

## SOIL-CONSERVATION AGRICULTURE:

AN EFFECTIVE BINOMY TO MITIGATE THE CLIMATE CHANGE

In agricultural ecosystems, the soil is one of the most relevant natural resources to fight change climate change, thanks to its potential to sequester CO<sub>2</sub> from the atmosphere. Therefore, the soil, which contains three times more carbon than the atmosphere, is recognized as the second storage of this element on the planet after the oceans. It is also one of the most important components of the biosphere, because of its provision of functions and services to ecosystem. Some agricultural practices, such as **Conservation Agriculture**, increases the sink effect of soil carbon, which is considered by a great number of studies and reports as an effective tool to mitigate climate change.

An example could be soil management practices such as No-tillage in herbaceous crops or Groundcovers in woody crops, which are capable of sequestering up to 3.1 t and 5.7 t of CO<sub>2</sub> per hectare and year respectively. It means that, within a year, in Spain, the agricultural land under Conservation Agriculture, would offset the CO<sub>2</sub> emissions equivalent to those produced by a car that had gone 955 times around the earth.

Under this premise, the LIFE Agromitiga project, a European-funded initiative for the LIFE Program of the European Union, promotes the development of management systems which would mitigate climate change, through the implementation of Conservation Agriculture to calculate the quantities of sequestered carbon thanks to such practices.



## ACTIONS TO BE CARRIED OUT

Thanks to the actions carried out within the framework of the LIFE Agromitiga project, the farmer will have tools which would help them calculate the amount of sequestered carbon using different management systems on their land. That would allow to value the mitigation capacity of Conservation Agriculture compared to tillage-based practices. These actions are as follows:

- **Development of an informatics tool (App)** that allows, through mobile devices, quantify carbon content in the soil and verify its increase thanks to the use of mitigating climate change practices such as Conservation Agriculture.
- **Establishment of a Demonstrative Farms Network**, in which soil carbon content will be calculated and its increase will be verified thanks to the use of Conservation Agriculture practices in arable and woody crops. The network consists of a pilot-scale demonstration farm, 35 farms at national scale located in Andalusia (Spain) and 5 farms at international scale located in Portugal, Spain, Italy and Greece.
- **Implementation of a governance and sustainability plan**, which would ensure effective social and institutional participation in the project, and which would help to spread philosophy about the practices promoted by the project on the agronomic and legislative level.
- **Dissemination and training activities**, focused on publicizing the project and its results, raising awareness of the main agents of the sector about climate change, helping technicians and farmers to learn about the Best Management Practices used within the project (field days, seminars, online course, European conferences).
- **Preparation of papers, technical reports and manuals**, which would be used in further studies, implementation and monitoring of agricultural practices promoted by the project, both agronomically and administratively, or as a documentary basis for implementing measures to support mitigation and adaptation to climate change respecting community, national and/or regional regulations.



## OBJECTIVES OF THE LIFE AGROMITIGA PROJECT

- To improve the state of knowledge about the contents of C in agricultural soil.
- To design and implement a method to calculate C footprint in the cultivation stage of crops, eligible for international verification standards and C footprint calculation.
- To develop a technological tool to evaluate and quantify the increase of C in soils due to better soil management practices, as a basis for the development and monitoring of policies linked to climate change and emissions trading.
- To demonstrate the ability of CA to reduce greenhouse gas emissions in the Mediterranean Basin.
- To encourage the development of soil management systems that mitigate climate change, through training and raising awareness of stakeholders linked to agriculture.
- To spread and transfer the experience and the soil management philosophy to similar Mediterranean areas.

## EXPECTED RESULTS

- **Increase in soil carbon content by 8% in those farms managed under Conservation Agriculture practices with respect to those managed under conventional tillage.**

↑ **8%**  
carbon  
sequestration



- **20% reduction in Greenhouse Gases Emissions in those farms under Best Management Practices.**

↓ **20% CO<sub>2</sub>**

- **Tools used to quantify soil carbon: App for mobile devices capable of quantifying soil carbon and thus verify the ability to mitigate climate change using Conservation Agriculture practices, as well as development of a methodology that would allow to certify validable carbon credits in the international regulations for verification and calculation of carbon footprint.**

- **Improvement of farms sustainability comparing following indicators:**

+ **environmental**  
+ **economical**  
+ **social**

- **Technical documentation identifying measures to be adopted in the European, national and regional agricultural sector that reinforce the policies that may arise from the regulations related to climate change mitigation.**

- **Improvement of formation groups belonging to the agricultural sector in relation to climate change and its implications in agriculture.**





## MITIGATING CLIMATE CHANGE WITH CONSERVATION AGRICULTURE

Conservation Agriculture is the basis of agricultural practices implemented in the framework of the LIFE Agromitiga project. These techniques, based on three basic principles such as no-tillage, leaving stubbles on at least 30% of the soil surface and crop rotation offer enormous potential for all farms and agro-ecological systems. Its proven effectiveness for soil carbon sequestration and reduction in greenhouse gas emissions, make it one of the best practices to mitigate climate change.

### NO-TILLAGE

No tillage is the most representative agronomic practice of the Conservation Agriculture in herbaceous crops, especially implanted in winter and spring cereals, legumes in a rotation with cereals and oilseeds (sunflower).

It is an agronomic practice based on no-tillage, at least 30% of soil surface is protected by stubbles, and the sowing is done using machinery enabled to sow on the remains of the previous crop. No-tillage is the best option to achieve a high degree of conservation in annual crops, in which tillage is completely refused.




### GROUNDCOVERS

Groundcovers is the most representative agronomic practice of the Conservation Agriculture in woody crops, highlighting its implementation in olive, citrus and almond crops. In this case, the soil surface between the rows of trees remains protected against water erosion generated by the direct impact of raindrops. At least 30% of the soil surface is protected by groundcovers. Groundcovers can be made up of live vegetation or plant remains, which can contain pruning remains, always taking care to maintain them properly so that there is no competition with the crop for water or nutrients.




# agromitiga

The LIFE Agromitiga project (LIFE17 CCM/ES/000140) has received funding from the LIFE Programme of the European Union



#### Coordinating beneficiary



#### Associated beneficiaries



#### Contact

Asociación Española Agricultura de Conservación. Suelos Vivos.  
 IFAPA Centro "Alameda del Obispo"  
 Avda. Menéndez Pidal s/n - 14004 Córdoba (España)  
[www.lifeagromitiga.eu](http://www.lifeagromitiga.eu)



## DEVELOPMENT OF CLIMATE CHANGE MITIGATION STRATEGIES THROUGH CARBON-SMART AGRICULTURE

The LIFE Agromitiga project (LIFE17 CCM/ES/000140) has received funding from the LIFE Programme of the European Union

