

The sustainability of the avocado crop in Europe

Challenge

To meet the growing European demand for avocados, this product is imported from South America, which has a high carbon footprint. At the same time, many European farmers are turning to this crop as a substitute for others due to its better economic profitability and the new climatic conditions.

Because avocado is a new crop in Europe, many farmers are not familiar with the most appropriate agronomic techniques adapted to the specific conditions.

Solution

It is necessary to identify whether the conditions are suitable before opting for this crop. To this end, a regional agroclimatic map has been drawn up.

The best available techniques to increase productivity, achieve more efficient water management and more effective biological control have also been studied.

Benefits

- Consider the agroclimatic conditions to determine the viability of this crop before opting for this product.
- Increase avocado productivity and improve water efficiency thanks to new cultivation practices.
- Reduce imports from South America and, therefore, decrease the CO₂ emissions that this transport entails.

Practical recommendation

- Before planting, the agroclimatic map must be consulted to determine whether the plot meets the optimum conditions. If the plot is not located within the agroclimatic map's area of influence, the climatic data of the closest weather station to the plot must be consulted and compared with the scales established in the cultivation manual.
- The appropriate variety as well as the pollinating variety must be selected in accordance with the manual, considering the type of soil and water available and the salinity and limestone concentrations in the plot.
- A good irrigation system is essential for water efficiency. Capacitance probes can be chosen to determine the irrigation needs at each moment (some are autonomous and work with a small solar panel).

Applicability box

Theme

Avocado; climate change adaptation; water-use efficiency; cover crop

Context

Mediterranean area with potential for avocado growing

Application time

All year

Required implementation time

No time required

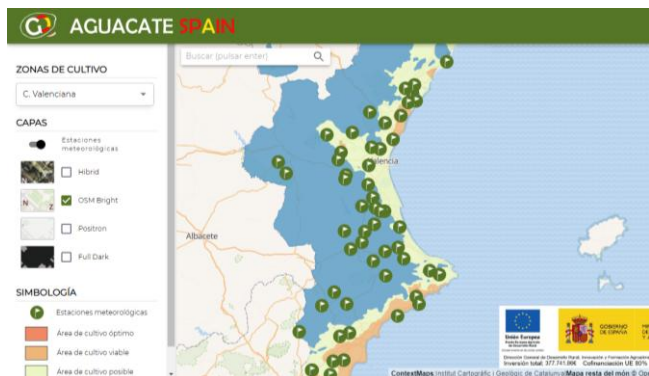
Period of impact

Immediately after applying the techniques

Equipment

No specific equipment is required.

- Pollination is key in avocado cultivation, so the installation of ground cover is recommended. This will increase the number of pollinators and productivity, as well as water efficiency.



Picture 1. Agroclimatic map



Picture 2. Capacitance probe on an avocado plantation



Picture 3. Avocado field

Further information

Web links

Project website:


 <https://goaguacatespain.com/>

Agroclimatic map (only available for some areas of Spain):

 <https://goaguacatespain.com/mapa/>

Further reading

Manual of practical management of avocado cultivation:

 <https://www.avaasaja.org/index.php/de-interes/documentacion/item/10006-manual-de-manejo-practico-del-cultivo-del-aguacate>

Contact information

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Project website: www.climed-fruit.eu

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Simplified cost/benefit analysis

The sustainability of avocado crop in Europe

Introduction – presentation of ex-ante and ex-post situation

The consumption of avocado in Europe, as it is considered a superfood, has increased drastically in recent years, with the majority of these fruits coming from South America, with the consequent impact of CO₂ on the atmosphere through its transportation.



Likewise, the general increase in temperatures in some European regions has made these areas suitable for growing avocados, which is why new plantations of this fruit have been started in recent decades. At the same time, the scarcity of water resources in some areas shows the need to optimize water management in this area.


The ex-ante situation of the study considers an avocado plantation in which the new knowledge and agronomic techniques on the crop are not applied and the ex-post situation contemplates the implementation of the knowledge studied during the OG Avocado project, in terms of increase productivity and reduction of water use, among others.

Economical costs and benefits






The data refers to the area of Valencia, a province located in the Mediterranean region of Spain.

Legend

-  Estimated indicator
-  Measured indicator

	Ex-ante	Ex-post
Variable costs		
Input		
<i>Fertilizers</i>	952,20	952,20
<i>Phytosanitary products</i>	516,60	516,60
<i>Water</i>	2.683,53	1.736,40
Labour (excluding installation)	1.392,96	1.392,96
Machine costs (fuel + depreciation)	320,64	320,64
TOTAL	5.865,93 €	4.918,80 €
COMPARISON	Global reduction of 16% of the cost: 	

Environmental costs and benefits

Energy	Indicator improvement of 35%: 
<p>The energy used to obtain irrigation water has been measured, which is reduced as a result of the optimization of the latter. In addition to this improvement, with the implementation of the agronomic techniques studied, an improvement in the productivity of the crop is achieved, therefore, the energy consumed for each kilo of avocado produced is also reduced, and not only the global energy at the plot level.</p>	
Water	Indicator improvement of 35%: 
<p>The amount of irrigation water used in the ex-ante and ex-post situation has been measured, which is reduced in response to an increase in water efficiency: a smaller amount of water is used, since it is added more times, avoiding percolation. In addition to this improvement, an improvement in crop productivity is achieved, also reducing the water used for each kilo of avocado produced.</p>	
Soil	No change: 
<p>No specific measurements were taken during the project for this indicator, but it is not supposed to be impacted.</p>	
Air	No change: 
<p>Although the soil and air parameters are not directly affected by the implementation of the practice, due to the increase in productivity in the field, consuming the same resources we achieve a greater quantity of avocados. Therefore, with this increase in productivity, the use of phytosanitary products is reduced with the consequent carbon footprint of their production and transportation, the use of agricultural machinery, among others.</p>	
Biodiversity	No change: 
<p>No specific measurements were taken during the project for this indicator, but it is not supposed to be impacted.</p>	



GO AVOCADO - Improvement of avocado productivity in Malaga, Cadiz, Valencian Community and the Canary Islands

Short description of the OG

The objective of this OG is to develop an avocado cultivation manual adapted to the agro-climatic characteristics of the regions of Andalusia, the Valencian Community and the Canary Islands, to increase avocado productivity in these areas.

In addition, the project aims to promote the successful expansion of the crop to new areas through the transfer of knowledge and technology related to cultivation techniques, plant material and biological control, thus consolidating Spain as the first European supplier of quality avocado produced sustainably and with a low carbon footprint.

Benefits

The implementation of the project aims to achieve a more sustainable cultivation of avocado with all that this entails, adapted to the characteristics of Mediterranean cultivation areas.

Stage of implementation

Finished in September 2021.

Applicability box

Theme

Avocado; climate change adaptation; water-use efficiency; cover crop

Context

Mediterranean area with potential for avocado growing

Duration

2019-2021

Partners

ASAJA-Málaga, Instituto de Hortofruticultura Subtropical y Mediterránea "La Mayora" (IHSM La Mayora)

Budget

€ 3,657.30

Particularity

The OG studied different techniques to improve the productivity of the avocado crops.

Main achieved or expected results

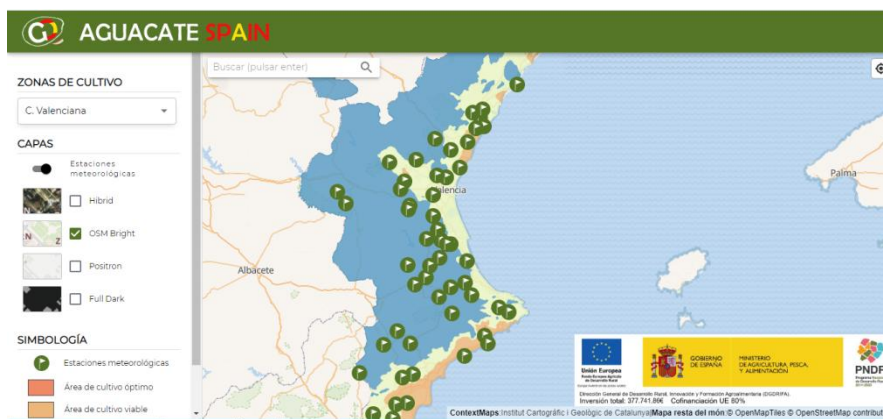
By adapting existing literature, mainly of South American origin, and conducting trials in various farms within the area of influence, we have succeeded in creating a cultivation manual tailored to the real agroclimatic conditions of the Mediterranean, with a considerable reduction in water usage compared to what is described in other countries.

Trials have been conducted on different varieties with various rootstocks to assess their potential in different areas. Thanks to these trials, farmers deciding to plant avocados can have reliable information about the performance of each variety with each rootstock in different cultivation zones.

An agroclimatic map has been developed using all the information gathered, and any farmer can use it to determine whether their plot is suitable or unsuitable for avocado cultivation.



Picture 1: Field trials of rootstocks and varieties



Picture 2: Agroclimatic map

Existing materials

Web links

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