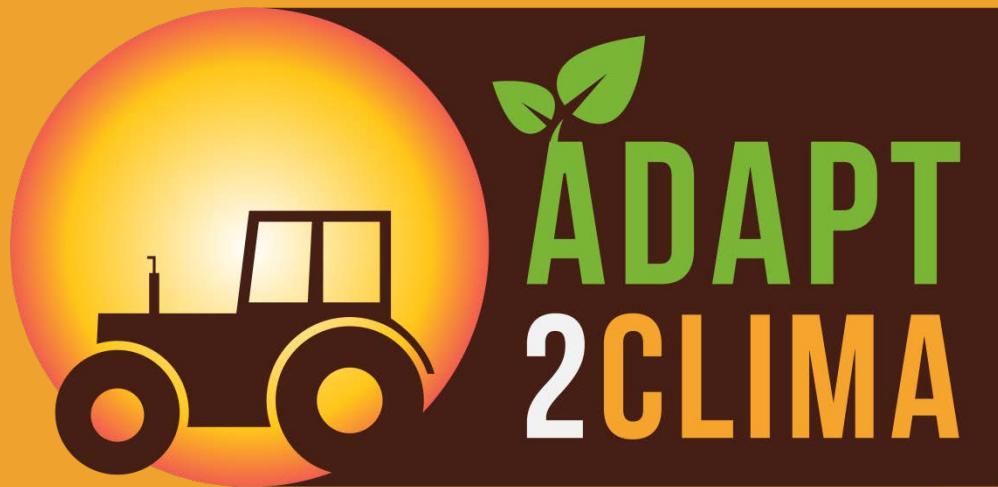


THE ADAPT2CLIMA TOOL FOR SUPPORTING ADAPTATION PLANNING IN AGRICULTURE

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3rd Virtual ADAPTtoCLIMATE Conference, 19-20/04/2021

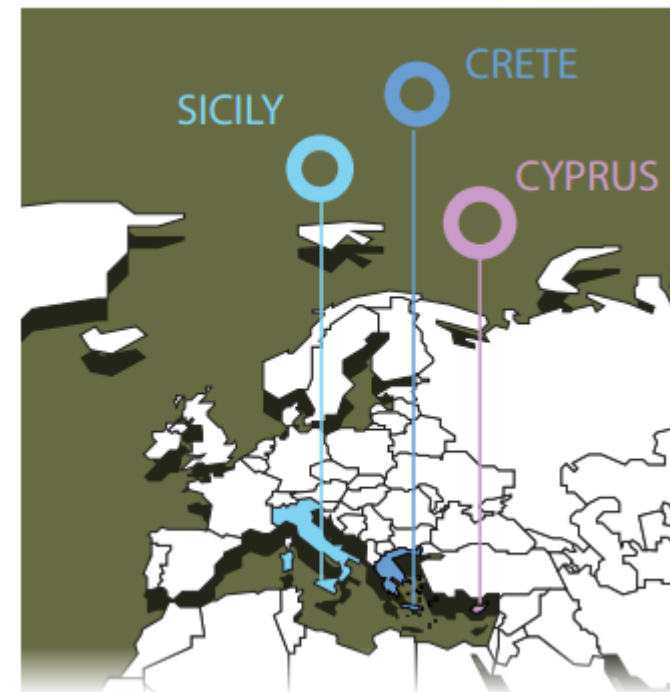
ADAPT2CLIMA PROJECT

The overall aim of the LIFE ADAPT2CLIMA (LIFE14 CCA/GR/000928) project is to increase knowledge on the vulnerability of EU Mediterranean agriculture to climate change and to support decision making for adaptation planning

Duration: **53 months** (1 Oct. 2015 – 29 Feb. 2020)

Project Budget: **1,497,060 €** (60% EC funding)

Implementation Areas: **Crete (Greece), Cyprus, Sicily (Italy)**

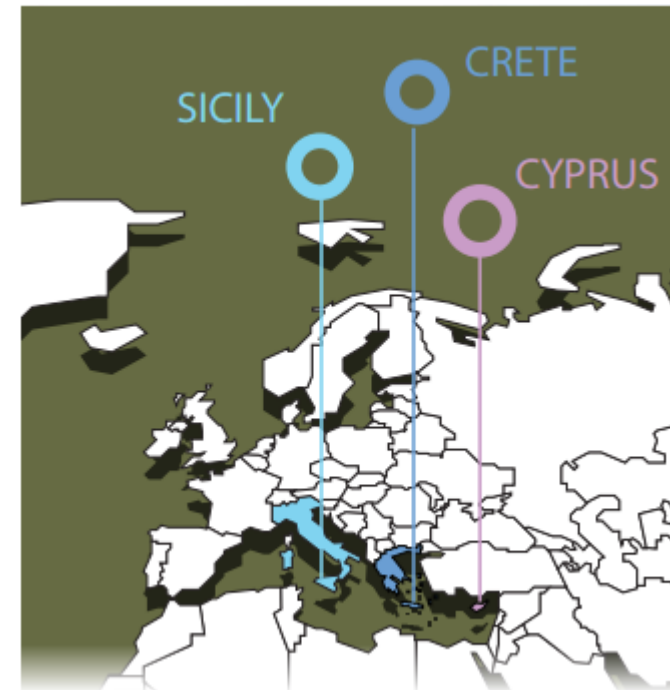


ADAPT2CLIMA PROJECT

➤ **Coordinator:** National Observatory of Athens-Greece

➤ **Partners:**

- National Technical University of Athens - Greece
- Agricultural Research Institute - Cyprus
- Institute of BioEconomy (CNR-IBE) - Italy
- Region of Crete - Greece
- Department of Agriculture, Rural Development and Mediterranean Fisheries, Region of Sicily, Italy





olive trees



tomatoes



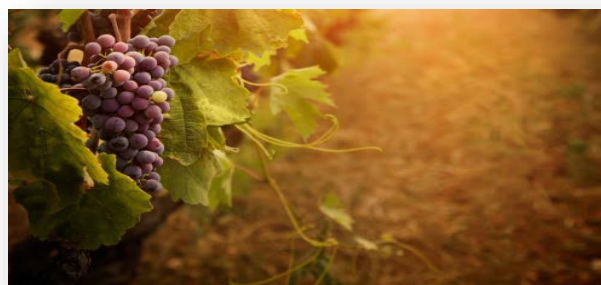
potatoes



barley

crops

grapevines

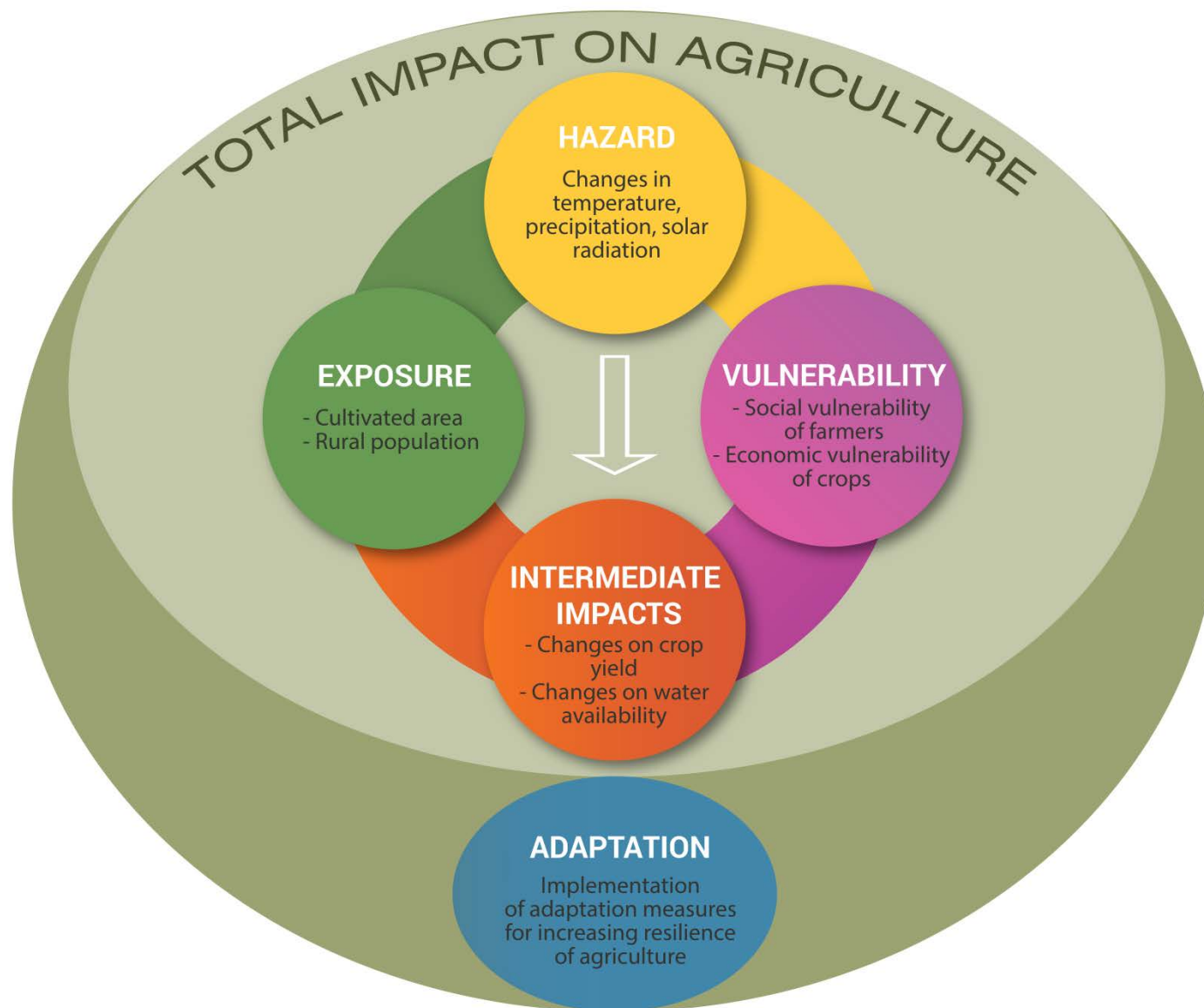


wheat



ADAPT2CLIMA RESULTS

- The **assessment of climate change impacts on crop production** in the three islands.
- The **development and demonstration of a user friendly and interactive decision support tool** for supporting decision making in agriculture
- The **development of adaptation strategies** of the agricultural sectors of the islands.

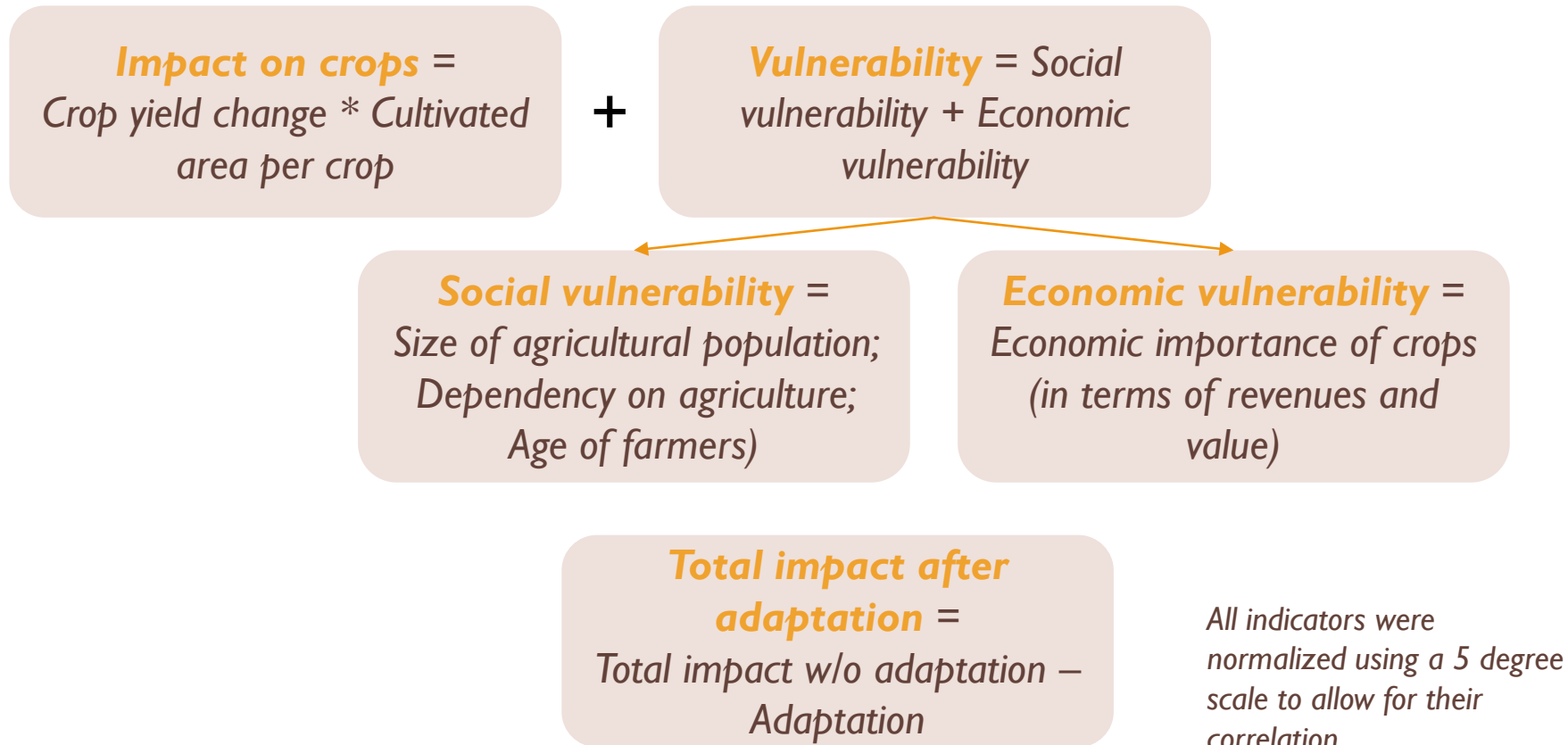


TOTAL IMPACT ON AGRICULTURE

- Based on the IPCC AR5 (2014) terminology
- Assessment at geospatial level so as to enable the identification of high risk areas where adaptation measures should be implemented

Total impact on agriculture =

Impact on crops + Vulnerability



All indicators were
normalized using a 5 degree
scale to allow for their
correlation

IMPACT
ASSESSMENT
METHODOLOGY

TOOL COMPONENTS

Provides information through interactive maps and graphs within a GIS-based environment on:

- agriculture relevant **climatic indicators**
- **hydrologic** and **drought** indicators for the project's pilot areas
- **crop performance** indicators for different sowing seasons and precocity levels for each crop
- **socio-economic** indicators used in the cc impact assessment
- evaluation of available **adaptation measures** for addressing climate change impacts on crops
- **total climate change impact assessment** for each crop **with or without the implementation of adaptation measures**

POTENTIAL USERS OF THE TOOL

- **Individual farmers** and agricultural cooperatives may be informed on the expected cc impacts to their cultivations as well as on the available measures for adaptation
- **Agronomists** may support farmers to the adaptation process, while the agribusiness industry may redesign or develop new adaptation-oriented products
- **National, regional and local authorities** may gain an overall insight to the expected cc impacts on their agricultural sectors and identify the available adaptation measures in order to include them in adaptation strategies and policies
- The **academic community** may access valuable scientific data to promote research on climate change and agriculture-related research fields
- **Non-Governmental Organizations, civil associations** and the public in general may gain insight on the cc impacts for the project areas, promote public acceptance of adaptation policies and push for governmental action

CLIMATE MODELS AND SCENARIOS

Two RCMs developed within the **EURO-CORDEX** initiative at a hor. resolution of 12km:

- HadGEM2-ES/RCA4,
- MPI-ESM-LR/RCA4

Average climatic conditions expected for the period **2031-2060** according to the following Representative Concentration Pathways (RCPs):

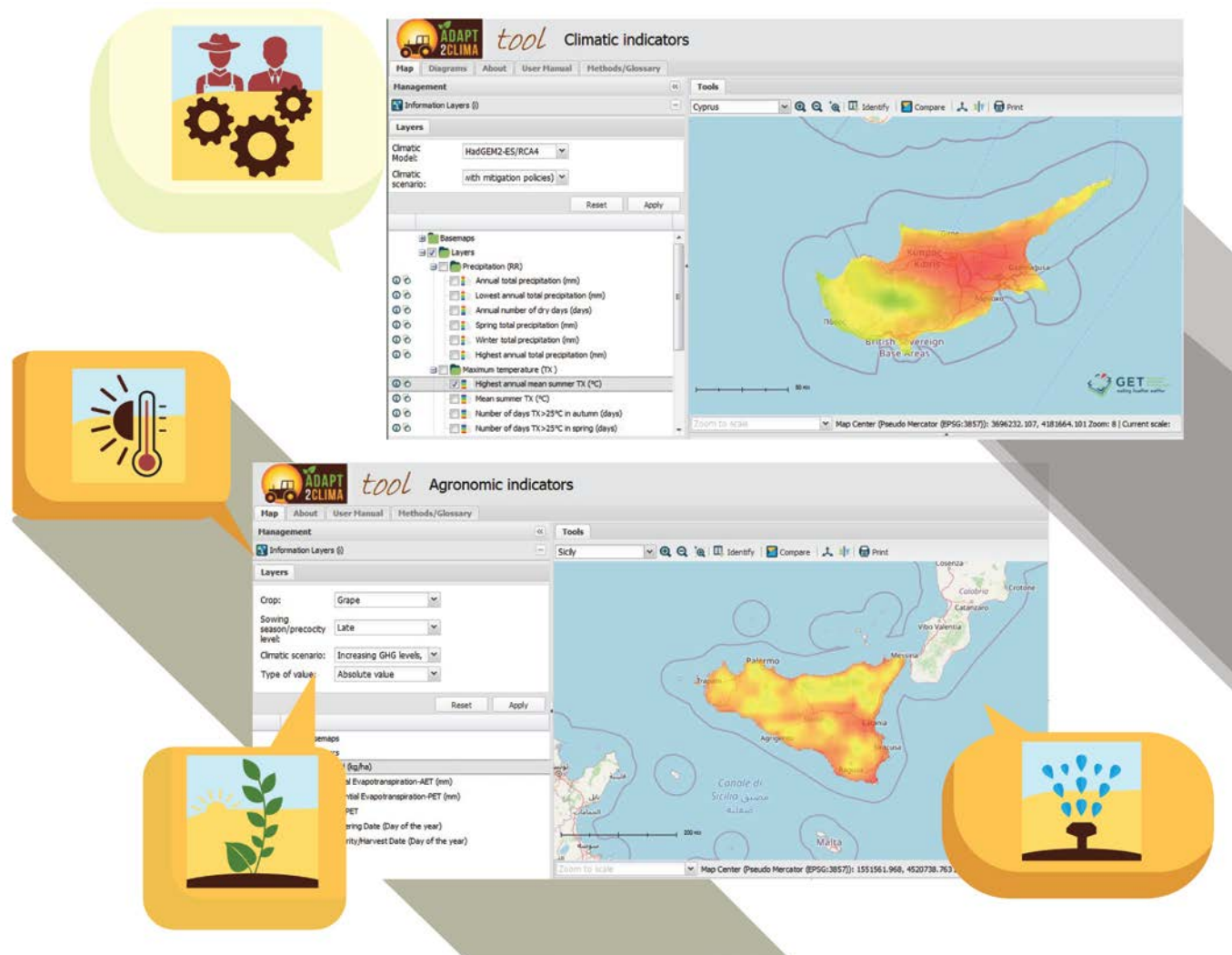
- RCP4.5- Stabilization of GHG concentration levels , with mitigation policies
- RCP8.5- Increasing GHG concentration levels , no mitigation policies

long-term adaptation
planning

Extreme climatic conditions according to RCP8.5:

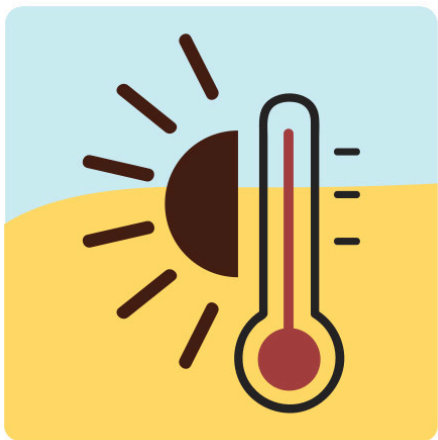
- Intense warm/cold and dry/wet years

short-term adaptation
planning

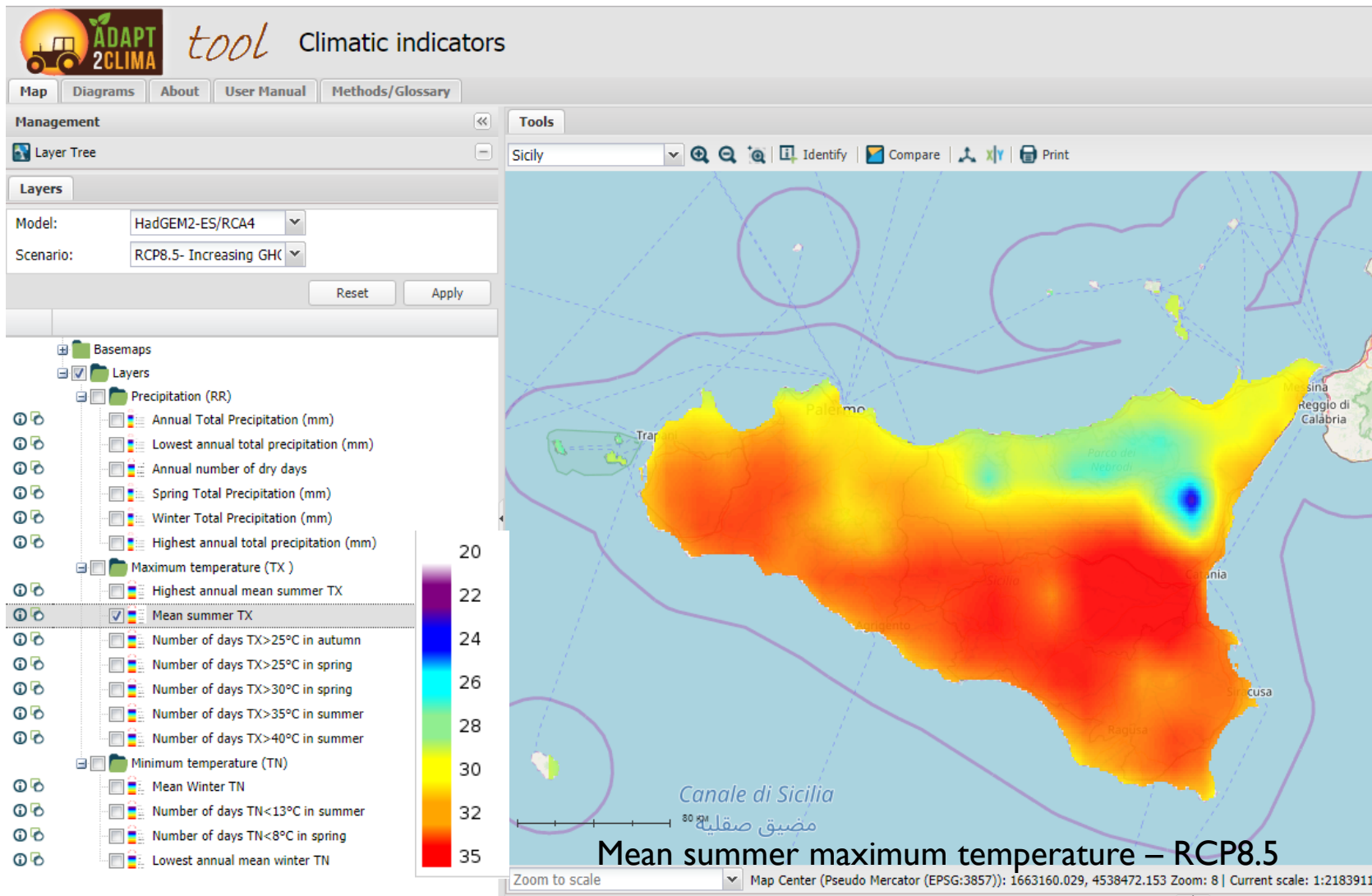


ADAPT2CLIMA DECISION SUPPORT TOOL NAVIGATION

<https://tool.adapt2clima.eu/en/home/>



CLIMATIC SECTION



-Climatic indicators relevant to precipitation, minimum and maximum temperature.

-Relevant to the different phenological stages of the plants, crop production and quality, plant survival

-Decided after consultation with the local steering committees



HYDROLOGIC SECTION

Please select the following parameters for an interactive representation of the hydrological variable.

Select Island:

Crete

Select SPEI hot spot
(see file 'Methods/Glossary'):

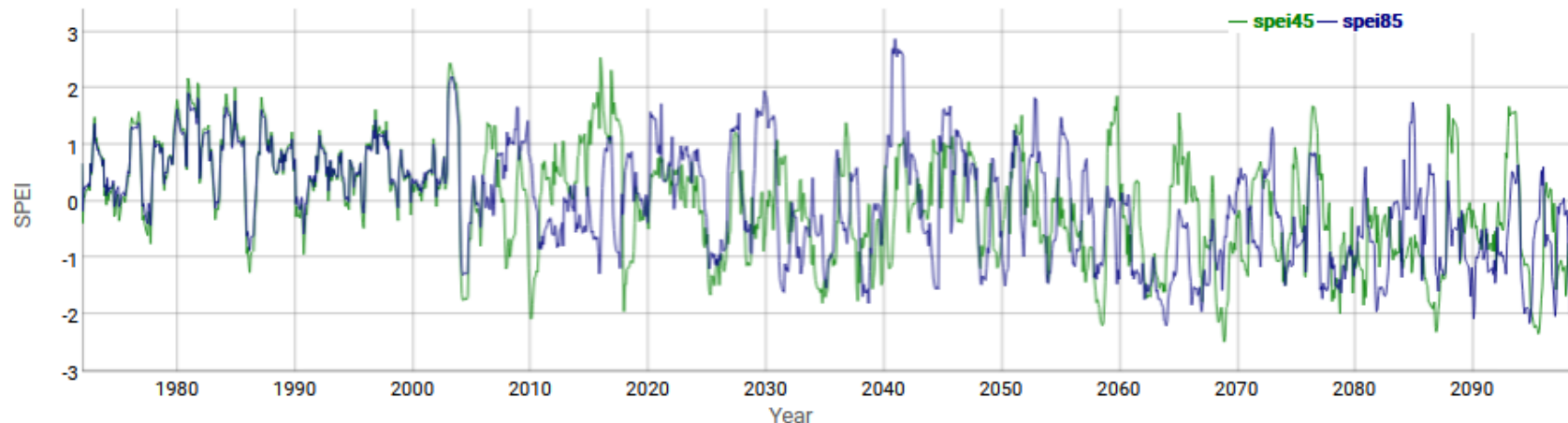
Ayia lake

Select Climatic scenario

× Stabilization of GHG levels (RCP4.5)

× Increasing GHG levels (RCP8.5)

Submit



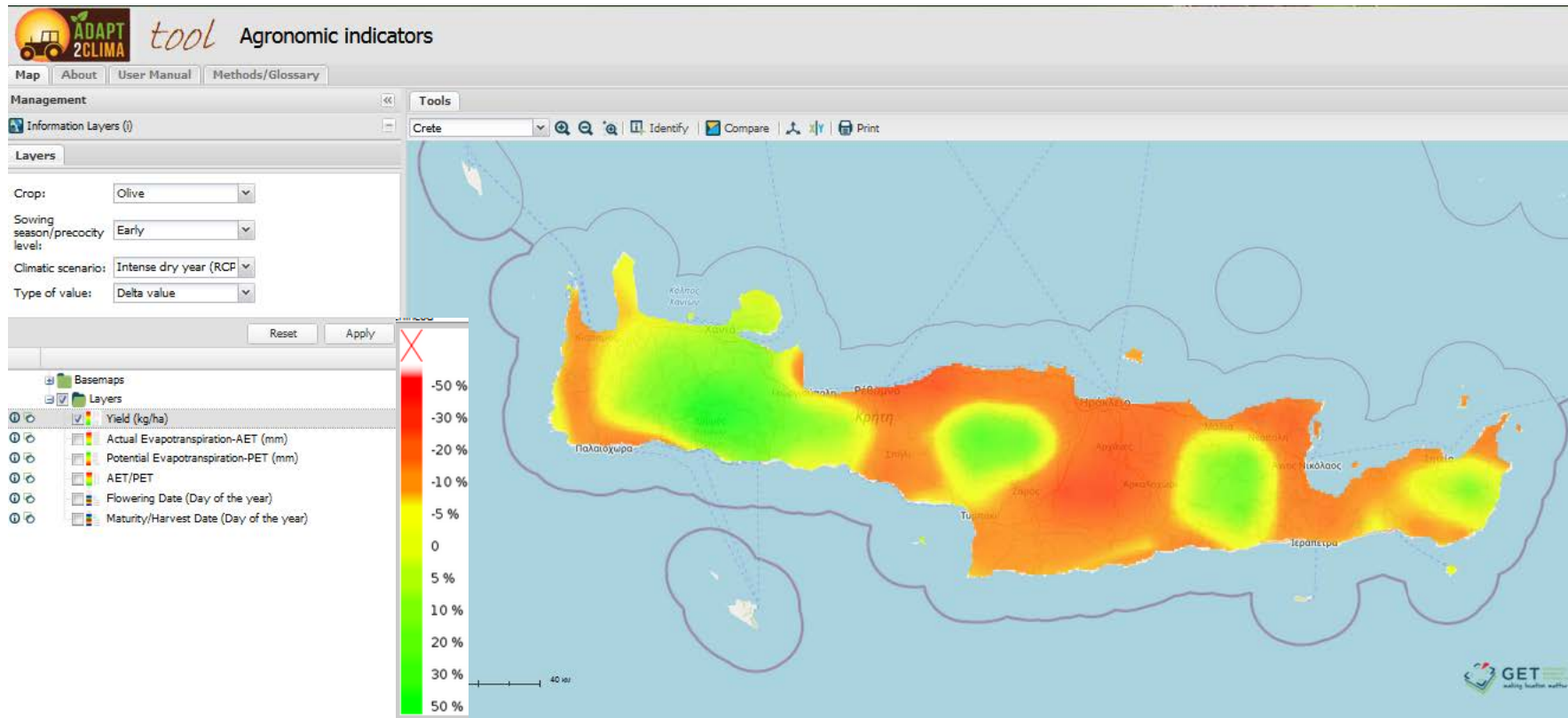
Hydrologic indicators:

- Groundwater level/variability between reference hydrological year and future scenarios

- Standardized Precipitation Evapotranspiration Index (SPEI)



AGRONOMIC SECTION



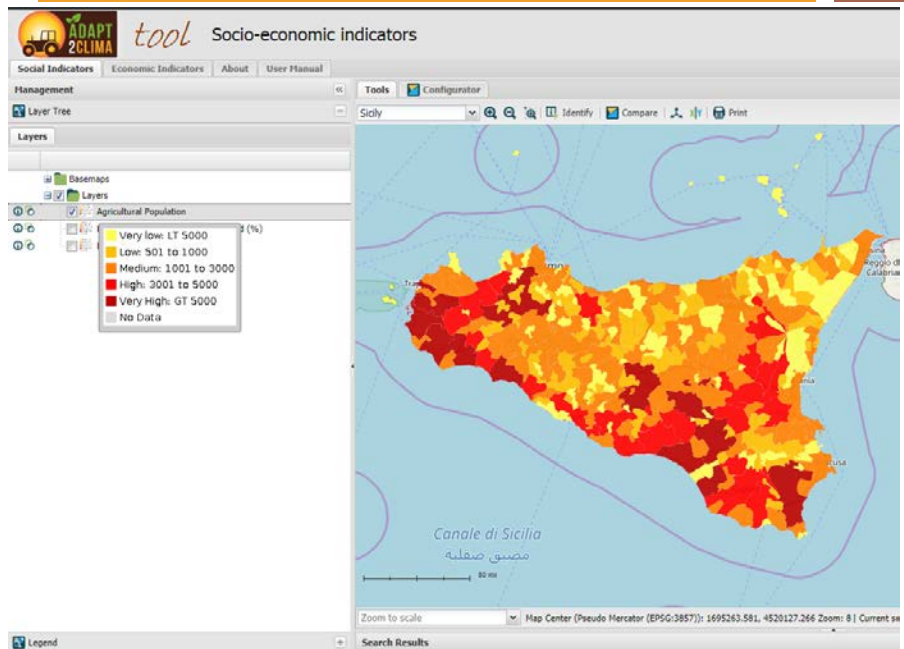
Olive- yield change for an intense dry year under RCP8.5

Crop performance indicators:

- Flowering date
- Maturity/harvest date
- Crop yield
- Actual evapotranspiration (AE),
- Potential evapotranspiration (PET)
- AE/PET

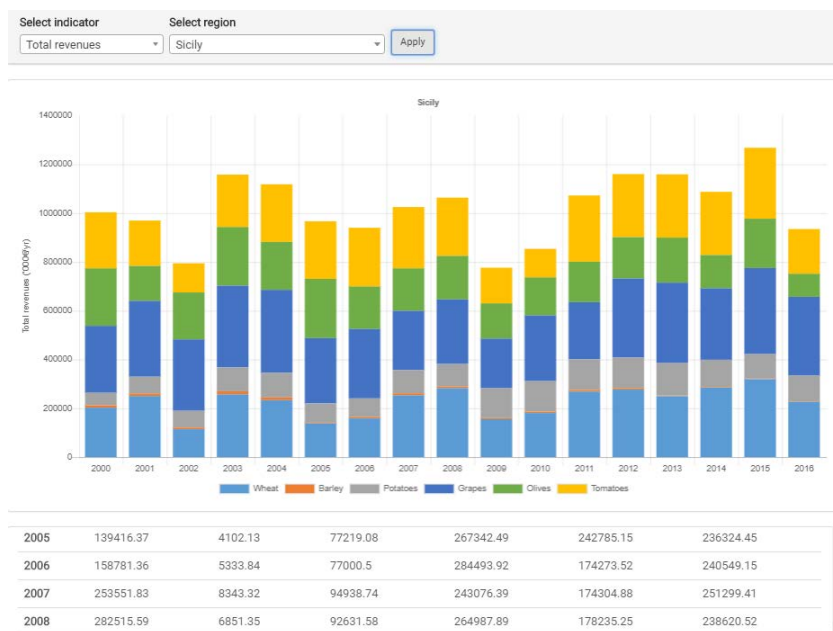


SOCIO-ECONOMIC SECTION



Agricultural population

Contribution of the crop revenues to the total revenues of the agricultural sector- Sicily



Social indicators:

- Agricultural population
- Family labour force over 65 years old (%)
- Dependence on agriculture (Level of economic dependence of farmers on the agricultural income)

Economic indicators (crop specific):

- Total revenues: (Contribution of the crop revenues to the total revenues of the agricultural sector)
- Crop price











ADAPTATION SECTION

Evaluation of adaptation measures

In the table that follows one may explore the available adaptation measures for addressing climate change impacts on crops, as well as, their evaluation against a set of criteria. The scores presented in the table are the average of the total scores provided by a pool of experts in the frame of the ADAPT2CLIMA project.

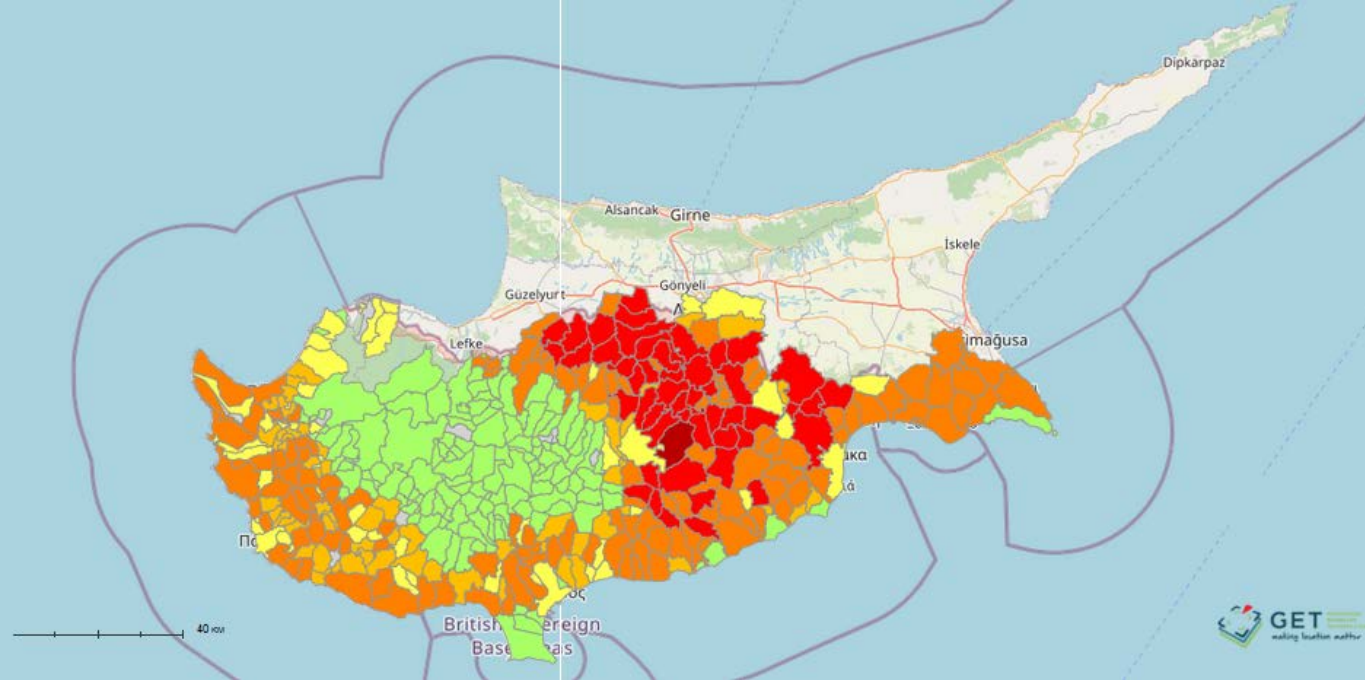
➤ Exploring the available adaptation measures for addressing climate change impacts on crops, as well as, their evaluation against a set of criteria (multi-criteria analysis)

➤ The scores presented in the table are the average of the total scores provided by a pool of experts in the frame of the ADAPT2CLIMA project

Adaptation measures / Evaluation criteria	Efficiency	Urgency for implementation	"No-regret"	Ease of implementation	Contribution to adaptation	Economic viability	Social acceptance	Total score
Use of green manure for vegetables. 	55.00	51.00	67.00	42.00	52.00	38.00	67.00	53.00
Earlier planting of potatoes 	64.00	47.00	62.00	43.00	54.00	38.00	64.00	53.00
Breeding early maturing potato varieties for shorter rainy seasons 	66.00	55.00	63.00	47.00	63.00	50.00	62.00	58.00
Applying deficit irrigation strategies (e.g. regulated deficit irrigation) in olive groves. 	74.00	68.00	73.00	46.00	66.00	49.00	65.00	63.00
Applying conservation tillage combined with vegetation cover in row-middle floors during winter and mulching it at the beginning of spring in olive groves 	59.00	50.00	61.00	50.00	55.00	59.00	58.00	56.00
Applying deficit irrigation strategies (e.g. regulated deficit irrigation, partial root drying or sustained deficit irrigation) in vineyards 	65.00	57.00	67.00	50.00	59.00	44.00	60.00	57.00
Applying the principles of conservation agriculture in rainfed cereals 	62.00	57.00	63.00	55.00	55.00	42.00	61.00	56.00
Applying zero tillage and early sowing in wheat/barley crops. 	61.00	56.00	56.00	55.00	56.00	53.00	50.00	55.00

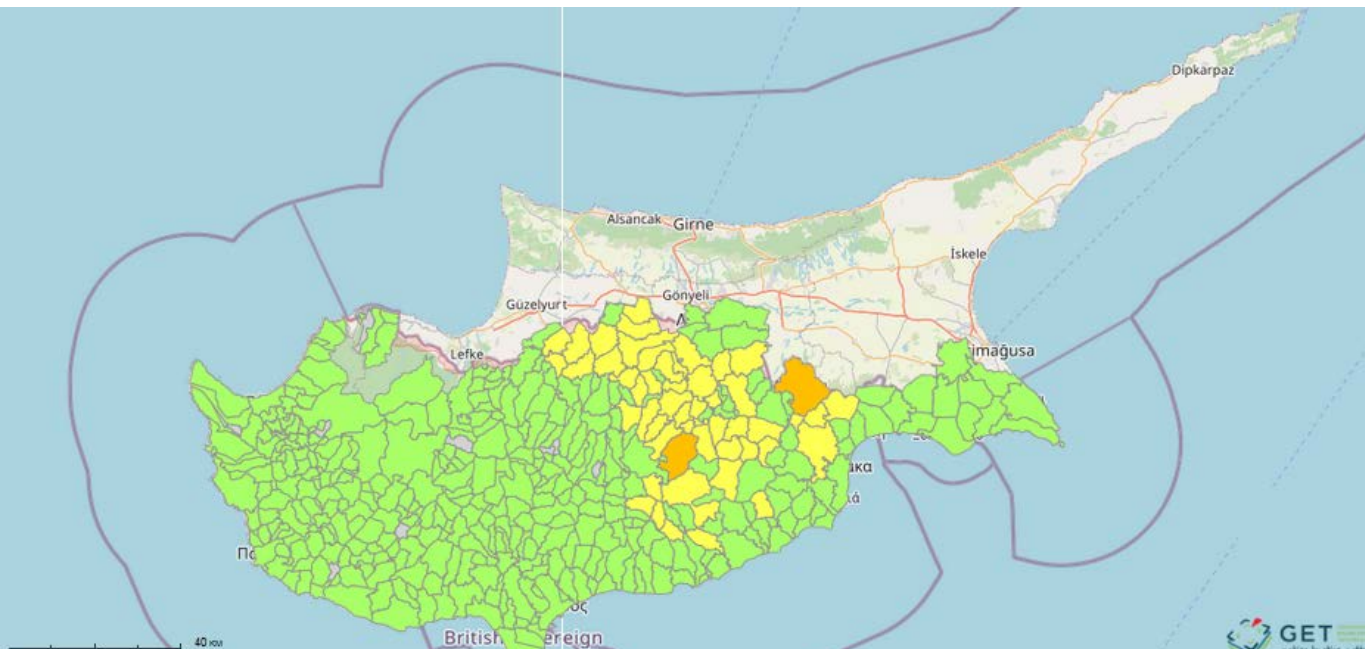


IMPACTS AND ADAPTATION SECTION



Olive – RCP4.5

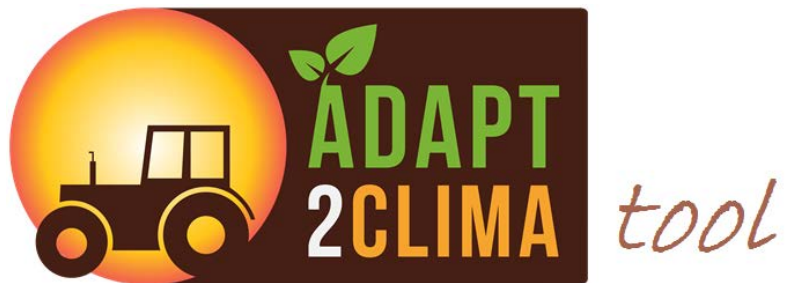
Total impact without adaptation



Total impact with adaptation

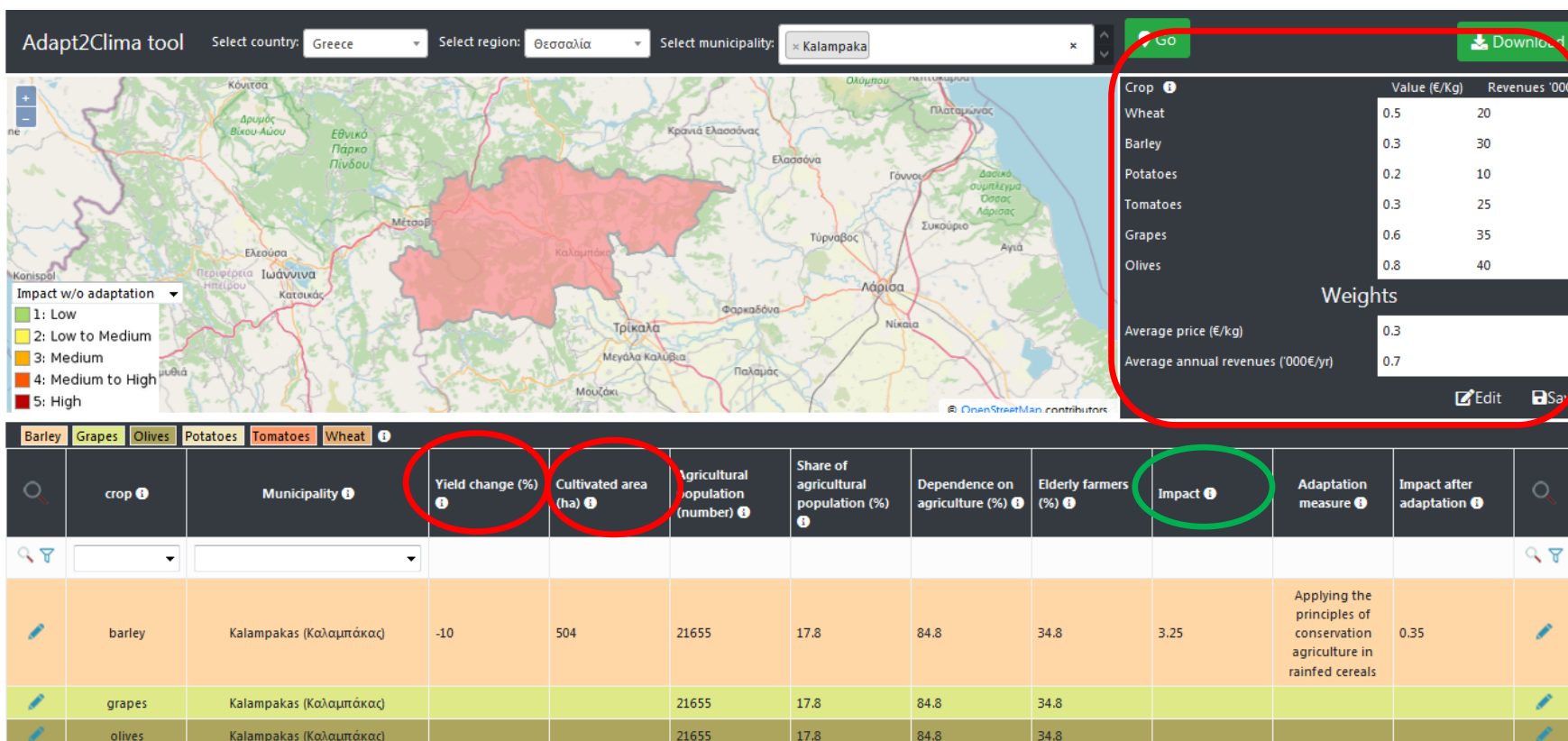
Adaptation measure: Applying conservation tillage combined with vegetation cover in row-middle floors during winter and mulching it at the beginning of spring in olive groves





REPLICATION

APPLY THE TOOL TO YOUR AREA



-The ADAPT2CLIMA tool is universally applicable to any municipality of Italy, Greece.

-Minimum data required refer to the crop yield change, cultivated area, economic data per crop.

➤ Competent authorities may decide on the specific areas and crops where adaptation measures should be implemented.

THANK YOU FOR YOUR ATTENTION!

For more information please visit our website:

<http://adapt2clima.eu/en/>

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LIFE Adapt2clima



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