop:	Orange	
Geographical area of the cultivation:	GREECE (total)	

## **CO2 Annual Removal Capacity**

R1.1	ARC	<b>308,164.2067</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	<b>250,030.8679</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		AR <sub>BF</sub>	<b>58,133.3388</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	'als	AR <sub>BW</sub>	<b>300,878.0321</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	100 E	AS <sub>s</sub>	13,029.3724 tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	Rei	TAR	<b>372,040.7433</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>313,907.4046</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	15	AE <sub>f</sub>	<b>24,150.0068</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers		
R3.2	Sior S	AE <sub>p</sub>	<b>12,478.7097</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides		
R3.3	m is	AE <sub>ff&amp;e</sub>	<b>27,247.8201</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity		
R3.4	ш	TAE	<b>63,876.5366</b> tn CO2/year	CO2 Total Annual Emissions		
	R4.1	AE <sub>D</sub>	20,184.8514 tn CO2/year	CO2 Annual Emissions due to the use of diesel		
	R4.2	AE <sub>G</sub>	1,151.9053 tn CO2/year	CO2 Annual Emissions due to the use of gasoline		
	R4.3	AE <sub>EL</sub>	5,911.0634 tn CO2/year	CO2 Annual Emissions due to the use of electricity		
	R4.4	AE <sub>ff&amp;e</sub>	<b>27,247.8201</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity		

R5.1		AG <sub>N-f_LCC</sub>	12,913.1142 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	12,874.6452 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	ia jai	AG <sub>WF</sub>	80,021.1785 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	105,808.9379 tn CO2/year	CO2 Total Annual Gain

CO2 Remova	Capacity	Indexes
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R6.1 ARC <sub>area</sub> 9.09416 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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R6.2	ARC <sub>product</sub>	0.37410	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>tree</sub>	0.02039		CO2 Annual Removal Capacity per unit or narvested truits  CO2 Annual Removal Capacity per tree unit	(Br is ilicidued)
K0.5	Arctree	0.02039	tn CO2/tree/year	CO2 Affidian Removal Capacity per tree unit	
R7.1	ARC <sub>area</sub>	7.37860	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	0.30353	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of controlled area  CO3 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARC <sub>tree</sub>	0.01655	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	(b) is not included)
107.5	Arretree	0.01033	tir CO2/tree/year	CO2 Annual Nemovar Capacity per tree unit	
R8.1	TAE/TAR	0.17169	Total Annual CO2 Emissions/ Total Ann	nual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.20349		stal Annual CO2 Emissions/ Total Annual CO2 Removals	
	,				(BF is not included)
R9.1	TAR <sub>area</sub>	10.97921	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	0.45165	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.02462	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
				·	
R10.1	TAR <sub>area</sub>	9.26365	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	0.38108	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.02077	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
				·	
R11.1	AR <sub>BF_area</sub>	1.71556	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.07057	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.00385	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	8.87914	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	0.36526	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.01991	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.38451	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.01582	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0.00086	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
R14.1	TAE <sub>area</sub>	1.88505	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2	TAE <sub>product</sub>	0.07754	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
R14.3	TAE <sub>tree</sub>	0.00423	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
	<u> </u>				
R15.1	AE <sub>f_area</sub>	0.71269	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2	AE <sub>f_product</sub>	0.02932	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f_tree</sub>	0.00160	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
R16.1	AE <sub>p_area</sub>	0.36826	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.01515	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p_tree</sub>	0.00083	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
2424	A.F.	0.00440		COO Assembly Excissions also to the consent facility of the Cooking of the Cookin	<u> </u>
R17.1	AE <sub>ff&amp;e_area</sub>	0.80410	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.2	AE <sub>ff&amp;e_product</sub>	0.03308	tn CO2/tn of yield/year	· · · · · · · · · · · · · · · · · · ·	
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00180	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R18.1	ΛE	0.59567	tn CO2/hactara/waar	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.1 R18.2	AE <sub>D_area</sub>	0.59567	tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.2	AE <sub>D_product</sub>	0.02450		CO2 Annual Emissions due to the use of diesel per unit of narvested fruits  CO2 Annual Emissions due to the use of diesel per tree unit	
K10.3	AE <sub>D_tree</sub>	0.00134	tn CO2/tree/year	CO2 Annual Emissions due to the use of dieser per tree dfilt	
R19.1	ΔF	0.03399	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R19.1	AE <sub>G_area</sub>	0.00140	tn CO2/nectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R19.2	AE <sub>G_product</sub>	0.00140	tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per unit of narvested ruits  CO2 Annual Emissions due to the use of gasoline per tree unit	
K13.2	ALG_tree	0.00008	шсог/пее/уеаг	COL Filmun Emissions due to the use of gasonine per tree unit	
R20.1	ΛE	0.17444	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
1120.1	AE <sub>EL_area</sub>	0.00718	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of cuttwated area  CO3 Annual Emissions due to the use of electricity per unit of harvested fruits	
R20 2	CEL product	0.00718			
R20.2		0 00030	tn CO2/tree/year	ICO2 Annual Emissions due to the use of electricity per tree unit	
R20.2 R20.3	AE <sub>EL_tree</sub>	0.00039	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit	
_		0.00039 3.12250	tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per tree unit  CO2 Total Annual Gain per unit of cultivated area	

R21.2	TAG <sub>product</sub>	0.12845	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00700	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.38108	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.01568	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00085	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.37994	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.01563	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00085	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
				·
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	2.36149	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.09714	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00530	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 20 Agricultural practice: Use of cover crops of the Leguminosae family

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Apple
Geographical area of the cultivation:	GREECE (total)

#### **CO2 Annual Removal Capacity**

R1	1.1	ARC	<b>38,202.1563</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1	1.2	ARC	<b>18,518.4499</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	19,683.7065 tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	'als	AR <sub>BW</sub>	<b>58,442.8502</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	2 E	AS <sub>s</sub>	<b>3,734.7260</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>81,861.2827</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>62,177.5762</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

S	AE <sub>f</sub>	10,957.0366 tn CO2/year	CO2 Annual Emissions due to the use of fertilizers
i iš	AE <sub>p</sub>	<b>3,152.0986</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides
i ii 🔳	AE <sub>ff&amp;e</sub>	<b>29,549.9912</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
ω –	TAE	43,659.1263 tn CO2/year	CO2 Total Annual Emissions
		·	
4.1	AE <sub>D</sub>	26,910.2182 tn CO2/year	CO2 Annual Emissions due to the use of diesel
4.2	$AE_G$	1,456.9426 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
4.3	AE <sub>EL</sub>	1,182.8304 tn CO2/year	CO2 Annual Emissions due to the use of electricity
4.4	AE <sub>ff&amp;e</sub>	<b>29,549.9912</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
	4.2 4.3	AE <sub>p</sub> AE <sub>fise</sub> TAE  4.1 AE <sub>D</sub> 4.2 AE <sub>G</sub> 4.3 AE <sub>EL</sub>	AE <sub>p</sub> 3,152.0986 tn CO2/year  AE <sub>HSe</sub> 29,549.9912 tn CO2/year  TAE 43,659.1263 tn CO2/year  4.1 AE <sub>b</sub> 26,910.2182 tn CO2/year  4.2 AE <sub>c</sub> 1,456.9426 tn CO2/year  4.3 AE <sub>E</sub> 1,182.8304 tn CO2/year

R5.1		AG <sub>N-f_LCC</sub>	4,255.9544 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	2,828.8505 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	12,245.5992 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>19,330.4041</b> tn CO2/year	CO2 Total Annual Gain

R6.1 ARC <sub>area</sub> 3.42060 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area	
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R6.2	ARCproduct	0.14401	to CO2/to of world have	COL Appeal Demonal Connection on with of bequested fruits	(BF is included)		
R6.3	ARC <sub>product</sub>	0.14401	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits  CO2 Annual Removal Capacity per tree unit	(Br is included)		
K6.3	ARC <sub>tree</sub>	0.00463	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit			
R7.1	ARC <sub>area</sub>	1.65813	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area			
R7.2		0.06981	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of cultivated area  CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)		
R7.3	ARC <sub>product</sub>	0.00224	tn CO2/tree/year	CO2 Annual Removal Capacity per tries unit	(b) is not included)		
K/.5	ARC <sub>tree</sub>	0.00224	tii CO2/tree/year	COZ Annual kemoval Capacity per tree unit			
R8.1	TAE/TAR	0.53333	Total Annual CO2 Emissions/ Total A	nnual CO2 Removals	(BF is included)		
R8.2	TAE/TAR	0.70217		Total Annual CO2 Emissions/ Total Annual CO2 Removals			
11012	7,12, 77.11	0170227	rotary amount of Emissions, rotary	Total Annual CO2 Emissions/ Total Annual CO2 Removals (BF is not included annual CO2 Emissions/ Total Annual CO2 Removals (BF is not included annual CO2 Emissions/ Total Annual CO2 Removals (BF is not included annual CO2 Emissions/ Total Annual CO2 Removals (BF is not included annual CO2 Emissions/ Total Annual CO2 Removals (BF is not included annual CO2 Emissions/ Total Annual CO2 Emissions/ Total Annual CO2 Removals (BF is not included annual CO2 Emissions/ Total Annual C			
R9.1	TAR <sub>area</sub>	7.32982	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area			
R9.2	TAR <sub>product</sub>	0.30858	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)		
R9.3	TAR <sub>tree</sub>	0.00992	tn CO2/tree/year	CO2 Total Annual Removals per tree unit			
	uee		, , , , , , , , , , , , , , , , , , , ,				
R10.1	TAR <sub>area</sub>	5.56735	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area			
R10.2	TAR <sub>product</sub>	0.23439	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)		
R10.3	TAR <sub>tree</sub>	0.00753	tn CO2/tree/year	CO2 Total Annual Removals per tree unit			
	ucc		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
R11.1	AR <sub>BF area</sub>	1.76247	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area			
R11.2	AR <sub>BF_product</sub>	0.07420	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits			
R11.3	AR <sub>BF tree</sub>	0.00238	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit			
	bi_ucc		,				
R12.1	AR <sub>BW area</sub>	5.23294	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area			
R12.2	AR <sub>BW_product</sub>	0.22031	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits			
R12.3	AR <sub>BW tree</sub>	0.00708	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit			
	ov_acc		, , ,				
R13.1	AS <sub>S area</sub>	0.33441	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area			
R13.2	AS <sub>S_product</sub>	0.01408	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits			
R13.3	AS <sub>S tree</sub>	0.00045	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit			
	<u> </u>						
R14.1	TAE <sub>area</sub>	3.90921	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area			
R14.2	TAE <sub>product</sub>	0.16458	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits			
R14.3	TAE <sub>tree</sub>	0.00529	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit			
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R15.1	AE <sub>f area</sub>	0.98109	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area			
R15.2	AE <sub>f_product</sub>	0.04130	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits			
R15.3	AE <sub>f tree</sub>	0.00133	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit			
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R16.1	AE <sub>p_area</sub>	0.28224	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area			
R16.2	AE <sub>p_product</sub>	0.01188	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits			
R16.3	AE <sub>p tree</sub>	0.00038	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit			
R17.1	AE <sub>ff&amp;e_area</sub>	2.64589	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area			
R17.2	AE <sub>ff&amp;e_product</sub>	0.11139	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits			
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00358	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit			
R18.1	AE <sub>D_area</sub>	2.40953	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area			
R18.2	AE <sub>D_product</sub>	0.10144	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits			
R18.3	AE <sub>D_tree</sub>	0.00326	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit			
R19.1	AE <sub>G_area</sub>	0.13045	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area			
R19.2	AE <sub>G_product</sub>	0.00549	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits			
R19.3	AE <sub>G_tree</sub>	0.00018	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit			
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R20.1	AE <sub>EL_area</sub>	0.10591	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area			
R20.2	AE <sub>EL product</sub>	0.00446	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits			
R20.3	AE <sub>EL tree</sub>	0.00014	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit			
R21.1	TAG <sub>area</sub>	1.73083	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area			

R21.2	TAG <sub>product</sub>	0.07287	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00234	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.38108	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.01604	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00052	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.25329	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.01066	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00034	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	1.09646	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.04616	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00148	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 21 Agricultural practice: Use of cover crops of the Leguminosae family

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Peach
Geographical area of the cultivation:	GREECE (total)

#### **CO2 Annual Removal Capacity**

R	1.1	ARC	<b>345,783.3536</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R	1.2	ARC	<b>315,092.9503</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>30,690.4033</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	'als	AR <sub>BW</sub>	<b>403,407.7541</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	2 E	AS <sub>s</sub>	<b>4,910.8758</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>439,009.0333</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>408,318.6299</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

b. The following are defined as fallen biomass: fallen leaves, fallen fruits (naturally fallen or as a result of a thinning process), other fallen biomass (e.g. almond hulls) as well as prunings which are left in the field.

A.F.						
AE <sub>p</sub>	<b>14,828.7505</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides				
AE <sub>ff&amp;e</sub>	<b>60,620.3870</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity				
TAE	<b>93,225.6797</b> tn CO2/year	CO2 Total Annual Emissions				
AE <sub>D</sub>	54,078.6348 tn CO2/year	CO2 Annual Emissions due to the use of diesel				
$AE_G$	2,136.5813 tn CO2/year	CO2 Annual Emissions due to the use of gasoline				
AE <sub>EL</sub>	4,405.1709 tn CO2/year	CO2 Annual Emissions due to the use of electricity				
AE <sub>ff&amp;e</sub>	<b>60,620.3870</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity				
	TAE  AE <sub>D</sub> AE <sub>G</sub> AE <sub>EL</sub>	TAE         93,225.6797         tn CO2/year           AE <sub>D</sub> 54,078.6348         tn CO2/year           AE <sub>G</sub> 2,136.5813         tn CO2/year           AE <sub>E</sub> 4,405.1709         tn CO2/year				

R5.1		AG <sub>N-f_LCC</sub>	14,969.7197 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	17,910.1488 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	23,146.9701 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	٥٥	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_m}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>56,026.8386</b> tn CO2/year	CO2 Total Annual Gain

### **CO2** Removal Capacity Indexes

R6.1 ARC <sub>area</sub> 8.80242 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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R6.2	ARCproduct	0.53380	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>product</sub>	0.02004		CO2 Annual Removal Capacity per unit or narvested truits  CO2 Annual Removal Capacity per tree unit	(Br is included)
NO.3	Anctree	0.02004	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R7.1	ARC <sub>area</sub>	8.02115	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.1	ARC <sub>product</sub>	0.48642	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of cultivated area	(BF is not included)
R7.3	ARC <sub>tree</sub>	0.01826	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	(St. 15 Hot meladed)
10.5	rivotree	0.01020	ar cozytrecy year	CO2 Annual removal capacity per tree unit	
R8.1	TAE/TAR	0.21235	Total Annual CO2 Emissions/ Total Ar	nnual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.22832	Total Annual CO2 Emissions/ Total Ar		(BF is not included)
			•		
R9.1	TAR <sub>area</sub>	11.17561	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	0.67772	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.02544	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	10.39434	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	0.63034	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.02366	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	0.78127	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.04738	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.00178	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	10.26933	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	0.62276	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.02338	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
D42.4	AC	0.43504	t CO2/bb/-	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.1 R13.2	AS <sub>S_area</sub>	0.12501 0.00758	tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.3	AS <sub>S_product</sub>	0.00738	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tried units	
K13.3	AS <sub>S_tree</sub>	0.00028	п сог/пее/уеаг	COZ Almuar Storage in son as carbon or the failer biomass per tree unit	
R14.1	TAE <sub>area</sub>	2.37319	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2	TAE <sub>product</sub>	0.14392	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
R14.3	TAE <sub>tree</sub>	0.00540	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
	uee		000, 11 00, 700.		
R15.1	AE <sub>f area</sub>	0.45253	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	·
R15.2	AE <sub>f_product</sub>	0.02744	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f tree</sub>	0.00103	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
				·	
R16.1	AE <sub>p_area</sub>	0.37749	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.02289	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p_tree</sub>	0.00086	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
R17.1	AE <sub>ff&amp;e_area</sub>	1.54318	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R17.2	AE <sub>ff&amp;e_product</sub>	0.09358	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00351	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R18.1	AE <sub>D_area</sub>	1.37665	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.2	AE <sub>D_product</sub>	0.08348	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.3	AE <sub>D_tree</sub>	0.00313	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
D40.4	AF	0.05420	to 602/bt	CO3 Angust Enrictions due to the use of specifica paywrit of subtracted asso	
R19.1	AE <sub>G_area</sub>	0.05439	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R19.2	AE <sub>G_product</sub>	0.00330	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R19.3	AE <sub>G_tree</sub>	0.00012	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit	
		0.44044	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
P20 1	ΛE			CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
R20.1	AE <sub>EL_area</sub>	0.11214		CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
R20.2	AE <sub>EL_product</sub>	0.00680	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
				CO2 Annual Emissions due to the use of electricity per unit of harvested fruits CO2 Annual Emissions due to the use of electricity per tree unit	
R20.2	AE <sub>EL_product</sub>	0.00680	tn CO2/tn of yield/year		

R21.2	TAG <sub>product</sub>	0.08649	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00325	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.38108	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.02311	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00087	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
				·
R24.1	AG <sub>H_cc/m_area</sub>	0.45593	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.02765	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00104	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	0.58924	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.03573	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00134	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 22 Agricultural practice: Use of cover crops of the Leguminosae family

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece	
Species of tree crop:	Almond	
Geographical area of the cultivation:	GREECE (total)	

### **CO2 Annual Removal Capacity**

R1	1.1	ARC	<b>152,550.5079</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1	1.2	ARC	<b>82,419.0524</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>70,131.4555</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>101,010.9724</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	0 E	AS <sub>s</sub>	<b>4,165.4097</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	Rei	TAR	<b>175,307.8376</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>105,176.3821</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	15	AE <sub>f</sub>	<b>3,979.0382</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers			
R3.2	22 Sior	AE <sub>p</sub>	<b>6,555.5997</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides			
R3.3	CC	AE <sub>ff&amp;e</sub>	<b>12,222.6918</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity			
R3.4	ш	TAE	<b>22,757.3297</b> tn CO2/year	CO2 Total Annual Emissions			
	R4.1	AE <sub>D</sub>	10,563.0311 tn CO2/year	CO2 Annual Emissions due to the use of diesel			
	R4.2	AE <sub>G</sub>	723.3709 tn CO2/year	CO2 Annual Emissions due to the use of gasoline			
	R4.3	AE <sub>EL</sub>	936.2898 tn CO2/year	CO2 Annual Emissions due to the use of electricity			
	R4.4	AE <sub>ff&amp;e</sub>	12,222.6918 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity			
	R4.4		•,,	·			

R5.1		AG <sub>N-f_LCC</sub>	5,068.2177 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	5,053.1191 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	16,335.0994 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>26,456.4362</b> tn CO2/year	CO2 Total Annual Gain

CO2 Remova	al Capacity	Indexes
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R6.1 ARC <sub>area</sub> 11.47017 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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R6.2	ARCproduct	4.73520	to CO2/to of viold/voor	CO3 Annual Removal Conseits now unit of how costed fruits	(BF is included)
R6.3	ARC <sub>product</sub>	0.04113	tn CO2/trop/vier	CO2 Annual Removal Capacity per unit of harvested fruits  CO2 Annual Removal Capacity per tree unit	(Br is included)
K0.5	Anc <sub>tree</sub>	0.04113	tn CO2/tree/year	COZ Annual Kemovar Capacity per tree unit	
R7.1	ARCarea	6.19703	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	2.55831	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of barvested fruits	(BF is not included)
R7.3	ARC <sub>tree</sub>	0.02222	tn CO2/tree/year	CO2 Annual Removal Capacity per true unit	(B) is not included)
117.3	Anctree	0.02222	tii CO2/tiee/yeai	CO2 Almaa Nemoval Capacity per tree unit	
R8.1	TAE/TAR	0.12981	Total Annual CO2 Emissions/ Total Annual	ual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.21637	Total Annual CO2 Emissions/ Total Annual		(BF is not included)
R9.1	TAR <sub>area</sub>	13.18128	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	5.44159	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.04727	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	7.90814	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	3.26470	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.02836	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	5.27314	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	2.17690	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.01891	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	7.59495	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	3.13540	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.02723	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.31319	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.12930	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0.00112	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
R14.1	TAE <sub>area</sub>	1.71111	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2	TAE <sub>product</sub>	0.70639	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
R14.3	TAE <sub>tree</sub>	0.00614	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	<del> </del>
	45	0.29918			
R15.1 R15.2	AE <sub>f area</sub>				•
K15.2			tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
D4 F 3	AE <sub>f_product</sub>	0.12351	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3				·	
	AE <sub>f_product</sub> AE <sub>f_tree</sub>	0.12351 0.00107	tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit	
R16.1	$AE_{f\_product}$ $AE_{f\_tree}$ $AE_{p\_area}$	0.12351 0.00107 0.49291	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.1 R16.2	AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub>	0.12351 0.00107 0.49291 0.20349	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.1 R16.2	$AE_{f\_product}$ $AE_{f\_tree}$ $AE_{p\_area}$	0.12351 0.00107 0.49291	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.1 R16.2 R16.3	AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub>	0.12351 0.00107 0.49291 0.20349 0.00177	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit	
R16.1 R16.2 R16.3	AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub>	0.12351 0.00107 0.49291 0.20349 0.00177	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R16.1 R16.2 R16.3 R17.1 R17.2	AE <sub>f</sub> product  AE <sub>f</sub> tree  AE <sub>p</sub> area  AE <sub>p</sub> product  AE <sub>p</sub> tree  AE <sub>f</sub> tree  AE <sub>f</sub> tree  AE <sub>f</sub> tree	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R16.1 R16.2 R16.3 R17.1 R17.2	AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub>	0.12351 0.00107 0.49291 0.20349 0.00177	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R16.1 R16.2 R16.3 R17.1 R17.2 R17.3	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p product</sub> AE <sub>p tree</sub> AE <sub>f tree</sub> AE <sub>f tree</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p product</sub> AE <sub>p tree</sub> AE <sub>p tree</sub> AE <sub>ffise area</sub> AE <sub>ffise product</sub> AE <sub>ffise product</sub> AE <sub>ffise product</sub> AE <sub>ffise product</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330	tn CO2/tr of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tr of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/hectare/year tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.1 R18.2	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p product</sub> AE <sub>p tree</sub> AE <sub>p tree</sub> AE <sub>ff area</sub> AE <sub>D area</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330 0.79423 0.32788	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.1 R18.2	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p product</sub> AE <sub>p tree</sub> AE <sub>p tree</sub> AE <sub>ffise area</sub> AE <sub>ffise product</sub> AE <sub>ffise product</sub> AE <sub>ffise product</sub> AE <sub>ffise product</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330	tn CO2/tr of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tr of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/hectare/year tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p, area</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, tree</sub> AE <sub>D, area</sub> AE <sub>D, area</sub> AE <sub>D, area</sub> AE <sub>D, tree</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330 0.79423 0.32788 0.00285	tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tro of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tro of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R16.1   R16.2   R16.3   R17.1   R17.2   R17.3   R18.1   R18.2   R18.3   R19.1   R19.1	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>ff&amp;e, area</sub> AE <sub>ff&amp;e, tree</sub> AE <sub>D, area</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, tree</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330 0.79423 0.32788 0.00285	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R16.1   R16.2   R16.3   R17.1   R17.2   R17.3   R18.1   R18.2   R18.3   R19.1   R19.2   R19.2	AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_bree</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff_area</sub> AE <sub>ff_product</sub> AE <sub>ff_area</sub> AE <sub>ff_product</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330 0.79423 0.32788 0.00285 0.05439 0.02245	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R16.1   R16.2   R16.3   R17.1   R17.2   R17.3   R18.1   R18.2   R18.3   R19.1   R19.2   R19.2	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>ff&amp;e, area</sub> AE <sub>ff&amp;e, tree</sub> AE <sub>D, area</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, tree</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330 0.79423 0.32788 0.00285	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R16.1   R16.2   R16.3   R17.1   R17.2   R17.3   R18.1   R18.2   R18.3   R19.1   R19.2   R19.2	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p, area</sub> AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>f, area</sub> AE <sub>f, area</sub> AE <sub>G, area</sub> AE <sub>G, area</sub> AE <sub>G, product</sub> AE <sub>G, tree</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330 0.79423 0.32788 0.00285 0.05439 0.02245	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R16.1   R16.2   R16.3   R17.1   R17.2   R17.3   R18.1   R18.2   R18.3   R19.1   R19.2   R19.3   R19.3	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p product</sub> AE <sub>p tree</sub> AE <sub>p tree</sub> AE <sub>f tree</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330 0.79423 0.32788 0.00285	tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/troe/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>f, tree</sub> AE <sub>f, area</sub> AE <sub>f, area</sub> AE <sub>G, area</sub> AE <sub>G, product</sub> AE <sub>G, tree</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330 0.79423 0.32788 0.00285 0.05439 0.02245 0.00020	tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO3 Annual Emissions due to the use of gasoline per unit of cultivated area CO4 Annual Emissions due to the use of gasoline per unit of harvested fruits CO5 Annual Emissions due to the use of gasoline per unit of harvested fruits CO6 Annual Emissions due to the use of gasoline per unit of harvested fruits CO7 Annual Emissions due to the use of gasoline per unit of harvested fruits CO8 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R16.1   R16.2   R16.3   R17.1   R17.2   R17.3   R18.1   R18.2   R18.3   R19.1   R19.2   R19.3   R20.1   R20.2	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p product</sub> AE <sub>p tree</sub> AE <sub>p tree</sub> AE <sub>f tree</sub>	0.12351 0.00107 0.49291 0.20349 0.00177 0.91902 0.37940 0.00330 0.79423 0.32788 0.00285 0.05439 0.02245 0.00020	tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/troe/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of electricity per unit of cultivated area CO2 Annual Emissions due to the use of electricity per unit of cultivated area	

R21.2	TAG <sub>product</sub>	0.82121	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00713	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.38108	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.15732	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00137	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.37994	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.15685	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00136	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	1.22823	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.50705	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00440	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 23 Agricultural practice: Use of prunings as wood fuel

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Olive
Geographical area of the cultivation:	GREECE (total)

#### **CO2 Annual Removal Capacity**

R:	1.1	ARC	<b>5,231,357.6446</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R:	1.2	ARC	<b>3,341,683.9421</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	1,889,673.7025 tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>4,842,883.1388</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	1 CO	AS <sub>s</sub>	<b>54,879.4248</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Rei	TAR	<b>6,787,436.2662</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>4,897,762.5636</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 was ablance between (a) the total quantity of CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

AE <sub>n</sub>		
ALp	<b>492,125.8637</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides
AE <sub>ff&amp;e</sub>	<b>428,036.9286</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
TAE	<b>1,556,078.6215</b> tn CO2/year	CO2 Total Annual Emissions
AE <sub>D</sub>	365,366.0711 tn CO2/year	CO2 Annual Emissions due to the use of diesel
$AE_G$	55,414.5324 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
AE <sub>EL</sub>	7,256.3251 tn CO2/year	CO2 Annual Emissions due to the use of electricity
AE <sub>ff&amp;e</sub>	<b>428,036.9286</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
	TAE  AE <sub>D</sub> AE <sub>G</sub> AE <sub>EL</sub>	TAE         1,556,078.6215         tn CO2/year           AE <sub>D</sub> 365,366.0711         tn CO2/year           AE <sub>G</sub> 55,414.5324         tn CO2/year           AE <sub>E</sub> 7,256.3251         tn CO2/year

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	$AG_WF$	1,321,932.4992 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>1,321,932.4992</b> tn CO2/year	CO2 Total Annual Gain

R6.1 ARC <sub>area</sub> 6.41827 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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R6.2	ARCproduct	1.53072	to CO2/to of yield/year	CO3 Appeal Democral Consistency unit of horizontal furite	(BF is included)
R6.3	ARC <sub>product</sub>	0.03702	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits  CO2 Annual Removal Capacity per tree unit	(Br is included)
NO.3	Arretree	0.03702	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R7.1	ARCarea	4.09986	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	0.97779	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of cuttwated area	(BF is not included)
R7.3	ARC <sub>tree</sub>	0.02365	tn CO2/tree/year	CO2 Annual Removal Capacity per unit of halvested natis	(B) is not included)
1.7.5	Arretree	0.02303	til CO2/ tree/ year	CO2 Almaar Removal Capacity per tree unit	
R8.1	TAE/TAR	0.22926	Total Annual CO2 Emissions/ Total Annual	ual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.31771	Total Annual CO2 Emissions/ Total Annual		(BF is not included)
	,				
R9.1	TAR <sub>area</sub>	8.32740	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	1.98603	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.04803	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	6.00899	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	1.43311	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.03466	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	2.31841	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.55293	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.01337	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	5.94166	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	1.41705	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.03427	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.06733	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.01606	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0.00039	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
R14.1	TAE <sub>area</sub>	1.90913	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2	TAE <sub>product</sub>	0.45532	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
R14.3	TAE <sub>tree</sub>	0.01101	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
				,	
	A.F.	0.70000		COA Annual Emissions due to the use of factilizers are unit of subtracted area	
	AE <sub>f_area</sub>	0.78020	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	<u> </u>
R15.2	AE <sub>f_product</sub>	0.18607	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.2				·	
R15.2 R15.3	$AE_{f\_product}$ $AE_{f\_tree}$	0.18607 0.00450	tn CO2/trof yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit	
R15.2 R15.3 R16.1	$AE_{f\_product}$ $AE_{f\_tree}$ $AE_{p\_area}$	0.18607 0.00450 0.60378	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R15.2 R15.3 R16.1 R16.2	AE <sub>f_product</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub>	0.18607 0.00450 0.60378 0.14400	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R15.2 R15.3 R16.1 R16.2	$AE_{f\_product}$ $AE_{f\_tree}$ $AE_{p\_area}$	0.18607 0.00450 0.60378	tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R15.2 R15.3 R16.1 R16.2 R16.3	AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub>	0.18607 0.00450 0.60378 0.14400 0.00348	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3	AE <sub>f_tree</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub>	0.18607 0.00450 0.60378 0.14400 0.00348	tn CO2/tr of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2	AE <sub>f product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff, tree</sub>	0.18607 0.00450 0.60378 0.14400 0.00348 0.52515 0.12525	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2	AE <sub>f_tree</sub> AE <sub>f_tree</sub> AE <sub>p_area</sub> AE <sub>p_product</sub> AE <sub>p_tree</sub>	0.18607 0.00450 0.60378 0.14400 0.00348	tn CO2/tr of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3	AE <sub>f</sub> product  AE <sub>f</sub> tree  AE <sub>p, area</sub> AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff&amp;e, area</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, tree</sub>	0.18607 0.00450 0.60378 0.14400 0.00348 0.52515 0.12525 0.00303	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1	AE <sub>I product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p product</sub> AE <sub>p product</sub> AE <sub>p product</sub> AE <sub>H&amp;e area</sub> AE <sub>H&amp;e product</sub>	0.18607 0.00450 0.60378 0.14400 0.00348 0.52515 0.12525 0.00303	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2	AE <sub>I, product</sub> AE <sub>f, tree</sub> AE <sub>p, area</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>p, product</sub> AE <sub>HRe, area</sub> AE <sub>HRe, product</sub> AE <sub>HRe, tree</sub> AE <sub>D, product</sub>	0.18607 0.00450 0.60378 0.14400 0.00348 0.52515 0.12525 0.00303 0.44826 0.10691	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2	AE <sub>I product</sub> AE <sub>f tree</sub> AE <sub>p area</sub> AE <sub>p product</sub> AE <sub>p product</sub> AE <sub>p product</sub> AE <sub>H&amp;e area</sub> AE <sub>H&amp;e product</sub>	0.18607 0.00450 0.60378 0.14400 0.00348 0.52515 0.12525 0.00303	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R15.2 R15.3 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3	AE <sub>f</sub> product  AE <sub>f</sub> tree  AE <sub>p</sub> area  AE <sub>p</sub> product  AE <sub>p</sub> product  AE <sub>p</sub> tree  AE <sub>ffike</sub> area  AE <sub>ffike</sub> product	0.18607 0.00450 0.60378 0.14400 0.00348 0.52515 0.12525 0.00303 0.44826 0.10691 0.00259	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.1	AE <sub>f</sub> product  AE <sub>f</sub> tree  AE <sub>D</sub> area  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>D</sub> tree  AE <sub>H&amp;e</sub> area  AE <sub>H&amp;e</sub> product  AE <sub>D</sub> area  AE <sub>D</sub> product  AE <sub>D</sub> area  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>D</sub> product	0.18607 0.00450 0.60378 0.14400 0.00348 0.52515 0.12525 0.00303 0.44826 0.10691 0.00259	tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2	AE <sub>I product</sub> AE <sub>I wee</sub> AE <sub>P area</sub> AE <sub>P product</sub> AE <sub>P product</sub> AE <sub>P product</sub> AE <sub>B product</sub> AE <sub>B area</sub> AE <sub>B area</sub> AE <sub>D product</sub>	0.18607 0.00450 0.60378 0.14400 0.00348 0.52515 0.12525 0.00303 0.44826 0.10691 0.00259 0.06799 0.01621	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO3 Annual Emissions due to the use of diesel per unit of harvested fruits CO4 Annual Emissions due to the use of diesel per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2	AE <sub>f</sub> product  AE <sub>f</sub> tree  AE <sub>D</sub> area  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>D</sub> tree  AE <sub>H&amp;e</sub> area  AE <sub>H&amp;e</sub> product  AE <sub>D</sub> area  AE <sub>D</sub> product  AE <sub>D</sub> area  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>D</sub> product	0.18607 0.00450 0.60378 0.14400 0.00348 0.52515 0.12525 0.00303 0.44826 0.10691 0.00259	tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>I</sub> product  AE <sub>f</sub> tree  AE <sub>p</sub> area  AE <sub>p</sub> product  AE <sub>p</sub> product  AE <sub>p</sub> tree  AE <sub>IRRe</sub> area  AE <sub>IRRe</sub> product  AE <sub>IRRe</sub> product  AE <sub>IRRe</sub> product  AE <sub>D</sub> area  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>D</sub> area  AE <sub>D</sub> product  AE <sub>D</sub> area	0.18607 0.00450 0.60378 0.14400 0.00348 0.52515 0.12525 0.00303 0.44826 0.10691 0.00259 0.06799 0.01621	tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit	
R15.2 R15.3 R16.1 R16.2 R16.3 R17.1 R17.2 R17.3 R18.1 R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>I</sub> product  AE <sub>I</sub> tree  AE <sub>D</sub> area  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>B</sub> product  AE <sub>HRe</sub> area  AE <sub>HRe</sub> product  AE <sub>HRe</sub> product  AE <sub>D</sub> area  AE <sub>D</sub> product  AE <sub>D</sub> product	0.18607 0.00450 0.60378 0.14400 0.00348 0.52515 0.12525 0.00303 0.44826 0.10691 0.00259 0.06799 0.01621 0.00039	tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits CO2 Annual Emissions due to the use of fertilizers per tree unit  CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
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R21.2	TAG <sub>product</sub>	0.38680	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00935	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
				·
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	1.62186	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.38680	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00935	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 24 Agricultural practice: Use of prunings as wood fuel

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Orange
Geographical area of the cultivation:	GREECE (total)

#### **CO2 Annual Removal Capacity**

R1	1.1	ARC	<b>313,116.8603</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1	1.2	ARC	257,751.7757 tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>55,365.0845</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	'als	AR <sub>BW</sub>	<b>340,888.6214</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	2 E	AS <sub>s</sub>	<b>6,527.4504</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Re	TAR	<b>402,781.1563</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>347,416.0718</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	ıs	AE <sub>f</sub>	<b>37,063.1211</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers
R3.2	Si Si	AE <sub>p</sub>	25,353.3549 tn CO2/year	CO2 Annual Emissions due to the use of pesticides
R3.3	S ig	AE <sub>ff&amp;e</sub>	<b>27,247.8201</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
R3.4	ш	TAE	89,664.2960 tn CO2/year	CO2 Total Annual Emissions
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	R4.1	AE <sub>D</sub>	20,184.8514 tn CO2/year	CO2 Annual Emissions due to the use of diesel
	R4.2	AE <sub>G</sub>	1,151.9053 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
	R4.3	AE <sub>EL</sub>	5,911.0634 tn CO2/year	CO2 Annual Emissions due to the use of electricity
	R4.4	AE <sub>ff&amp;e</sub>	<b>27,247.8201</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	120,031.7677 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	٥٥	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_m}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>120,031.7677</b> tn CO2/year	CO2 Total Annual Gain

CO2 Remova	al Capacity	Indexes
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R6.1 ARC <sub>area</sub> 9.24032 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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March   Select   Se	R6.2	ARCproduct	0.39912	to CO2/to of yield have	CO2 Annual Removal Canacity par unit of harvested fruits	(BF is included)
1.   All-Part   7.266   TaCO/Partial/part   CO Annual Partonius Capatily per cut of calibration as a construction of the many reviewed parts   All-Parts   All-P						(BF is included)
Martin   M	K0.5	Arctree	0.02072	tii CO2/tree/year	CO2 Affilian Removar Capacity per tree unit	
Martin   M	R7 1	ARC	7 60645	tn CO2/hectare/year	CO2 Annual Removal Canacity per unit of cultivated area	
ABACO	_					(BE is not included)
1.   1.   1.   1.   1.   1.   1.   1.	_					(b) is not included,
18.2   1.74   1.84   1.85	107.5	Arretree	0.01700	tir eozytrecy year	COZ ANNUAL NETWORK DEPORT OF CHIEF	
18.2   1.74   1.84   1.85	R8.1	TAE/TAR	0.22261	Total Annual CO2 Emissions/ Total Ann	ual CO2 Removals	(BE is included)
1						` '
187   1				•		
10.00   TAB_max	R9.1	TAR <sub>area</sub>	11.88638	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
10.00   TAB_max	R9.2	TAR <sub>product</sub>	0.51341	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
TAP_mark   0.4229   10.0072 for dysidyyear   CO2 tend Annual Removal gar and of Parameter funds   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the production of furth Bonnas per and of Cultivated area   CO2 Annual Removal (as to the use of furtilistics per	R9.3		0.02666	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
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R18.2 AE <sub>D_product</sub> 0.02573 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  R19.1 AE <sub>G_product</sub> 0.03399 tn CO2/hectare/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  R19.2 AE <sub>G_product</sub> 0.00147 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  R19.3 AE <sub>G_tree</sub> 0.00008 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  R20.1 AE <sub>E_tree</sub> 0.17444 tn CO2/hectare/year CO2 Annual Emissions due to the use of gasoline per tree unit  R20.2 AE <sub>E_tree</sub> 0.0753 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  R20.3 AE <sub>E_tree</sub> 0.00039 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  R20.3 AE <sub>E_tree</sub> 0.00039 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	R17.3		0.00180	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
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R19.2 AE <sub>G, product</sub> 0.00147 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  R19.3 AE <sub>G, tree</sub> 0.00008 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  R20.1 AE <sub>EL, product</sub> 0.17444 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  R20.2 AE <sub>EL, product</sub> 0.00753 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  R20.3 AE <sub>EL, product</sub> 0.00039 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	R18.3		0.00134	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
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R20.3 AE <sub>EL,tree</sub> 0.00039 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit					The state of the s	
R21.1 TAG <sub>area</sub> 3.54223 tn CO2/hectare/year CO2 Total Annual Gain per unit of cultivated area	R20.3	AE <sub>EL_tree</sub>	0.00039	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit	
R21.1 TAG <sub>area</sub> 3.54223 tn CO2/hectare/year CO2 Total Annual Gain per unit of cultivated area						
	R21.1	TAG <sub>area</sub>	3.54223	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area	

R21.2	TAG <sub>product</sub>	0.15300	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00794	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
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R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
				·
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	3.54223	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.15300	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00794	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
				·
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 25 Agricultural practice: Use of prunings as wood fuel

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Apple
Geographical area of the cultivation:	GREECE (total)

### **CO2 Annual Removal Capacity**

R	1.1	ARC	<b>70,713.8138</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R	1.2	ARC	<b>51,967.4267</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>18,746.3871</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	als .	AR <sub>BW</sub>	<b>101,302.4475</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	100 E	AS <sub>s</sub>	1,408.9104 tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	Rei	TAR	<b>121,457.7450</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>102,711.3579</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	S	AE <sub>f</sub>	<b>15,212.9910</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers	
R3.2	22 sion	AE <sub>p</sub>	<b>5,980.9490</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides	
R3.3	CC	AE <sub>ff&amp;e</sub>	<b>29,549.9912</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	
R3.4	ш	TAE	<b>50,743.9312</b> tn CO2/year	CO2 Total Annual Emissions	
			·		
	R4.1	AE <sub>D</sub>	26,910.2182 tn CO2/year	CO2 Annual Emissions due to the use of diesel	
	R4.2	$AE_G$	1,456.9426 tn CO2/year	CO2 Annual Emissions due to the use of gasoline	
	R4.3	AE <sub>EL</sub>	1,182.8304 tn CO2/year	CO2 Annual Emissions due to the use of electricity	
	R4.4	AE <sub>ff&amp;e</sub>	<b>29,549.9912</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	
				-	

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5		AG <sub>WF</sub>	55,105.1965 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_m}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>55,105.1965</b> tn CO2/year	CO2 Total Annual Gain

R6.1 ARC <sub>area</sub> 6.33168 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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Section 1985   Section   S	R6.2	ARCproduct	0.27989	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
AFE, 45318 IV COD-metanolyses 100 Area al increased group or until of collevant alreased for the second group or until of collevant alreased for the second group or until all annexes for the second group or until annexes for the second group or until all annexes for the second group or until annexes for the second group or until all annexes for the second group or until annexes for the second group or until annexes for the second group or until a						(Br is included)
10   ACC.   0.0000	K0.5	Anc <sub>tree</sub>	0.00657	tii CO2/tree/year	COZ Affiliari Kemiovai Capacity per tree unit	
10   ACC.   0.0000	D7 1	APC	A 6521A	tn CO2/hectare/year	CO2 Annual Removal Canacity per unit of cultivated area	
Second						(BE is not included)
Total   Total   Total   Total   Annual CO2   Encoding   Total Annual CO2   Encoding   Total Annual Removals per unit of cultivated area						(b) is not included)
1. Trail Annual COS Principatory (100 pt 200 pt 100	1.7.5	Arree	0.00030	til CO2/tree/year	COZ Almad Nemoval Capacity per tree unit	
1. Trail Annual COS Principatory (100 pt 200 pt 100	R8.1	TAF/TAR	0.41779	Total Annual CO2 Emissions / Total A	nnual CO2 Removals	(BE is included)
1 YAL	R8.2					` '
1		,				
10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Test Annual Removade per the unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Test Annual Removade per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Test Annual Removade per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Test Annual Removade per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad area to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Storage in oil as carbon of the faller brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Storage in oil as carbon of the faller brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Storage in oil as carbon of the faller brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Storage in oil as carbon of the faller brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10613 in CO2/hectser/year CO2 Annual Storage in oil as carbon of the faller brow	R9.1	TAR <sub>area</sub>	10.87526	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Test Annual Removade per the unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Test Annual Removade per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Test Annual Removade per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Test Annual Removade per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad are to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Removad area to the production of fruit brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Storage in oil as carbon of the faller brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Storage in oil as carbon of the faller brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Storage in oil as carbon of the faller brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10612 in CO2/hectser/year CO2 Annual Storage in oil as carbon of the faller brownse per unit of cultivated area   10.1 TAR <sub>ess</sub> 0.10613 in CO2/hectser/year CO2 Annual Storage in oil as carbon of the faller brow	R9.2	TAR <sub>product</sub>	0.48074	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
130 TAL control 0.40554 in CO27not yieldylear CO2 Total Annual Removals per unt of harvested rists 131 All control 1 CO27not yieldylear CO2 Total Annual Removal gas to the production of first biomass per unt of cultivated area 132 All control 1 CO27not yieldylear CO27not Annual Removal due to the production of first biomass per unt of riversed rists 133 All control 1 CO27not yieldylear CO27not Annual Removal due to the production of first biomass per unt of riversed rists 134 All control 1 CO27not yieldylear CO27not Annual Removal due to the production of riversed rists 135 All control 1 CO27not yieldylear CO27not Annual Removal due to the production of vious biomass per unt of annual control and the control of vious biomass per unt of annual control and the control of vious biomass per unt of annual control and the control of vious biomass per unt of annual control of vio	R9.3		0.01472		CO2 Total Annual Removals per tree unit	
130 TAL control 0.40554 in CO27not yieldylear CO2 Total Annual Removals per unt of harvested rists 131 All control 1 CO27not yieldylear CO2 Total Annual Removal gas to the production of first biomass per unt of cultivated area 132 All control 1 CO27not yieldylear CO27not Annual Removal due to the production of first biomass per unt of riversed rists 133 All control 1 CO27not yieldylear CO27not Annual Removal due to the production of first biomass per unt of riversed rists 134 All control 1 CO27not yieldylear CO27not Annual Removal due to the production of riversed rists 135 All control 1 CO27not yieldylear CO27not Annual Removal due to the production of vious biomass per unt of annual control and the control of vious biomass per unt of annual control and the control of vious biomass per unt of annual control and the control of vious biomass per unt of annual control of vio						
132 TA <sub>Restanti</sub> 0.4064 in CO2/Tee/perfect CO2 Total Annual Removals per unit of harvested must 133 TA <sub>Restanti</sub> 0.0124 in CO2/Tee/perfect CO2 Total Annual Removal due to the production of fruit biomass per unit of cultivated area 134 A <sub>Restantial</sub> 0.0024 in CO2/Tee/perfect CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area 135 A <sub>Restantial</sub> 0.0027 in CO2/Tee/perfect CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area 136 A <sub>Restantial</sub> 0.0027 in CO2/Tee/perfect CO2 Annual Removal due to the production of fruit biomass per unit of fruit biomass per unit of cultivated area 136 A <sub>Restantial</sub> 0.0027 in CO2/Tee/perfect CO2 Annual Removal due to the production of word biomass per area of an annual cultivated area 137 A <sub>Restantial</sub> 0.0027 in CO2/Tee/perfect CO2 Annual Removal due to the production of word biomass per unit of cultivated area 138 A <sub>Restantial</sub> 0.0028 in CO2/Tee/perfect CO2 Annual Removal due to the production of word biomass per unit of cultivated area 139 A <sub>Restantial</sub> 0.0028 in CO2/Tee/perfect CO2 Annual Storage in soil as carbon of the faller biomass per unit of cultivated area 130 A <sub>Restantial</sub> 0.0028 in CO2/Tee/perfect CO2 Annual Storage in soil as carbon of the faller biomass per unit of cultivated area 130 A <sub>Restantial</sub> 0.0028 in CO2/Tee/perfect CO2 Annual Storage in soil as carbon of the faller biomass per unit of cultivated area 131 A <sub>Restantial</sub> 0.0003 in CO2/Tee/perfect CO2 Annual Storage in soil as carbon of the faller biomass per unit of cultivated area 132 A <sub>Restantial</sub> 0.0003 in CO2/Tee/perfect CO2 Annual Storage in soil as carbon of the faller biomass per unit of cultivated area 133 A <sub>Restantial</sub> 0.0003 in CO2/Tee/perfect CO2 Annual Storage in soil as carbon of the faller biomass per unit of cultivated area 134 A <sub>Restantial</sub> 0.0003 in CO2/Tee/perfect CO2 Annual Storage in soil as carbon of the faller biomass per unit of cultivated area 135 A <sub>Restantial</sub> 0.0003 in CO2/Tee/perfect CO2 Annual Storage in soil as carbon of t	R10.1	TAR <sub>area</sub>	9.19672	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
10. 1 Aligner 1. 2012 An in CO2/Teckyper 1 CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area 1. 2012 Annual Removal due to the production of fruit biomass per unit of cultivated area 1. 2012 Annual Removal due to the production of fruit biomass per unit of harvested fruits 1. 2012 Annual Removal due to the production of fruit biomass per unit of harvested fruits 1. 2012 Annual Removal due to the production of fruit biomass per unit of harvested fruits 1. 2012 Annual Removal due to the production of fruit biomass per unit of harvested fruits 1. 2012 Annual Removal due to the production of wood biomass per unit of harvested fruits 1. 2012 Annual Removal due to the production of wood biomass per unit of harvested fruits 1. 2012 Annual Removal due to the production of wood biomass per unit of harvested fruits 1. 2012 Annual Removal due to the production of wood biomass per unit of harvested fruits 1. 2012 Annual Removal due to the production of wood biomass per unit of harvested fruits 1. 2012 Annual Removal due to the production of wood biomass per unit of harvested fruits 1. 2012 Annual Removal due to the production of wood biomass per unit of cultivated area 1. 2012 Annual Removal due to the production of wood biomass per unit of harvested fruits 1. 2012 Annual Removal due to the production of wood biomass per unit of cultivated area 1. 2012 Annual Removal due to the production of wood biomass per unit of cultivated area 1. 2012 Annual Removal due to the production of wood biomass per unit of cultivated area 1. 2012 Annual Removal due to the production of wood biomass per unit of cultivated area 1. 2012 Annual Removal due to the unit of cultivated area 1. 2012 Annual Removal due to the unit of cultivated area 1. 2012 Annual Removal due to the unit of cultivated area 1. 2012 Annual Removal due to the unit of cultivated area 1. 2012 Annual Removal due to the unit of cultivated area 1. 2012 Annual Removal due to the unit of cultivated area 1. 2012 Annual Removal due to the unit o	R10.2	TAR <sub>product</sub>	0.40654			(BF is not included)
132 All process of 201220 in 0.02/her press of 202 Annual Removal due to the production of furth blomass per unit of cultivated area  133 All process of 2012 in 0.02/her press of 202 Annual Removal due to the production of wood blomass per unit of cultivated area  134 All process of 2012 in 0.02/her press of 202 Annual Removal due to the production of wood blomass per unit of cultivated area  135 All process of 202 in 0.02/her press of 202 Annual Removal due to the production of wood blomass per unit of cultivated area  136 All process of 202 in 0.02/her press of 202 Annual Removal due to the production of wood blomass per unit of cultivated area  137 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per unit of cultivated area  138 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per tree unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Emissions per unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Emissions of 202 annual Emissions per unit of cultivated area  139 All press of 202 in 0.02/her press of 202 Annual Emissions due to the use of Petiticines per unit of unitivated area  139 All press of 202 in 0.02/her press of 202 Annual Emissions due to the use of petiticines per unit of unitivated area  139 All press of 202 in 0.02/her press of 202 Annual Emissions due to the use of petiticines per unit of cultivated area  139 All press o	R10.3		0.01244			
132 All process of 201220 in 0.02/her press of 202 Annual Removal due to the production of furth blomass per unit of cultivated area  133 All process of 2012 in 0.02/her press of 202 Annual Removal due to the production of wood blomass per unit of cultivated area  134 All process of 2012 in 0.02/her press of 202 Annual Removal due to the production of wood blomass per unit of cultivated area  135 All process of 202 in 0.02/her press of 202 Annual Removal due to the production of wood blomass per unit of cultivated area  136 All process of 202 in 0.02/her press of 202 Annual Removal due to the production of wood blomass per unit of cultivated area  137 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per unit of cultivated area  138 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Storage in soil as carbon of the faller blomass per tree unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Emissions per unit of cultivated area  139 All process of 202 in 0.02/her press of 202 Annual Emissions of 202 annual Emissions per unit of cultivated area  139 All press of 202 in 0.02/her press of 202 Annual Emissions due to the use of Petiticines per unit of unitivated area  139 All press of 202 in 0.02/her press of 202 Annual Emissions due to the use of petiticines per unit of unitivated area  139 All press of 202 in 0.02/her press of 202 Annual Emissions due to the use of petiticines per unit of cultivated area  139 All press o						<u> </u>
131 All your Control of the Control	R11.1	AR <sub>BF_area</sub>	1.67854	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
After process of the Control of the	R11.2				CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
ABus process of 2015 15 (CO2/Institute/pier) CO2 Annual Femoval due to the production of veod biomass per unit of cultivated area co2 Annual Femoval due to the production of veod biomass per unit of Anvested fruits (CO2/Institute) and (CO2/Institute) area co2 Annual Femoval due to the production of veod biomass per unit of Anvested fruits (CO2/Institute) and (CO2/Institute) area co2 Annual Femoval due to the production of veod biomass per unit of Anvested fruits (CO2/Institute) area co2 Annual Storage in soil as carbon of the fallen biomass per unit of Co2/Institute) area co2 Annual Storage in soil as carbon of the fallen biomass per unit of Co2/Institute) area co2 Annual Storage in soil as carbon of the fallen biomass per unit of Co2/Institute) area co2 Annual Storage in soil as carbon of the fallen biomass per unit of Anvested fruits (CO2/Institute) area co2 Annual Storage in soil as carbon of the fallen biomass per unit of Co2/Institute) area co2 Annual Storage in soil as carbon of the fallen biomass per unit of Co2/Institute) area co2 Annual Storage in soil as carbon of the fallen biomass per unit of Co2/Institute) area co2 Annual Emissions per unit of Instituted area co2 Annual Emissions per unit of Co2/Instituted area co2 Annual Emissions per unit of Instituted area co2 Annual Emissions per unit of Co2/Instituted area co2 Annual Emissions due to the use of fertilizers per unit of Co2/Instituted area co2 Annual Emissions due to the use of fertilizers per unit of Co2/Instituted area co2 Annual Emissions due to the use of fertilizers per unit of cultivated area co2 Annual Emissions due to the use of fertiliz	R11.3				CO2 Annual Removal due to the production of fruit biomass per tree unit	
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222 ARIGO 1997 10 60000 (CC) Annual Removal due to the production of vocal bornass per unit of harvested finits 233 ARIGO 1998 10 12215 11 CO2/hectare/year (CC) Annual Removal due to the production of vocal bornass per unit of cultivated area 234 ARIGO 1998 10 12215 11 CO2/hectare/year (CC) Annual Storage in soil as carbon of the fallen bornass per unit of cultivated area 235 ARIGO 1997 11 CO2/hectare/year (CC) Annual Storage in soil as carbon of the fallen bornass per unit of tharvested finits 236 ARIGO 1997 11 CO2/hectare/year (CC) Annual Storage in soil as carbon of the fallen bornass per unit of tharvested finits 237 ARIGO 1997 11 CO2/hectare/year (CC) Annual Storage in soil as carbon of the fallen bornass per unit of tharvested finits 238 ARIGO 1998 11 CO2/hectare/year (CC) Annual Emissions per unit of tharvested finits 239 ARIGO 1998 11 CO2/hectare/year (CC) Annual Emissions per unit of tharvested finits 230 ARIGO 1998 11 CO2/hectare/year (CC) Annual Emissions see to the use of fertilizers per unit of Annual Emissions due to the use of persitides per unit of Annual E	R12.1	AR <sub>BW area</sub>	9.07057	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
133 AS <sub>perior</sub> 0.01327 to CO2/tree/peri CO2 Annual Removal due to the production of wood bownsas per tree unit 134 AS <sub>perior</sub> 0.0265 to CO2/tree/peri CO2 Annual Storage in soil as carbon of the fallen bornass per unit of cultivated area 135 AS <sub>perior</sub> 0.00017 to CO2/tree/peri CO2 Annual Storage in soil as carbon of the fallen bornass per unit of harvested fruits 136 AS <sub>perior</sub> 0.00017 to CO2/tree/peri CO2 Annual Storage in soil as carbon of the fallen bornass per unit of harvested fruits 137 AS <sub>perior</sub> 0.00015 to CO2/tree/peri CO2 Annual Storage in soil as carbon of the fallen bornass per tree unit 138 TAS <sub>perior</sub> 0.00015 to CO2/tree/peri CO2 Annual Emissions per unit of harvested fruits 139 TAS <sub>perior</sub> 0.00015 to CO2/tree/peri CO2 Annual Emissions per tree unit 130 TAS <sub>perior</sub> 0.00015 to CO2/tree/peri CO2 Annual Emissions per tree unit 131 TAS <sub>perior</sub> 0.00015 to CO2/tree/peri CO2 Annual Emissions due to the use of fertilkers per unit of cultivated area 130 TAS <sub>perior</sub> 0.00018 to CO2/tree/peri CO2 Annual Emissions due to the use of fertilkers per unit of cultivated area 131 TAS <sub>perior</sub> 0.00018 to CO2/tree/peri CO2 Annual Emissions due to the use of fertilkers per unit of cultivated area 132 TAS <sub>perior</sub> 0.00018 to CO2/tree/peri CO2 Annual Emissions due to the use of fertilkers per unit of cultivated area 133 TAS <sub>perior</sub> 0.00018 to CO2/tree/peri CO2 Annual Emissions due to the use of fertilkers per unit of cultivated area 134 TAS <sub>perior</sub> 0.00007 to CO2/tree/peri CO2 Annual Emissions due to the use of fertilkers per unit of cultivated area 135 TAS <sub>perior</sub> 0.00007 to CO2/tree/peri CO2 Annual Emissions due to the use of fertilkers per unit of cultivated area 135 TAS <sub>perior</sub> 0.00007 to CO2/tree/peri CO2 Annual Emissions due to the use of festilkers per unit of cultivated area 136 TAS <sub>perior</sub> 0.00007 to CO2/tree/peri CO2 Annual Emissions due to the use of festilkers per unit of cultivated area 137 TAS <sub>perior</sub> 0.00007 to CO2/tree/peri CO2 Annual Emissions due to the use of festilkers per unit of cultivated area 138 TAS	R12.2		0.40096	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
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132 AS_puters 133 AS_puters 134 CO2/Individe/year 135 AS_puters 135 AS_puters 136 TAE_puters 136 TAE_puters 137 AS_puters 138 TAE_puters 139		500_000		,	·	
AS 3.5.10	R13.1	AS <sub>s area</sub>	0.12615	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
1.1.1 TAF process	R13.2		0.00558	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
TAE <sub>protect</sub> 4.54358 to CO2/hectare/year CO2 Total Annual Emissions per unit of cultivated area  1.1 TAE <sub>protect</sub> 0.20095 to CO2/hor dy'eld/year CO2 Total Annual Emissions per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.00615 to CO2/hectare/year CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area  1.1 TAE <sub>protect</sub> 0.00615 to CO2/hoctare/year CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area  1.1 TAE <sub>protect</sub> 0.00621 to CO2/hoctare/year CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.00621 to CO2/hoctare/year CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.00828 to CO2/hoctare/year CO2 Annual Emissions due to the use of pettilizers per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.00828 to CO2/hoctare/year CO2 Annual Emissions due to the use of pettilizers per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.00828 to CO2/hoctare/year CO2 Annual Emissions due to the use of pettilizers per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.00828 to CO2/hoctare/year CO2 Annual Emissions due to the use of pettilizers per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.00828 to CO2/hoctare/year CO2 Annual Emissions due to the use of pettilizers per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.00828 to CO2/hoctare/year CO2 Annual Emissions due to the use of fostil fuels & electricity per unit of cultivated area  1.1 TAE <sub>protect</sub> 0.11696 to CO2/hoctare/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.11696 to CO2/hoctare/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.11695 to CO2/hoctare/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.11695 to CO2/hoctare/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  1.1 TAE <sub>protect</sub> 0.11695 to CO2/hoctare/year CO2	13.3		0.00017	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
14.2 TAE_polat 0.2085 tn CO2/tn of yield/year CO2 Total Annual Emissions per unit of harvested fruits 14.3 TAE_polat 0.00615 tn CO2/thee/year CO2 Annual Emissions per tree unit of cultivated area 15.1 AE_polat 0.00612 tn CO2/thee/year CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area 15.2 AE_polated 0.00602 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits 15.3 AE_polated 0.00602 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area 16.4 AE_polated 0.00353 tn CO2/tnee/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area 16.4 AE_polated 0.00356 tn CO2/tnee/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area 16.5 AE_polated 0.00357 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area 17.1 AE_polated 0.00356 tn CO2/tnee/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area 17.2 AE_polated 0.00356 tn CO2/tnee/year CO2 Annual Emissions due to the use of festilizers per unit of cultivated area 17.3 AE_polated 0.00356 tn CO2/tnee/year CO2 Annual Emissions due to the use of festilizers per unit of cultivated area 17.4 AE_polated 0.00358 tn CO2/tnee/year CO2 Annual Emissions due to the use of fessil fuels & electricity per unit of cultivated area 17.2 AE_polated 0.00358 tn CO2/tnee/year CO2 Annual Emissions due to the use of fessil fuels & electricity per unit of Annual Emissions due to the use of fessil fuels & electricity per unit of Annual Emissions due to the use of fessil fuels & electricity per unit of Annual Emissions due to the use of fessil fuels & electricity per unit of Annual Emissions due to the use of fessil fuels & electricity per unit of Annual Emissions due to the use of fessil fuels & electricity per unit of Annual Emissions due to the use of fessil fuels & electricity per unit of cultivated area 17.4 AE_polated 0.00356 tn CO2/tnee/year						
Table 1.32 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	R14.1	TAE <sub>area</sub>	4.54358	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
Table 1.32 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	R14.2	TAEproduct	0.20085	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
AE <sub>1 prodect</sub> 0.06021 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits  AE <sub>2 prodect</sub> 0.00184 tn CO2/tree/year CO2 Annual Emissions due to the use of fertilizers per tree unit  AE <sub>2 prodect</sub> 0.00287 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  102 Annual Emissions due to the use of pesticides per unit of harvested fruits  103 AE <sub>3 prodect</sub> 0.002867 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  104 AE <sub>10 prodect</sub> 0.00022 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  105 AE <sub>3 prodect</sub> 0.00022 tn CO2/tree/year CO2 Annual Emissions due to the use of possif fuels & electricity per unit of cultivated area  106 AE <sub>3 prodect</sub> 0.11696 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  107 AE <sub>10 prodect</sub> 0.00358 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  108 AE <sub>3 prodect</sub> 0.00358 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  108 AE <sub>3 prodect</sub> 0.00358 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  109 AE <sub>4 prodect</sub> 0.00551 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of diesel per unit of the use of diesel per unit of cultivated area  109 AE <sub>4 prodect</sub> 0.0057 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  100 AE <sub>4 prodect</sub> 0.0057 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  109 AE <sub>4 prodect</sub> 0.0057 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  100 AE <sub>4 prodect</sub> 0.0058 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  100 AE <sub>4 prodect</sub> 0.0058 tn CO2/tree/year CO2 Annual E	R14.3	TAE <sub>tree</sub>	0.00615	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	
AE <sub>1 prodect</sub> 0.06021 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits  AE <sub>2 prodect</sub> 0.00184 tn CO2/tree/year CO2 Annual Emissions due to the use of fertilizers per tree unit  AE <sub>2 prodect</sub> 0.00287 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  102 Annual Emissions due to the use of pesticides per unit of harvested fruits  103 AE <sub>3 prodect</sub> 0.002867 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits  104 AE <sub>10 prodect</sub> 0.00022 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area  105 AE <sub>3 prodect</sub> 0.00022 tn CO2/tree/year CO2 Annual Emissions due to the use of possif fuels & electricity per unit of cultivated area  106 AE <sub>3 prodect</sub> 0.11696 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  107 AE <sub>10 prodect</sub> 0.00358 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  108 AE <sub>3 prodect</sub> 0.00358 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  108 AE <sub>3 prodect</sub> 0.00358 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  109 AE <sub>4 prodect</sub> 0.00551 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of diesel per unit of the use of diesel per unit of cultivated area  109 AE <sub>4 prodect</sub> 0.0057 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  100 AE <sub>4 prodect</sub> 0.0057 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  109 AE <sub>4 prodect</sub> 0.0057 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  100 AE <sub>4 prodect</sub> 0.0058 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  100 AE <sub>4 prodect</sub> 0.0058 tn CO2/tree/year CO2 Annual E						•
16.1 AE <sub>p. stee</sub> 0.53553 tn CO2/hectare/year CO2 Annual Emissions due to the use of fertilizers per tree unit 16.1 AE <sub>p. stee</sub> 0.53553 tn CO2/hectare/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area 16.3 AE <sub>p. tree</sub> 0.00072 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits 16.3 AE <sub>p. tree</sub> 0.00072 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits 17.1 AE <sub>prac. prace</sub> 2.64589 tn CO2/hectare/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area 17.2 AE <sub>prac. prace</sub> 1.04589 tn CO2/hectare/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits 17.2 AE <sub>prac. prace</sub> 0.00358 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits 17.3 AE <sub>prac. prace</sub> 0.00358 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit 18.1 AE <sub>0. prace</sub> 2.40953 tn CO2/hectare/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area 18.2 AE <sub>0. pracket</sub> 0.10651 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area 18.3 AE <sub>0. pracket</sub> 0.10651 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area 19.3 AE <sub>0. pracket</sub> 0.10651 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area 19.3 AE <sub>0. pracket</sub> 0.000326 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area 19.3 AE <sub>0. pracket</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of annual Emissions due to the use of gasoline per unit of annual Emissions due to the use of electricity per unit of harvested fruits 10.0 AE <sub>0. pracket</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of the per tree unit 10.00018 tn CO2/tree/year CO2 Annual Emissions due to	R15.1	AE <sub>f_area</sub>	1.36216	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	·
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AE <sub>Itse_product</sub> 0.11696 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits  AE <sub>Itse_tree</sub> 0.00358 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  AE <sub>D_product</sub> 0.10651 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  AE <sub>D_product</sub> 0.00326 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  AE <sub>D_tree</sub> 0.00326 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  AE <sub>D_tree</sub> 0.13045 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  AE <sub>G_tree</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  AE <sub>G_tree</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of electricity per unit of cultivated area  CO3 Annual Emissions due to the use of electricity per unit of cultivated area  CO3 Annual Emissions due to the use of electricity per unit of harvested fruits  CO3 Annual Emissions due to the use of electricity per unit of harvested fruits  CO3 Annual Emissions due to the use of electricity per unit of harvested fruits  CO3 Annual Emissions due to the use of electricity per unit of harvested fruits  CO3 Annual Emissions due to the use of electricity per unit of harvested fruits  CO3 Annual Emissions due to the use of electricity per unit of harvested fruits	R16.3		0.00072	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
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18.1 AE <sub>0.prea</sub> 2.40953 tn CO2/hectare/year CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  18.1 AE <sub>0.prea</sub> 2.40953 tn CO2/hectare/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  18.2 AE <sub>0.product</sub> 0.10651 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  18.3 AE <sub>0.prea</sub> 0.0326 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  19.1 AE <sub>0.product</sub> 0.13045 tn CO2/hectare/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  19.2 AE <sub>0.product</sub> 0.00577 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  19.3 AE <sub>0.tree</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  20.1 AE <sub>1.tree</sub> 0.10591 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  20.2 AE <sub>1.product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.3 AE <sub>1.tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	R17.1	AE <sub>ff&amp;e_area</sub>	2.64589	tn CO2/hectare/year	The state of the s	
18.1 AE <sub>D_area</sub> 2.40953 tn CO2/hectare/year CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  18.2 AE <sub>D_product</sub> 0.10651 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area  18.2 AE <sub>D_tree</sub> 0.00326 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  19.1 AE <sub>C_tree</sub> 0.13045 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  19.2 AE <sub>C_product</sub> 0.00577 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  19.3 AE <sub>C_tree</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  20.1 AE <sub>E_tree</sub> 0.10591 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  20.2 AE <sub>E_tree</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.3 AE <sub>E_tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.4 AE <sub>E_tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.3 AE <sub>E_tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	R17.2	AE <sub>ff&amp;e_product</sub>	0.11696	tn CO2/tn of yield/year	· · ·	
18.2 AE <sub>D, product</sub> 0.10651 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  18.3 AE <sub>D, tree</sub> 0.00326 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  19.1 AE <sub>G, product</sub> 0.00577 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  19.3 AE <sub>G, tree</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  20.1 AE <sub>EL, tree</sub> 0.10591 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  20.2 AE <sub>EL, product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.3 AE <sub>EL, tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.4 AE <sub>EL, tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.5 AE <sub>EL, tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	17.3		0.00358	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
18.2 AE <sub>D, product</sub> 0.10651 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits  18.3 AE <sub>D, tree</sub> 0.00326 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area  19.1 AE <sub>G, product</sub> 0.00577 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  19.3 AE <sub>G, tree</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  20.1 AE <sub>EL, tree</sub> 0.10591 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  20.2 AE <sub>EL, product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.3 AE <sub>EL, tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.4 AE <sub>EL, tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.5 AE <sub>EL, tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit						
19.1 AE <sub>G_area</sub> 0.13045 tn CO2/hectare/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area 19.2 AE <sub>G_product</sub> 0.00577 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits 19.3 AE <sub>G_pree</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  20.1 AE <sub>E_t_rea</sub> 0.10591 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area 20.2 AE <sub>E_t_product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits 20.3 AE <sub>E_t_tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits 20.4 CO2 Annual Emissions due to the use of electricity per unit of harvested fruits 20.5 AE <sub>E_t_product</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	R18.1				·	
19.1 AE <sub>G_area</sub> 0.13045 tn CO2/hectare/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area 19.2 AE <sub>G_product</sub> 0.00577 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits 19.3 AE <sub>G_pree</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  20.1 AE <sub>E_t_rea</sub> 0.10591 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area 20.2 AE <sub>E_t_product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits 20.3 AE <sub>E_t_tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits 20.4 CO2 Annual Emissions due to the use of electricity per unit of harvested fruits 20.5 AE <sub>E_t_product</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	R18.2	AE <sub>D_product</sub>	0.10651	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
19.2 AE <sub>6_product</sub> 0.00577 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  19.3 AE <sub>6_tree</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  20.1 AE <sub>EL_product</sub> 0.10591 tn CO2/tectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  20.2 AE <sub>EL_product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.3 AE <sub>EL_tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	R18.3		0.00326	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
19.2 AE <sub>6_product</sub> 0.00577 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits  19.3 AE <sub>6_tree</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  20.1 AE <sub>EL_product</sub> 0.10591 tn CO2/tectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  20.2 AE <sub>EL_product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.3 AE <sub>EL_tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit						
19.3 AE <sub>EL product</sub> 0.00018 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit  20.1 AE <sub>EL product</sub> 0.10591 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area  20.2 AE <sub>EL product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.3 AE <sub>EL tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	R19.1	AE <sub>G_area</sub>	0.13045	tn CO2/hectare/year		
20.1 AE <sub>EL, product</sub> 0.10591 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area 20.2 AE <sub>EL, product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits 20.3 AE <sub>EL, tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	R19.2	AE <sub>G_product</sub>	0.00577	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
20.2 AE <sub>EL product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.3 AE <sub>EL tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	R19.3	AE <sub>G_tree</sub>	0.00018	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit	
20.2 AE <sub>EL product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.3 AE <sub>EL tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit						
20.2 AE <sub>EL_product</sub> 0.00468 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits  20.3 AE <sub>EL_tree</sub> 0.00014 tn CO2/tree/year CO2 Annual Emissions due to the use of electricity per tree unit	R20.1	AE <sub>EL_area</sub>	0.10591	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
	R20.2		0.00468	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
	R20.3	AE <sub>EL_tree</sub>	0.00014	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit	
21.1 TAG <sub>area</sub> 4.93409 tn CO2/hectare/year CO2 Total Annual Gain per unit of cultivated area						
	R21.1	TAG <sub>area</sub>	4.93409	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area	

R21.2	TAG <sub>product</sub>	0.21811	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00668	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
				·
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	4.93409	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.21811	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00668	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 26 Agricultural practice: Use of prunings as wood fuel

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece	
Species of tree crop:	Peach	
Geographical area of the cultivation:	GREECE (total)	

#### **CO2 Annual Removal Capacity**

R1.1	ARC	<b>389,760.5551</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	<b>360,531.5996</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>29,228.9555</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>484,422.1493</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	1 CO	AS <sub>s</sub>	<b>2,214.9984</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	- Rei	TAR	<b>515,866.1033</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>486,637.1477</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

CO2 Annual Emissions due to the use of pesticides CO2 Annual Emissions due to the use of fossil fuels & electricity CO2 Total Annual Emissions
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CO2 Total Annual Emissions
CO2 Annual Emissions due to the use of diesel
CO2 Annual Emissions due to the use of gasoline
CO2 Annual Emissions due to the use of electricity
CO2 Annual Emissions due to the use of fossil fuels & electricity

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5 R5.6	302 jain	AG <sub>WF</sub>	104,161.3653 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		AG <sub>EL_m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		AG <sub>D_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	104,161.3653 tn CO2/year	CO2 Total Annual Gain

CO2 Remova	al Capacity	Indexes
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R6.1 ARC <sub>area</sub> 9.92192 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area
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R6.2	ARCproduct	0.63177	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>product</sub>	0.02258		CO2 Annual Removal Capacity per unit or narvested truits  CO2 Annual Removal Capacity per tree unit	(BF IS ITICIadea)
NO.3	Anotree	0.02238	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R7.1	ARCarea	9.17785	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	0.58440	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARC <sub>tree</sub>	0.02089	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	(St. 15 Not included)
10.5	Arretree	0.02003	tir e02/tree/year	COZ Annual nemoval capacity per tree unit	
R8.1	TAE/TAR	0.24445	Total Annual CO2 Emissions/ Total Ar	inual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.25914	Total Annual CO2 Emissions/ Total Ar		(BF is not included)
			•		
R9.1	TAR <sub>area</sub>	13.13212	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	0.83618	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.02989	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	12.38805	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	0.78880	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.02820	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	0.74407	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0.04738	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.00169	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	12.33167	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	0.78521	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.02807	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.05639	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.00359	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>s_tree</sub>	0.00013	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
200	TAF	2 24 222		CONTACT Annual Engineers and the facility and any	
R14.1	TAE	3.21020	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.2 R14.3	TAE <sub>product</sub>	0.20441	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
K14.3	TAE <sub>tree</sub>	0.00731	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	<u> </u>
R15.1	AE <sub>f area</sub>	0.83360	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2		0.05308	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f_product</sub> AE <sub>f tree</sub>	0.00190	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
113.3	ALf_tree	0.00130	til CO2/ tree/ year	eoz-ximan cimisions due to the dae of refunctis per tree unit	
R16.1	AE <sub>p_area</sub>	0.83342	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.05307	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p tree</sub>	0.00190	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
	p_tree		00 _ 1 00 , 1		
R17.1	AE <sub>ff&amp;e area</sub>	1.54318	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	·
R17.2	AE <sub>ff&amp;e_product</sub>	0.09826	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00351	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
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R18.1	AE <sub>D_area</sub>	1.37665	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.2	AE <sub>D_product</sub>	0.08766	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.3	AE <sub>D_tree</sub>	0.00313	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
R19.1	AE <sub>G_area</sub>	0.05439	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R19.2	AE <sub>G_product</sub>	0.00346	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R19.3	AE <sub>G_tree</sub>	0.00012	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit	
R20.1	AE <sub>EL_area</sub>	0.11214	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
R20.2	AE <sub>EL_product</sub>	0.00714	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
R20.3	AE <sub>EL_tree</sub>	0.00026	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit	
R21.1	TAG <sub>area</sub>	2.65158	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area	
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R21.2	TAG <sub>product</sub>	0.16884	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00604	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
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R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
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R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	2.65158	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.16884	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00604	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 27 Agricultural practice: Use of prunings as wood fuel

Designed and developed by TERRA NOVA Ltd.



## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Almond
Geographical area of the cultivation:	GREECE (total)

#### **CO2 Annual Removal Capacity**

R	1.1	ARC	<b>145,348.1950</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R	1.2	ARC	<b>78,556.3326</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

#### Analysis

R2.1		AR <sub>BF</sub>	<b>66,791.8624</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	rals	AR <sub>BW</sub>	<b>109,178.5221</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	20 E	AS <sub>s</sub>	<b>2,256.4770</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	Rei	TAR	<b>178,226.8616</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	111,434.9991 tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	SI	AE <sub>f</sub>	<b>9,047.2559</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers
R3.2	Si Si	AE <sub>p</sub>	11,608.7189 tn CO2/year	CO2 Annual Emissions due to the use of pesticides
R3.3	CC	AE <sub>ff&amp;e</sub>	12,222.6918 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
R3.4	ш	TAE	<b>32,878.6665</b> tn CO2/year	CO2 Total Annual Emissions
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	R4.1	AE <sub>D</sub>	10,563.0311 tn CO2/year	CO2 Annual Emissions due to the use of diesel
	R4.2	AE <sub>G</sub>	723.3709 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
	R4.3	AE <sub>EL</sub>	936.2898 tn CO2/year	CO2 Annual Emissions due to the use of electricity
	R4.4	AE <sub>ff&amp;e</sub>	12,222.6918 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity

R5.1		AG <sub>N-f_LCC</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	24,502.6491 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	٥٥	AG <sub>RES</sub>	0.0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_m}$	0.0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		$AG_{D_FGT}$	0.0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>24,502.6491</b> tn CO2/year	CO2 Total Annual Gain

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R6.2	ARCproduct	4.73722	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>product</sub>	0.03919		CO2 Annual Removal Capacity per unit or narvested fruits  CO2 Annual Removal Capacity per tree unit	(Br is included)
K0.5	Anc <sub>tree</sub>	0.03919	tn CO2/tree/year	COZ Affindar Removar Capacity per tree unit	
R7.1	ARCarea	5.90660	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	2.56033	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is not included)
R7.3	ARCtree	0.02118	tn CO2/tree/year	CO2 Annual Removal Capacity per time unit	(b) is not included)
к/.5	Anctree	0.02110	th cozytree, year	CO2 Aimuar Nemovar Capacity per tree unit	
R8.1	TAE/TAR	0.18448	Total Annual CO2 Emissions/ Total Ann	ual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0.29505	Total Annual CO2 Emissions/ Total Ann		(BF is not included)
	•				,
R9.1	TAR <sub>area</sub>	13.40076	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	5.80881	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0.04805	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	8.37872	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	3.63192	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0.03005	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	5.02204	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	2.17690	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0.01801	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	8.20906	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	3.55837	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0.02944	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
R13.1	AS <sub>S_area</sub>	0.16966	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0.07354	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0.00061	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
R14.1	TAE	2.47212	to CO2/bastara/vaar	COO Total Appeal Exissions pay unit of sultivated area	
R14.1	TAE	2.47212 1.07159	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area CO2 Total Annual Emissions per unit of harvested fruits	
R14.2	TAE <sub>product</sub>	0.00886	tn CO2/tn of yield/year tn CO2/tree/year	CO2 Total Annual Emissions per unit of narvested truits  CO2 Total Annual Emissions per tree unit	
K14.5	TACtree	0.00886	tii CO2/tree/year	CO2 Total Affiliad Emissions per tree unit	<u> </u>
R15.1	AE <sub>f area</sub>	0.68026	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2	AE <sub>f_product</sub>	0.29487	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f tree</sub>	0.00244	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
.12515	r_t_tree	0.00211	an cozy a coy year		
R16.1	AE <sub>p_area</sub>	0.87285	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0.37835	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p tree</sub>	0.00313	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
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R17.1	AE <sub>ff&amp;e_area</sub>	0.91902	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	·
R17.2	AE <sub>ff&amp;e_product</sub>	0.20826	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
		0.39836			
R17.3	AE <sub>ff&amp;e_tree</sub>	0.00330	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R17.3				CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
	AE <sub>ff&amp;e_tree</sub>			CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.1	AE <sub>ff&amp;e_tree</sub>	0.00330	tn CO2/tree/year		
R18.1 R18.2	AE <sub>ff&amp;e_tree</sub>	0.00330 0.79423	tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.1 R18.2	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub>	0.00330 0.79423 0.34427	tn CO2/hectare/year tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.1 R18.2 R18.3	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub>	0.00330 0.79423 0.34427 0.00285	tn CO2/hectare/year tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.1 R18.2 R18.3 R19.1 R19.2	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub>	0.00330 0.79423 0.34427 0.00285	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R18.1 R18.2 R18.3 R19.1 R19.2	AE <sub>D_area</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub>	0.00330 0.79423 0.34427 0.00285	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.1 R18.2 R18.3 R19.1 R19.2	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub> AE <sub>G_area</sub> AE <sub>G_product</sub>	0.00330 0.79423 0.34427 0.00285 0.05439 0.02358 0.00020	tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit	
R18.1 R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>ff&amp;e_tree</sub> AE <sub>D_area</sub> AE <sub>D_product</sub> AE <sub>D_tree</sub> AE <sub>G_area</sub> AE <sub>G_product</sub>	0.00330 0.79423 0.34427 0.00285 0.05439 0.02358 0.00020	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>ID_area</sub> AE <sub>D_area</sub> AE <sub>D_broduct</sub> AE <sub>D_broe</sub> AE <sub>G_area</sub> AE <sub>G_product</sub> AE <sub>G_broe</sub>	0.00330 0.79423 0.34427 0.00285 0.05439 0.02358 0.00020	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO3 Annual Emissions due to the use of gasoline per unit of cultivated area CO4 Annual Emissions due to the use of electricity per unit of cultivated area CO5 Annual Emissions due to the use of electricity per unit of harvested fruits	
R18.1 R18.2 R18.3 R19.1 R19.2 R19.3	AE <sub>ff, area</sub> AE <sub>D, area</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>D, product</sub> AE <sub>G, area</sub> AE <sub>G, product</sub> AE <sub>G, tree</sub> AE <sub>G, tree</sub>	0.00330 0.79423 0.34427 0.00285 0.05439 0.02358 0.00020	tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/hectare/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R18.1 R18.2 R18.3 R19.1 R19.2 R19.3 R20.1 R20.2	AE <sub>file</sub> tree  AE <sub>D</sub> area AE <sub>D</sub> product AE <sub>D</sub> tree  AE <sub>G</sub> area AE <sub>G</sub> product AE <sub>G</sub> tree  AE <sub>E</sub> tree  AE <sub>E</sub> tree  AE <sub>E</sub> product	0.00330 0.79423 0.34427 0.00285 0.05439 0.02358 0.00020 0.07040 0.03052	tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year  tn CO2/tn of yield/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO3 Annual Emissions due to the use of gasoline per unit of cultivated area CO4 Annual Emissions due to the use of electricity per unit of cultivated area CO5 Annual Emissions due to the use of electricity per unit of harvested fruits	

R21.2	TAG <sub>product</sub>	0.79860	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0.00661	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
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R24.1	AG <sub>H_cc/m_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	1.84234	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0.79860	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0.00661	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0.00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0.00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0.00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 28 Agricultural practice: Electricity supply 100% by dedicated RES

Designed and developed by TERRA NOVA Ltd. TERRA NOVA

## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Orange
Geographical area of the cultivation:	GREECE (total)

### **CO2 Annual Removal Capacity**

R1.1	ARC	<b>279.713,4935</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	<b>224.348,4090</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2	.1	AR <sub>BF</sub>	<b>55.365,0845</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2	.2 S	AR <sub>BW</sub>	<b>300.878,0321</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2	.3 Ö É	AS <sub>s</sub>	<b>7.223,6095</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2	. <b>4</b>	TAR	<b>363.466,7262</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2	.5	TAR	<b>308.101,6417</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 mass balance between (a) the total quantity of CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	S	AE <sub>f</sub>	<b>37.063,1211</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers
R3.2	Sior	AE <sub>p</sub>	25.353,3549 tn CO2/year	CO2 Annual Emissions due to the use of pesticides
R3.3	g ig	AE <sub>ff&amp;e</sub>	21.336,7567 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
R3.4	ш	TAE	83.753,2327 tn CO2/year	CO2 Total Annual Emissions
	R4.1	AE <sub>D</sub>	20.184,8514 tn CO2/year	CO2 Annual Emissions due to the use of diesel
	R4.2	AE <sub>G</sub>	1.151,9053 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
	R4.3	۸۲	0.0000 /	contract the state of the state
	K4.5	AE <sub>EL</sub>	0,0000 tn CO2/year	CO2 Annual Emissions due to the use of electricity

R5.1		AG <sub>N-f_LCC</sub>	0,0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		$AG_{f\_FGT}$	0,0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0,0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0,0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	302 jain	AG <sub>WF</sub>	80.021,1785 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	0 0	AG <sub>RES</sub>	5.911,0634 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_{m}}$	0,0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		$AG_{D\_FGT}$	0,0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>85.932,2418</b> tn CO2/year	CO2 Total Annual Gain

CO2	Removal	Capacity	Indexes

R6.1	ARC <sub>area</sub>	8,25456	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	

					(05::: 1 1 1)
R6.2	ARC	0,35654	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>tree</sub>	0,01851	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R7.1	ARC <sub>area</sub>	6,62069	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	0,28597	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of cuttwated area	(BF is not included)
R7.3	p	0,28597	tn CO2/tri or yield/year	CO2 Annual Removal Capacity per unit of nativested truts  CO2 Annual Removal Capacity per tree unit	(BF is not included)
./.3	ARC <sub>tree</sub>	0,01465	tii CO2/tree/year	CO2 Annual Removal Capacity per tree unit	
R8.1	TAE/TAR	0,23043	Total Annual CO2 Emissions/ Total Annual	al CO2 Removals	(BF is included)
R8.2	TAE/TAR	0,27184	Total Annual CO2 Emissions/ Total Annual		(BF is not included)
	,	3,2,7,20,7			(2. 10.112.112.22.)
9.1	TAR <sub>area</sub>	10,72618	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
9.2	TAR <sub>product</sub>	0,46330	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
9.3	TAR <sub>tree</sub>	0,02405	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
				·	
10.1	TAR <sub>area</sub>	9,09232	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
10.2	TAR <sub>product</sub>	0,39273	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
0.3	TAR <sub>tree</sub>	0,02039	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
					,
1.1	AR <sub>BF_area</sub>	1,63387	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
1.2	AR <sub>BF_product</sub>	0,07057	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
1.3	AR <sub>BF_tree</sub>	0,00366	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
12.1	AR <sub>BW_area</sub>	8,87914	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
12.2	AR <sub>BW_product</sub>	0,38352	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
12.3	AR <sub>BW_tree</sub>	0,01991	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
13.1	AS <sub>S_area</sub>	0,21317	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
3.2	AS <sub>S_product</sub>	0,00921	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
13.3	AS <sub>S_tree</sub>	0,00048	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
				Teacher to the second s	
14.1	TAE <sub>area</sub>	2,47162	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
14.2	TAE <sub>product</sub>	0,10676	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of harvested fruits	
14.3	TAE <sub>tree</sub>	0,00554	tn CO2/tree/year	CO2 Total Annual Emissions per tree unit	<del> </del>
15.1	AF	1,09376	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
15.2	AE <sub>f_area</sub>	0,04724	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of cardvated area	
15.3	AE <sub>f_product</sub>	0,00245	tn CO2/tri of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of narvested ruits  CO2 Annual Emissions due to the use of fertilizers per tree unit	
.5.5	AE <sub>f_tree</sub>	0,00243			
16.1				COE TAMBOUT DATABOUT DATABOUT DATABOUT DE COMPANIE DE PORTO DE COMPANIE DE COM	
16.2	ΔF	0.74820			
	AE <sub>p_area</sub>	0,74820 0.03232	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
	AE <sub>p_product</sub>	0,03232	tn CO2/hectare/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
_			tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
6.3	AE <sub>p_product</sub> AE <sub>p_tree</sub>	0,03232 0,00168	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit	
.7.1	AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ff&amp;e_area</sub>	0,03232 0,00168 0,62966	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
7.1 7.2	AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ff&amp;e_area</sub> AE <sub>ff&amp;e_product</sub>	0,03232 0,00168 0,62966 0,02720	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year tn CO2/hoctare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
.7.1 .7.2	AE <sub>p_product</sub> AE <sub>p_tree</sub> AE <sub>ff&amp;e_area</sub>	0,03232 0,00168 0,62966	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
7.1 7.2 7.3	AE <sub>p_tree</sub> AE <sub>fl&amp;e_area</sub> AE <sub>ff&amp;e_product</sub> AE <sub>ff&amp;e_tree</sub>	0,03232 0,00168 0,62966 0,02720	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/hectare/year tn CO2/hoctare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
7.1 7.2 7.3	AE <sub>p_tree</sub> AE <sub>fl&amp;e_area</sub> AE <sub>fl&amp;e_tree</sub> AE <sub>fl&amp;e_tree</sub>	0,03232 0,00168 0,62966 0,02720 0,00141	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
7.1 7.2 7.3 8.1 8.2	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff, product</sub> AE <sub>D, product</sub>	0,03232 0,00168 0,62966 0,02720 0,00141 0,59567	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
17.1 17.2 17.3 18.1	AE <sub>p_tree</sub> AE <sub>fl&amp;e_area</sub> AE <sub>fl&amp;e_tree</sub> AE <sub>fl&amp;e_tree</sub>	0,03232 0,00168 0,62966 0,02720 0,00141 0,59567 0,02573	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
7.1 7.2 7.3 8.1 8.2 8.3	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff, product</sub> AE <sub>D, product</sub>	0,03232 0,00168 0,62966 0,02720 0,00141 0,59567 0,02573	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
16.3 17.1 17.2 17.3 18.1 18.2 18.3	AE <sub>p, product</sub> AE <sub>p, tree</sub> AF <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>D, area</sub> AE <sub>D, product</sub> AE <sub>D, tree</sub>	0,03232 0,00168 0,62966 0,02720 0,00141 0,59567 0,02573 0,00134	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
16.3	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff, product</sub> AE <sub>D, area</sub> AE <sub>D, product</sub> AE <sub>D, tree</sub> AE <sub>D, tree</sub>	0,03232 0,00168 0,62966 0,02720 0,00141 0,59567 0,02573 0,00134	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year tn CO2/tn of yield/year tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO3 Annual Emissions due to the use of pesticides per unit of harvested fruits CO3 Annual Emissions due to the use of pesticides per tree unit  CO3 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO3 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO3 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO4 Annual Emissions due to the use of diesel per unit of cultivated area CO5 Annual Emissions due to the use of diesel per unit of harvested fruits CO5 Annual Emissions due to the use of diesel per unit of cultivated area CO6 Annual Emissions due to the use of diesel per unit of cultivated area	
16.3	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>D, area</sub> AE <sub>D, product</sub> AE <sub>D, tree</sub> AE <sub>D, tree</sub> AE <sub>G, product</sub> AE <sub>G, product</sub>	0,03232 0,00168 0,62966 0,02720 0,00141 0,59567 0,02573 0,00134 0,03399 0,00147	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	·
16.3 17.1 17.2 17.3 18.1 18.2 18.3 19.1 19.2 19.3	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, product</sub> AE <sub>D, area</sub> AE <sub>D, product</sub> AE <sub>D, tree</sub> AE <sub>D, tree</sub> AE <sub>G, product</sub> AE <sub>G, product</sub>	0,03232 0,00168 0,62966 0,02720 0,00141 0,59567 0,02573 0,00134 0,03399 0,00147	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
16.3 17.1 17.2 17.3 18.1 18.2 18.3 19.1 19.2 19.3	AE <sub>p</sub> product  AE <sub>p</sub> tree  AE <sub>ff&amp;e</sub> area  AE <sub>ff&amp;e</sub> product  AE <sub>ff&amp;e</sub> product  AE <sub>ff,e</sub> tree  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>G</sub> area  AE <sub>G</sub> area  AE <sub>G</sub> product  AE <sub>G</sub> product	0,03232 0,00168 0,62966 0,02720 0,00141 0,59567 0,02573 0,00134 0,03399 0,00147 0,00008	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
16.2 16.3 17.1 17.2 17.3 18.1 18.2 18.3 19.1 19.2 19.3 20.1 20.2 20.3	AE <sub>p</sub> product  AE <sub>p</sub> tree  AE <sub>ff&amp;e</sub> area  AE <sub>ff&amp;e</sub> product  AE <sub>ff&amp;e</sub> product  AE <sub>ff&amp;e</sub> tree  AE <sub>D</sub> product  AE <sub>D</sub> product  AE <sub>G</sub> area  AE <sub>G</sub> area  AE <sub>G</sub> product  AE <sub>G</sub> tree	0,03232 0,00168 0,62966 0,02720 0,00141 0,59567 0,02573 0,00134 0,03399 0,00147 0,00008	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit	
7.1 7.2 7.3 8.1 8.2 8.3 9.1 9.2 9.3 0.1 0.2	AE <sub>p, product</sub> AE <sub>p, tree</sub> AE <sub>ff&amp;e, area</sub> AE <sub>ff&amp;e, product</sub> AE <sub>ff&amp;e, tree</sub> AE <sub>D, product</sub> AE <sub>G, product</sub> AE <sub>G, tree</sub> AE <sub>G, tree</sub> AE <sub>G, tree</sub>	0,03232 0,00168 0,62966 0,02720 0,00141 0,59567 0,02573 0,00134 0,03399 0,00147 0,00008	tn CO2/hectare/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tree/year  tn CO2/tree/year  tn CO2/tree/year  tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits CO2 Annual Emissions due to the use of pesticides per tree unit  CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit  CO2 Annual Emissions due to the use of diesel per unit of cultivated area CO2 Annual Emissions due to the use of diesel per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of cultivated area CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of gasoline per tree unit  CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits CO2 Annual Emissions due to the use of electricity per unit of lativated area CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	

R21.2	TAG <sub>product</sub>	0,10954	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0,00569	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	2,36149	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0,10200	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0,00530	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0,17444	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0,00753	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0,00039	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 29 Agricultural practice: Use of insects mass trapping

Designed and developed by TERRA NOVA Ltd. TERRA NOVA

## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Orange
Geographical area of the cultivation:	GREECE (total)

### **CO2 Annual Removal Capacity**

R1.1	ARC	<b>283.025,0291</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	227.659,9446 tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.	1	AR <sub>BF</sub>	<b>55.365,0845</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	ı
R2.	2 2 8	AR <sub>BW</sub>	<b>300.878,0321</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	ı
R2.	3 0 É	AS <sub>s</sub>	<b>7.223,6095</b> tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	1
R2.	4 2	TAR	<b>363.466,7262</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.	5	TAR	<b>308.101,6417</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 mass balance between (a) the total quantity of CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	S	AE <sub>f</sub>	<b>37.063,1211</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers	
R3.2 ∾	Sion	AE <sub>p</sub>	<b>16.130,7560</b> tn CO2/year	CO2 Annual Emissions due to the use of pesticides	
R3.3	g iệ	AE <sub>ff&amp;e</sub>	<b>27.247,8201</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	
R3.4	В	TAE	<b>80.441,6971</b> tn CO2/year	CO2 Total Annual Emissions	
R	R4.1	AE <sub>D</sub>	20.184,8514 tn CO2/year	CO2 Annual Emissions due to the use of diesel	
R	R4.2	$AE_G$	1.151,9053 tn CO2/year	CO2 Annual Emissions due to the use of gasoline	
R	R4.3	AE <sub>EL</sub>	5.911,0634 tn CO2/year	CO2 Annual Emissions due to the use of electricity	
R	R4.4	AE <sub>ff&amp;e</sub>	<b>27.247,8201</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity	

R5.1		AG <sub>N-f_LCC</sub>	0,0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0,0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	0,0000 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	9.222,5989 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	30 ja	AG <sub>WF</sub>	80.021,1785 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	٥٥	AG <sub>RES</sub>	0,0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_{m}}$	0,0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		$AG_{D_FGT}$	0,0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>89.243,7774</b> tn CO2/year	CO2 Total Annual Gain

CO2	Removal	Canacity	/ Indexes

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R6.1	ARC <sub>area</sub>	8,35229	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	

R6.2	ARCproduct	0,36076	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of harvested fruits	(BF is included)
R6.3	ARC <sub>product</sub>	0,36076		CO2 Annual Removal Capacity per unit or narvested truits  CO2 Annual Removal Capacity per tree unit	(Br is included)
NO.3	Anctree	0,01873	tn CO2/tree/year	CO2 Anniual nemioval capacity per tree unit	
R7.1	ARCarea	6,71842	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	
R7.2	ARC <sub>product</sub>	0,29019	tn CO2/tn of yield/year	CO2 Annual Removal Capacity per unit of cantracted area	(BF is not included)
R7.3	ARC <sub>tree</sub>	0,01507	tn CO2/tree/year	CO2 Annual Removal Capacity per tree unit	(St. 13 files meladed)
10.5	Arretree	0,01307	th cozytice/year	CO2 Annual Nethoval cupacity for the disk	
R8.1	TAE/TAR	0,22132	Total Annual CO2 Emissions/ Total An	nual CO2 Removals	(BF is included)
R8.2	TAE/TAR	0,26109		Annual CO2 Emissions/ Total Annual CO2 Removals	
			•		(BF is not included)
R9.1	TAR <sub>area</sub>	10,72618	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R9.2	TAR <sub>product</sub>	0,46330	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3	TAR <sub>tree</sub>	0,02405	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R10.1	TAR <sub>area</sub>	9,09232	tn CO2/hectare/year	CO2 Total Annual Removals per unit of cultivated area	
R10.2	TAR <sub>product</sub>	0,39273	tn CO2/tn of yield/year	CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3	TAR <sub>tree</sub>	0,02039	tn CO2/tree/year	CO2 Total Annual Removals per tree unit	
R11.1	AR <sub>BF_area</sub>	1,63387	tn CO2/hectare/year	CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2	AR <sub>BF_product</sub>	0,07057	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3	AR <sub>BF_tree</sub>	0,00366	tn CO2/tree/year	CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1	AR <sub>BW_area</sub>	8,87914	tn CO2/hectare/year	CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2	AR <sub>BW_product</sub>	0,38352	tn CO2/tn of yield/year	CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3	AR <sub>BW_tree</sub>	0,01991	tn CO2/tree/year	CO2 Annual Removal due to the production of wood biomass per tree unit	
				Too and the second of the seco	
R13.1	AS <sub>S_area</sub>	0,21317	tn CO2/hectare/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2	AS <sub>S_product</sub>	0,00921	tn CO2/tn of yield/year	CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits	
R13.3	AS <sub>S_tree</sub>	0,00048	tn CO2/tree/year	CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
R14.1	TAE <sub>area</sub>	2,37390	tn CO2/hectare/year	CO2 Total Annual Emissions per unit of cultivated area	
R14.1		0,10254	tn CO2/tn of yield/year	CO2 Total Annual Emissions per unit of cultivated area  CO2 Total Annual Emissions per unit of harvested fruits	
R14.2	TAE <sub>product</sub>	0,00532	tn CO2/tree/year	CO2 Total Annual Emissions per unit	
K14.5	TALtree	0,00332	ti CO2/tiee/year	CO2 Total Annual Critisaions per tree unit	<del> </del>
R15.1	AE <sub>f area</sub>	1,09376	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2	AE <sub>f_product</sub>	0,04724	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3	AE <sub>f tree</sub>	0,00245	tn CO2/tree/year	CO2 Annual Emissions due to the use of fertilizers per tree unit	
	I_tree	0,000	652,63, 762.		
R16.1	AE <sub>p_area</sub>	0,47603	tn CO2/hectare/year	CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2	AE <sub>p_product</sub>	0,02056	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3	AE <sub>p tree</sub>	0,00107	tn CO2/tree/year	CO2 Annual Emissions due to the use of pesticides per tree unit	
				<del></del>	
R17.1	AE <sub>ff&amp;e_area</sub>	0,80410	tn CO2/hectare/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	<del></del>
R17.2	AE <sub>ff&amp;e_product</sub>	0,03473	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.3	AE <sub>ff&amp;e_tree</sub>	0,00180	tn CO2/tree/year	CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R18.1	AE <sub>D_area</sub>	0,59567	tn CO2/hectare/year	CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.2	AE <sub>D_product</sub>	0,02573	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.3	AE <sub>D_tree</sub>	0,00134	tn CO2/tree/year	CO2 Annual Emissions due to the use of diesel per tree unit	
R19.1	AE <sub>G_area</sub>	0,03399	tn CO2/hectare/year	CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R19.2	AE <sub>G_product</sub>	0,00147	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R19.3	AE <sub>G_tree</sub>	0,00008	tn CO2/tree/year	CO2 Annual Emissions due to the use of gasoline per tree unit	
R20.1	AE <sub>EL_area</sub>	0,17444	tn CO2/hectare/year	CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
R20.2	AE <sub>EL_product</sub>	0,00753	tn CO2/tn of yield/year	CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
R20.3	AE <sub>EL_tree</sub>	0,00039	tn CO2/tree/year	CO2 Annual Emissions due to the use of electricity per tree unit	
R21.1	TAG <sub>area</sub>	2,63365	tn CO2/hectare/year	CO2 Total Annual Gain per unit of cultivated area	

R21.2	TAG <sub>product</sub>	0,11376	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0,00591	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
R23.1	AG <sub>f_FGT_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
				·
R25.1	AG <sub>I_im/mt_area</sub>	0,27217	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0,01176	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0,00061	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	2,36149	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0,10200	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0,00530	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit





Run 30 Agricultural practice: Use of cover crops

Designed and developed by TERRA NOVA Ltd. TERRA NOVA

## **Results**

Country where the Tool is applied:	Greece
Species of tree crop:	Orange
Geographical area of the cultivation:	GREECE (total)

# **CO2** Annual Removal Capacity

R1.1	ARC	<b>295.251,0925</b> tn CO2/year	CO2 Annual Removal Capacity	(BF is included)
R1.2	ARC	237.117,7537 tn CO2/year	CO2 Annual Removal Capacity	(BF is not included)

The term "CO2 Removal" means the abstraction of CO2 from atmosphere

BF: the fruits' biomass

### Analysis

R2.1		AR <sub>BF</sub>	<b>58.133,3388</b> tn CO2/year	CO2 Annual Removal due to the production of fruit biomass	
R2.2	z vals	AR <sub>BW</sub>	<b>300.878,0321</b> tn CO2/year	CO2 Annual Removal due to the production of wood biomass	
R2.3	8 6	AS <sub>s</sub>	13.029,3724 tn CO2/year	CO2 Annual Storage in soil as carbon of the fallen biomass	
R2.4	æ	TAR	<b>372.040,7433</b> tn CO2/year	CO2 Total Annual Removals	(BF is included)
R2.5		TAR	<b>313.907,4046</b> tn CO2/year	CO2 Total Annual Removals	(BF is not included)

a. It has to be underlined an important difference between ARC and TAR:

ARC is the result of the CO2 mass balance between (a) the total quantity of CO2 which is abstracted from the atmosphere [=TAR] by the tree in order to create biomass and (b) the total quantity of CO2 which is emitted to the atmosphere due to the agricultural practices which are applied for the cultivation of the tree.

R3.1	SI	AE <sub>f</sub>	<b>37.063,1211</b> tn CO2/year	CO2 Annual Emissions due to the use of fertilizers
R3.2	Sior S	AE <sub>p</sub>	12.478,7097 tn CO2/year	CO2 Annual Emissions due to the use of pesticides
R3.3	g ig	AE <sub>ff&amp;e</sub>	27.247,8201 tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity
R3.4	ш	TAE	<b>76.789,6508</b> tn CO2/year	CO2 Total Annual Emissions
	R4.1	AE <sub>D</sub>	20.184,8514 tn CO2/year	CO2 Annual Emissions due to the use of diesel
	R4.2	AE <sub>G</sub>	1.151,9053 tn CO2/year	CO2 Annual Emissions due to the use of gasoline
	R4.3	AE <sub>EL</sub>	5.911,0634 tn CO2/year	CO2 Annual Emissions due to the use of electricity
	R4.4	AE <sub>ff&amp;e</sub>	<b>27.247,8201</b> tn CO2/year	CO2 Annual Emissions due to the use of fossil fuels & electricity

R5.1		AG <sub>N-f_LCC</sub>	0,0000 tn CO2/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (use of Leguminosae cover crops)
R5.2		AG <sub>f_FGT</sub>	0,0000 tn CO2/year	CO2 Annual Gain due to fertilizers reduction (use of fertigation)
R5.3		AG <sub>H_cc/m</sub>	12.874,6452 tn CO2/year	CO2 Annual Gain due to herbicides reduction (use of cover crops/mulching)
R5.4		AG <sub>I_im/mt</sub>	0,0000 tn CO2/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping)
R5.5	30 ja	AG <sub>WF</sub>	80.021,1785 tn CO2/year	CO2 Annual Gain due to the use of wood fuels instead of diesel
R5.6	٥٥	AG <sub>RES</sub>	0,0000 tn CO2/year	CO2 Annual Gain due to the use of Renewable Energy Sources
R5.7		$AG_{EL_{m}}$	0,0000 tn CO2/year	CO2 Annual Gain due to electricity reduction (use of mulching)
R5.8		$AG_{D_FGT}$	0,0000 tn CO2/year	CO2 Annual Gain due to diesel reduction (use of fertigation)
R5.9		TAG	<b>92.895,8237</b> tn CO2/year	CO2 Total Annual Gain

R6.1	ARC <sub>area</sub>	8,71309	tn CO2/hectare/year	CO2 Annual Removal Capacity per unit of cultivated area	

R6.2 ARC product 0,35843 tn CO2/tn of yield/year CO2 Annual Removal Capacity per unit of harvested fruits  R6.3 ARC pree 0,01954 tn CO2/tree/year CO2 Annual Removal Capacity per unit of cultivated area  R7.1 ARC pres 6,99753 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area  R7.2 ARC product 0,28785 tn CO2/tn of yield/year CO2 Annual Removal Capacity per unit of harvested fruits  R7.3 ARC product 0,01569 tn CO2/tree/year CO2 Annual Removal Capacity per unit of harvested fruits  R8.1 TAE/TAR 0,20640 Total Annual CO2 Emissions/ Total Annual CO2 Removals  R8.2 TAE/TAR 0,24463 Total Annual CO2 Emissions/ Total Annual CO2 Removals  R8.3 TAE/TAR 0,24463 Total Annual CO2 Emissions/ Total Annual CO2 Removals  R9.1 TAR pres 10,97921 tn CO2/hectare/year CO2 Total Annual Removals per unit of cultivated area	(BF is not included)
R7.1 ARC <sub>area</sub> 6,99753 tn CO2/hectare/year CO2 Annual Removal Capacity per unit of cultivated area R7.2 ARC <sub>product</sub> 0,28785 tn CO2/tn of yield/year CO2 Annual Removal Capacity per unit of harvested fruits R7.3 ARC <sub>tree</sub> 0,01569 tn CO2/tree/year CO2 Annual Removal Capacity per tree unit  R8.1 TAE/TAR 0,20640 Total Annual CO2 Emissions/ Total Annual CO2 Removals R8.2 TAE/TAR 0,24463 Total Annual CO2 Emissions/ Total Annual CO2 Removals  R9.1 TAR <sub>area</sub> 10,97921 tn CO2/hectare/year CO2 Total Annual Removals per unit of cultivated area	
R7.2 ARC product 0,28785 tn CO2/tn of yield/year CO2 Annual Removal Capacity per unit of harvested fruits  R7.3 ARC product 0,01569 tn CO2/tree/year CO2 Annual Removal Capacity per tree unit  R8.1 TAE/TAR 0,20640 Total Annual CO2 Emissions/ Total Annual CO2 Removals  R8.2 TAE/TAR 0,24463 Total Annual CO2 Emissions/ Total Annual CO2 Removals  R9.1 TAR product 10,97921 tn CO2/hectare/year CO2 Total Annual Removals per unit of cultivated area	
R7.2 ARC <sub>product</sub> 0,28785 tn CO2/tn of yield/year CO2 Annual Removal Capacity per unit of harvested fruits R7.3 ARC <sub>tree</sub> 0,01569 tn CO2/tree/year CO2 Annual Removal Capacity per tree unit  R8.1 TAE/TAR 0,20640 Total Annual CO2 Emissions/ Total Annual CO2 Removals R8.2 TAE/TAR 0,2463 Total Annual CO2 Emissions/ Total Annual CO2 Removals  R9.1 TAR <sub>area</sub> 10,97921 tn CO2/hectare/year CO2 Total Annual Removals per unit of cultivated area	
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R8.2 TAE/TAR 0,24463 Total Annual CO2 Emissions/ Total Annual CO2 Removals  R9.1 TAR <sub>area</sub> 10,97921 tn CO2/hectare/year CO2 Total Annual Removals per unit of cultivated area	
R8.2 TAE/TAR 0,24463 Total Annual CO2 Emissions/ Total Annual CO2 Removals  R9.1 TAR <sub>area</sub> 10,97921 tn CO2/hectare/year CO2 Total Annual Removals per unit of cultivated area	(BF is included)
R9.1 TAR <sub>area</sub> 10,97921 tn CO2/hectare/year CO2 Total Annual Removals per unit of cultivated area	(BF is not included)
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R9.2 TAR product 0,45165 tn CO2/tn of yield/year CO2 Total Annual Removals per unit of harvested fruits	(BF is included)
R9.3 TAR <sub>tree</sub> 0,02462 tn CO2/tree/year CO2 Total Annual Removals per tree unit	
R10.1 TAR <sub>area</sub> 9,26365 tn CO2/hectare/year CO2 Total Annual Removals per unit of cultivated area	
R10.2 TAR <sub>product</sub> 0,38108 tn CO2/tn of yield/year CO2 Total Annual Removals per unit of harvested fruits	(BF is not included)
R10.3 TAR <sub>tree</sub> 0,02077 tn CO2/tree/year CO2 Total Annual Removals per tree unit	
R11.1 AR <sub>BF, area</sub> 1,71556 tn CO2/hectare/year CO2 Annual Removal due to the production of fruit biomass per unit of cultivated area	
R11.2 AR <sub>ef_product</sub> 0,07057 tn CO2/tn of yield/year CO2 Annual Removal due to the production of fruit biomass per unit of harvested fruits	
R11.3 AR <sub>BF, tree</sub> 0,00385 tn CO2/tree/year CO2 Annual Removal due to the production of fruit biomass per tree unit	
R12.1 AR <sub>BW_area</sub> 8,87914 tn CO2/hectare/year CO2 Annual Removal due to the production of wood biomass per unit of cultivated area	
R12.2 AR <sub>BW_product</sub> 0,36526 tn CO2/tn of yield/year CO2 Annual Removal due to the production of wood biomass per unit of harvested fruits	
R12.3 AR <sub>BW_tree</sub> 0,01991 tn CO2/tree/year CO2 Annual Removal due to the production of wood biomass per tree unit	
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R13.1 AS <sub>S_area</sub> 0,38451 tn CO2/hectare/year CO2 Annual Storage in soil as carbon of the fallen biomass per unit of cultivated area	
R13.2 AS <sub>s_product</sub> 0,01582 tn CO2/tn of yield/year CO2 Annual Storage in soil as carbon of the fallen biomass per unit of harvested fruits  R13.3 AS <sub>s_tree</sub> 0,00086 tn CO2/tree/year CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
R13.3 AS <sub>s_tree</sub> 0,00086 tn CO2/tree/year CO2 Annual Storage in soil as carbon of the fallen biomass per tree unit	
R14.1 TAE <sub>area</sub> 2,26612 tn CO2/hectare/year CO2 Total Annual Emissions per unit of cultivated area	
R14.2 TAE product 0,09322 tn CO2/tn of yield/year CO2 Total Annual Emissions per unit of harvested fruits	
R14.3 TAE <sub>tree</sub> 0,00508 tn CO2/tree/year CO2 Total Annual Emissions per tree unit	
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R15.1 AE <sub>f area</sub> 1,09376 tn CO2/hectare/year CO2 Annual Emissions due to the use of fertilizers per unit of cultivated area	
R15.2 AE <sub>f_product</sub> 0,04499 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fertilizers per unit of harvested fruits	
R15.3 AE tree 0,00245 tn CO2/tree/year CO2 Annual Emissions due to the use of fertilizers per tree unit	
R16.1 AE <sub>p_area</sub> 0,36826 tn CO2/hectare/year CO2 Annual Emissions due to the use of pesticides per unit of cultivated area	
R16.2 AE <sub>p_product</sub> 0,01515 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of pesticides per unit of harvested fruits	
R16.3 AE <sub>p,tree</sub> 0,00083 tn CO2/tree/year CO2 Annual Emissions due to the use of pesticides per tree unit	
R17.1 AE <sub>fi&amp;e_area</sub> 0,80410 tn CO2/hectare/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of cultivated area	
R17.2 AE <sub>ff8e_product</sub> 0,03308 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of fossil fuels & electricity per unit of harvested fruits	
R17.3 AE <sub>Hille_tree</sub> 0,00180 tn CO2/tree/year CO2 Annual Emissions due to the use of fossil fuels & electricity per tree unit	
R18.1 AE <sub>D_area</sub> 0,59567 tn CO2/hectare/year CO2 Annual Emissions due to the use of diesel per unit of cultivated area	
R18.2 AE <sub>D_product</sub> 0,02450 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of diesel per unit of harvested fruits	
R18.3 AE <sub>D_tree</sub> 0,00134 tn CO2/tree/year CO2 Annual Emissions due to the use of diesel per tree unit	
R19.1 AE <sub>G_area</sub> 0,03399 tn CO2/hectare/year CO2 Annual Emissions due to the use of gasoline per unit of cultivated area	
R19.2 AE <sub>G_product</sub> 0,00140 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of gasoline per unit of harvested fruits	
R19.3 AE <sub>G_tree</sub> 0,00008 tn CO2/tree/year CO2 Annual Emissions due to the use of gasoline per tree unit	
R20.1 AE <sub>EL area</sub> 0,17444 tn CO2/hectare/year CO2 Annual Emissions due to the use of electricity per unit of cultivated area	
R20.2 AE <sub>EL product</sub> 0,00718 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	
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R20.2 AE <sub>EL product</sub> 0,00718 tn CO2/tn of yield/year CO2 Annual Emissions due to the use of electricity per unit of harvested fruits	

R21.2	TAG <sub>product</sub>	0,11277	tn CO2/tn of yield/year	CO2 Total Annual Gain per unit of harvested fruits
R21.3	TAG <sub>tree</sub>	0,00615	tn CO2/tree/year	CO2 Total Annual Gain per tree unit
R22.1	AG <sub>N-f_LCC_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of cultivated area
R22.2	AG <sub>N-f_LCC_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per unit of harvested fruits
R22.3	AG <sub>N-f_LCC_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to Nitrogen-fertilizers reduction (Leguminosae cover crops) per tree unit
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R23.1	AG <sub>f_FGT_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of cultivated area
R23.2	AG <sub>f_FGT_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per unit of harvested fruits
R23.3	AG <sub>f_FGT_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to fertilizers reduction (fertigation) per tree unit
R24.1	AG <sub>H_cc/m_area</sub>	0,37994	tn CO2/hectare/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of cultivated area
R24.2	AG <sub>H_cc/m_product</sub>	0,01563	tn CO2/tn of yield/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per unit of harvested fruits
R24.3	AG <sub>H_cc/m_tree</sub>	0,00085	tn CO2/tree/year	CO2 Annual Gain due to herbicides reduction (cover crops/mulching) per tree unit
R25.1	AG <sub>I_im/mt_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of cultivated area
R25.2	AG <sub>I_im/mt_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per unit of harvested fruits
R25.3	AG <sub>I_im/mt_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to insecticides reduction (insects monitoring/mass trapping) per tree unit
R26.1	AG <sub>WF_area</sub>	2,36149	tn CO2/hectare/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of cultivated area
R26.2	AG <sub>WF_product</sub>	0,09714	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per unit of harvested fruits
R26.3	AG <sub>WF_tree</sub>	0,00530	tn CO2/tree/year	CO2 Annual Gain due to the use of wood fuels instead of diesel per tree unit
R27.1	AG <sub>RES_area</sub>	0,00000	tn CO2/hectare/year	CO2 Annual Gain due to the use of RES per unit of cultivated area
R27.2	AG <sub>RES_product</sub>	0,00000	tn CO2/tn of yield/year	CO2 Annual Gain due to the use of RES per unit of harvested fruits
R27.3	AG <sub>RES_tree</sub>	0,00000	tn CO2/tree/year	CO2 Annual Gain due to the use of RES per tree unit