

Development of climate change mitigation strategies through carbon-smart agriculture (LIFE17 CCM/ES/000140)

TANSING.





PROJECT FICHE

Title: LIFE17 CCM/ES/000140. Development of climate change mitigation strategies through carbon smart agriculture.

Acronym: Life Agromitiga.

Start date: 15/09/2018

End date: 29/02/2024

Coordinating beneficiary: Spanish Association of Conservation Agriculture Living Soils (AEACSV).

Associated beneficiaries:

Young Farmers' Agricultural Association of Seville (ASAJA Seville). Department of Sustainability, Environment and Blue Economy of the Regional Government of Andalusia. European Conservation Agriculture Federation (ECAF). Andalusian Institute for Agricultural, Fisheries, Food and Organic Production Research and Training (IFAPA). University of Cordoba.

Total budget: 2.782.957 €.

EU contribution: €1,669,774 (60%)

Web: lifeagromitiga.eu

Contact:

Spanish Association of Conservation Agriculture Living Soils (AEACSV). IFAPA "Alameda del Obispo" Centre. Avda. Menéndez Pida s/n. 14004 Córdoba (Spain). info@agriculturadeconservacion.org

Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

THE LIFE AGROMITIGA PROJECT IN 5 POINTS

What is your aim?

The Life Agromitiga project is a demonstrative and innovative project that aims to contribute to the transition towards a low-carbon agricultural system by promoting the development of low-carbon management systems, such as Conservation Agriculture (CA). In this way, the project provides validated results applicable to the EU's commitments to global climate partnerships.

How did we achieve this goal?

- By improving the state of knowledge on soil carbon content and its dynamics as a function of the management system used in crops, thanks to studies carried out on a network of 41 demonstration farms.
- Verifying the Greenhouse Gas (GHG) emission reduction capacity of the CA in the network of demonstration farms established in the framework of the project.
- Designing and implementing a methodology for calculating the carbon footprint of the agronomic phase of crops can be integrated into international standards for the verification and calculation of the carbon footprint.
- Developing an App that allows the assessment and quantification of the increase in carbon due to better soil practices, as well as the calculation of Greenhouse Gas emissions derived from agricultural operations carried out on a crop.
- Disseminating and transferring the knowledge and experience gained to all actors in the agricultural sector, from farmers to politicians and policymakers, academia, and the private sector.

When?

The project has been carried out over a period of just over four years, during which time data were collected from four agricultural campaigns in the demonstration farm network, and dissemination actions were carried out at different levels (online course, field days, seminars, and national and international conferences) and governance actions with different interest groups (farmers, politicians, and the world of academia).

Where?

Although the project has developed most of its actions in Spain, through a network of pilot and regional farms, it has a clear European vocation, as demonstrated by the fact that it has carried out replication actions in other countries of the Mediterranean basin (Portugal, Italy, and Greece) and dissemination actions not only in Spain but also in Belgium.

Main achievements to which the Life Agromitiga project has contributed:

- Increased knowledge of the behaviour of CA as a climate change mitigation management system in different soils and climate zones.
- Networking of farms as low-carbon agriculture success stories.
- · Design of carbon footprint methodology (indicators, guidelines, etc.).
- Mobile App development on soil organic carbon assessment and CO2 emissions.
- Presence of CA practices in the new CAP in Spain through the eco-schemes.
- Increase in the CA area in Spain.

OBJECTIVES OF THE POST-LIFE PLAN

Communicate the value of the achievements obtained by the project beyond its development period. To this end, it is necessary to continue with the implementation of communication and dissemination actions aimed at all agents in the agricultural sector.

Extend the Conservation Agriculture model to more areas, replicating and transferring the knowledge and lessons learned from the project. This will require a **Transferability and Replication Plan** to ensure rapid extension of this scheme throughout the Mediterranean basin.

Extending the use of tools developed in the project to a larger number of individuals. In this case, we are discussing the App for carbon quantification and GHG emissions, in which dissemination actions will have to be carried out and improvements and new functionalities will have to be studied. The Carbon Footprint (CF) quantification protocol and sustainability audit model for farms are also part of this objective, promoting the use of these documents among the sector's agents. This objective is supported by the Exploitation of results Plan.

To ensure the sustainability of the project's actions, using the results and achievements of the project as a starting point for new lines of work and research.

Securing human and financial resources. In order to cover the above objectives and carry out actions that will enable their fulfilment, it will be necessary to ensure the necessary human resources and financial flows during the post-Life phase.



MAIN LINES OF ACTION OF THE POST-LIFE PLAN

In order to achieve the above objectives, in addition to the Exploitation Plan and the Transferability and replication Plan carried out within the framework of the project, the Post Life Plan is based on the following axes:

13

Axis 1: Sustainability of the project's achievements

Once the Life Agromitiga project has been completed, it is time to analyse in depth the results generated in order to make the best possible use of them and give them continuity. For each of these achievements, proposed actions to promote sustainability are presented.



Achievement 1: Increased knowledge gained on the performance of Conservation Agriculture as a Climate Change mitigation management system in different soils and climatic zones.

Actión 1

Extrapolate the soil and climate zoning methodology to other agricultural regions.

Description:

The identification of different soil-climatic zones within the same region has enabled a better understanding of the behaviour of CA in terms of soil carbon sequestration under different environmental conditions. The Life Agromitiga project has defined the methodology for such zoning, and is a pioneer in this respect. The extrapolation of this methodology to other regions will make it possible to accurately characterise the mitigation potential of CA. To carry out this action, it will be necessary to have initial information, such as digital layers of soil types, climatic types, and land use. This type of information is usually held by public administration and research organisations. On this basis, meetings will be set up with these entities to inform them about the project and offer them the possibility of carrying out this zoning within the framework of initiatives that may arise under the Proposal for a Regulation on an EU certification for carbon removals (COM(2022) 672 final).

Action 2

Promover la visibilidad y la Promote the visibility and incorporation of the results obtained on soil carbon content into new initiatives.

Description:

The project has generated valuable information on soil carbon content in the Andalusian region. This information can be used as a basis for the development of new research to advance knowledge. In this sense, in the data that may be publicly owned, work will be done to give them the greatest possible visibility, publicising the repositories in which they are stored. A particular case in this respect is the REDIAM portal of the Department of Sustainability, Environment and Blue Economy of the Regional Government of Andalusia, a partner in the project, where regional content maps that have been produced may be stored in the future. On the other hand, within the framework of the calls for public aid for projects, work will be carried out with the partners responsible for generating the results obtained to find ways to incorporate this information in projects of interest.



Achievement 2: Creation of network of farms as lowcarbon agriculture success stories.

Action 1

Maintain the network of demonstration farms established in the Life phase and establish new contacts in the post-Life phase.

Action 2

Integration of the network into new projects and initiatives.

Description:

The establishment of demonstration farm networks is one of the most important assets generated by the project, in that they constitute success stories of the application of the agricultural practices promoted by the project; therefore, they are true examples of transformations that promote the sustainability of the agricultural sector. Therefore, it is of great interest to maintain and expand this network. To this end, both within and outside the established network, those farmers who are most aware will be identified to prolong the link beyond the development of the project. To this end, we also count on the support of the existing regional CA associations in Spain and the national CA associations of other European countries that are part of the ECAF.

Description:

Through new projects involving the establishment of lighthouses and living labs, or through the establishment of relations with public administrations with which contact has been maintained in the governance forum, the integration of the network will be promoted as an observatory of success stories in carbon farming. The Spanish Ministry of Agriculture, Fisheries, and Food has begun to characterise the carbon content of agricultural soils at the national level, and its interest in having model farms serves as a germ for this.





Achievement 3: Design of the carbon footprint methodology.

Action 1

Updating and promoting the carbon footprint calculation methodology.

Description:

As in the case of the farm network, the methodology is integrated into new initiatives for use and as a reference for calculating the Carbon Footprint. Based on the lessons learned, the protocol will be updated and made known to the actors involved in these initiatives.



Achievement 4: Development of mobile App on soil organic carbon assessment and CO₂ emissions.

Action 1

Dissemination of the tool among potential interested users.

Description:

Several beneficiary partners of the Life Agromitiga project include their usual activities and training actions addressed to the agricultural sector. Within the framework of these actions, demonstrative sessions on the use and application of a computer tool developed within the framework of the project will be integrated.

Action 2

Integration of the tool in new projects and initiatives.

Description:

Within the framework of new projects and initiatives that may arise under national and international public calls for proposals, the use of the App will be integrated as a data generator to advance the knowledge of soil carbon dynamics.

Action 3 Update and improve the App.

Description:

It is expected that continued use of the App by end users will generate new demands in terms of usability and applicability of the tool. A point of contact will be established through the website to meet these demands and undertake the relevant actions for the improvement of the App, uploading new updates to Google Play and the App Store.





Achievement 5: Presence of CA practices in the new CAP in Spain through the eco-schemes.

Action 1 Promote the uptake of the CA eco-schemes among CAP.

Description:

The inclusion of CA in the CAP eco-schemes in Spain is a milestone; it is the first time that this type of management system is subject to the collection of a premium under Pillar I. To ensure the success of the measure and its continuity in the future, it needs to be well received by farmers. To this end, and as part of the dissemination actions generated as a result of the activities of beneficiary partners such as the AEACSV, ASAJA Seville, IFAPA and the UCO, informative talks on the eco-schemes will be included, where possible with the help of public officials responsible for managing CAP aid.



Achievement 6: Increased area of JI in Spain

Action 1 Promoting CA practices among farmers and technicians.

Description:

In the framework of this action, training actions will be carried out for agents of the agricultural sector, in which the keys for the adoption and development of the practices of No-tillage and Groundcovers will be given. Emphasis will be placed on the environmental benefits of these practices, in particular the improvement of water use efficiency, to promote CA in the context of climate change. In the framework of this action, the manual developed in the project will be disseminated through the beneficiary partners' training activities, social networks, and websites.

Action 2 Identification of *early adopters*.

Description:

To promote CA practices among members of the farm network and regional and national CA associations, pioneer farmers will be identified as ambassadors of the management system, both in training courses and in meetings with administrations, companies, and research bodies. In this regard, the contacts generated in the framework of the project's governance actions will be used, particularly in the working groups of the Farmers' Climate Network, Governance Forum, and Impact Advisory Board.

Axis 2: Dissemination of project achievements

The general objective of communication and dissemination of the Life Agromitiga project is to make known, in a comprehensive manner, the knowledge generated during the development of each of the actions included in the project. In this way, a global understanding of the benefits of the agricultural practices used in terms of climate change mitigation is ensured, so that this knowledge serves as a basis for the promotion and development of environmental policies and legislation of the EU and the Member States with respect to climate change. This is particularly true in the framework of Mediterranean countries.

The dissemination of results has several aspects. From those closest to the sector, such as the farmers themselves, to others that are more transversal, such as the administration, private sector, academia, and society in general.

Farmers should be the main target in terms of training and transfer, by passing on to them the achievements obtained in Life Agromitiga and training them in the implementation of CAP eco-regimes. To this end, it is necessary to promote the exchange of experiences between farmers, and a network of demonstration farms distributed at the regional level is very effective for this task. Not forgetting the support provided by the associations, which, as part of their tasks, can promote the use of CA practices and even improve them based on the reality of their geographical area. At a global level, communication professionals and/ or agro-influencers are another important source of transfer, serving as a paradigm for ordinary producers. In this line of digitisation of the agricultural sector, a virtual community of App users can be created, in which users can find advice and support from farmers who are geographically distant but close in terms of their concerns.

Administrations also have a very important role in the visibility of the results obtained in Life Agromitiga, as they set the guidelines for agricultural policy and also regulate and supervise the application of agricultural practices. Therefore, they were the first to be interested in training farmers in the efficiency of applying good practices. Therefore, they can disseminate and train the results obtained through specialised courses organised by their bodies. In addition, soil carbon data and calculated sequestration rates can be made available to society through digital information portals. In the case of Junta de Andalucía, a partner in the project, through the REDIAM portal, the regional content maps that have been produced can be hosted in the future. In fact,



these data are highly relevant for use in academic studies on the mitigation potential at a territorial scale. In addition, the implementation of aid for the promotion of practices can help achieve this goal. It also allows calculations of mitigation that can offset the emissions of other economic sectors.

The trend towards a low-carbon future and the arrival of bonds with which to remunerate carbon sequestration also opens the door to training and capacity building for private sector companies. Companies that are already interested in how to monetise the application of CA practices and that can be found in the results of Life Agromitiga are an important source of information, both in terms of methodologies and general results.

The dissemination actions, once the project is completed, can be summarised as follows:

- Meetings with stakeholders: Meetings will be held with official bodies (members of the European Parliament, Directorates General, representatives of the Ministries and Departments of the Autonomous Communities of Agriculture and Environment, technicians of the Spanish Office of Climate Change, among others), making the results obtained known and allowing them to be taken into account in decision-making in agricultural and environmental policies. The initiative for these actions will be taken by the ECAF in the case of meetings at the European level, while at the national and regional levels, it will be the staff of the AEAC.SV. In principle, the bodies among which meetings are promoted are:
 - European Parliament.
 - DG Agriculture and Environment.
 - DG Climate Action.
 - Ministry of Agriculture, Fisheries and Food (Government of Spain).
 - Departments of Agriculture by different autonomous governments.
 - Spanish Climate Change Office.
- Dissemination in our own transfer and training events: Throughout the following years, thanks to the training activities planned in the projects in which the consortium members participate, such as Life Innoceral or Operational Groups, presentations will be dedicated to disseminating the results and methodologies of Life Agromitiga, as the topics are closely related to each other.
- Communication with the media: This action will bring together those actions that result in direct visibility in the media. Periodically, coinciding with relevant dates (World Soil Day, Earth Hour, etc...), press releases will be issued for dissemination in the written media. This action involves the involvement of the staff in charge of preparing press releases and the news to be published.
- Attendance at technical and congress events: The results of the project will continue to be disseminated in various forums, both technical and scientific, through attendance and participation of the staff involved in Life Agromitiga. Participation will oc-

cur through the preparation of communications that will be presented in a poster format or as an oral contribution. Through these actions, the aim is to have an impact on the scientific and technical community and on entities related to environmental and natural protection.

- Publication of technical and scientific articles: Both in scientific journals of impact and technical journals, both informative and scientific articles will be published, publicising the results obtained in the project, both in terms of parameters that have not yet been studied and others that, although they have already been studied, admit a more detailed development than has been carried out so far.
- Maintenance and updating of the website: The project website (www.Lifeagromitga.eu) will remain active for a minimum of 5 years from the date of completion of the project, updating it with news related to the theme of Life Agromitiga. The AEACSV's staff will be in charge of updating the news on the website.
- Visits to the project's demonstration farms: In the demonstration farms that are still active, such as the "Rabanales" farm located in Cordoba, as well as in farms where project practices are carried out, visits will be organised with interested agents from the agricultural sector, so that they can see these practices in situ.
- Dissemination of dissemination material: The Life Agromitiga project generated sufficient dissemination material for dissemination during the project and after its completion. Thus, the material will be distributed in those forums where the project staff attends. Likewise, the distribution lists will be updated so that digital versions of the material can be sent by e-mail. In addition to all this material, the Layman Report will be uploaded to the project website and included in the e-mails to be sent to the distribution list. All partners will be co-participants in this action through the staff involved in the project.







Strand 3: New challenges beyond the Life Agromitiga project

Since the Life Agromitiga project has ended, it is important to reflect on new objectives to be achieved after the current ones have been reached. Once a large amount of information has been gathered on the ground, both at the soil level and in terms of agricultural practices, the next step is to make an effort to obtain a remote yield, although without forgetting the role that can be played by maintaining and even increasing the network of demonstration farms. Such a network is an invaluable source of information as a long-term observation tool where the possible effects of climate change are evident.

Regarding the increase in the number of demonstration farms, it is necessary to include new irrigated farms in CA. Because of their scarce representation in the project that has just finished, with respect to rainfed farms.

Objectives

- Facilitate access through REDIAM to soil COS data.
- Generate new meta-analyses at the scale of soil and climate regions and crops.
- Generate a carbon sequestration prediction map at the regional scale by crop and soil-climatic zones.
- Improve digital monitoring of CA practices using satellite sensors.
- Improve the effectiveness of remote indicators with respect to carbon sequestration, especially remote sensing.

- Use the data obtained in the FAO soil organic carbon sequestration prediction model.
- · Determine the effects of other ecosystem services.

Tools and actions to achieve new objectives

To achieve the objectives set out in each of the axes defined in the After Life Plan, it is necessary to use tools and carry out actions that make it possible to achieve them. One of the main actions is to search for irrigated crops under CA, mainly herbaceous crops. To this end, it would be important to conduct a campaign for farmers in areas where this type of crop is abundant. This is supported by the contacts established in Life Agromitiga.

Another important task is the generation of new digital layers through cabinet work. To this end, a prior search must be made for financial resources to cover the work to be carried out in terms of the digitisation of the results obtained on a territorial scale, which will subsequently be open for use.

A new area to work on is the search for satellite sources of information to monitor CA practices using remote sensing. Advancements in this type of tool make it possible to observe changes in soil moisture, biomass, etc. These, supported by sensors on the ground, both for humidity and temperature, can provide a significant volume of information. Predictive models can be generated using computer application training.

Finally, the impact of CA measures on the biodiversity of the environment in which they are implemented cannot be neglected. The study of populations of birds, arthropods, earthworms, and/or nematodes can help show the extent to which this type of measure favours the conservation of biodiversity in agrosystems. In addition to the ecosystem services, they provide.

SOURCES OF FUNDING

Private funding

Linking a company's brand image to sustainability is an increasingly common strategy in the agricultural sector, especially after the presentation of major European policy strategies, such as the European Green Deal or the Farm-to-Fork Strategy. Conservation Agriculture has proven to be a model of carbon farming that is applicable on a large scale, and its benefits go beyond environmental sustainability. In this sense, there are companies whose lines of work are aimed at opening business opportunities in the field of carbon farming and who are interested in the results achieved in the framework of the project. This interest can be materialised by supporting the continuity of some of the actions of the Life Agromitiga project, either by maintaining the monitoring of some of the farms in the network or by providing more services to the developed App. The establishment of specific collaboration agreements in this sense would represent a source of funding to guarantee the sustainability of a project's actions.

Voluntary carbon markets represent additional opportunities. In recent years, various companies have become interested in agricultural management that generates carbon credit. These companies offer their services to farmers to quantify the tons of CO2 eq sequestered in the soil because of certain agricultural practices, including Conservation Agriculture, in exchange for being able to trade these credits on voluntary markets. In return, the farmer receives compensation for each carbon credit generated. All this can serve to extend Conservation Agriculture to more farmers and in this sense, the Life Agromitiga project can serve as a reference model for the transition that farmers have to make from a conventional model to a CA-based model.

Public funding

Public calls for project funding (Life, Horizon Europe, PRIMA...)

The new lines of work outlined in axis 3 may fit into international projects that contribute to the fulfilment of the objectives established in European aid programs such as Life, Horizon Europe, and PRIMA, among others. In this sense, each of these calls for proposals will be studied in order to analyse which of them a Phase 2 of the Life Agromitiga project can best fit.

Regardless, we also seek to replicate the project model in other initiatives that may be presented within the framework of these calls for proposals. Not surprisingly, several of the partners of the Life Agromitiga project are currently participating in Life projects in which CA is a fundamental pillar in a low-carbon model, as is the case of the LIFE21-CCM-ES-LIFE Innocereal EU project "Connecting the cereal value chain and creating sustainable certification for carbon neutral production in Europe".

The CAP post-2020

The introduction of CA practices in the CAP eco-schemes in Spain will serve to extend the model promoted by the Life Agromitiga project. In this sense, the interest shown by Public Administrations in having a network of model farms, in which they can provide data of various kinds to help justify the environmental benefits of the application of the eco-schemes, would represent an extra source of funding for the continuity of some of the project's actions.

European Innovation Partnership (EIP) tasks force agricultural productivity and sustainability

Los grupos operativos son agrupaciones funcionales y temporales de agenOperational groups are functional and temporary groups of actors interested in innovation in a sector. In the agricultural sector, they are groupings of farmers and their associative forms, forest managers, rural communities, the research sector, NGOs, companies, and other stakeholders interested in innovation in the agricultural sector.

These figures focus on the development of specific projects and the dissemination of their results, provided for in the European Union Regulations, and which in the case of Andalusia are included in the Rural Development Plan 2014-2020 and have different lines of aid promoted by the Regional Ministry of Agriculture, both for the constitution of operational groups and for the development of specific projects (the operation of an operational group that has already been set up).

Currently, these funds have already contributed to replicating the model promoted by the Life Agromitiga project. Specifically, in Andalusia, the Girasoil Operational Group "Improving the sustainability of sunflower through conservation agriculture" (GOPG-CO-20-0012) has been underway since 2022, and in 2024, the Carboagri Operational Group "Model of certification of carbon credits for the use of organic fertiliser and promotion of regenerative agriculture" (GOPG-SE-23-0036) has been launched.











Junta de Andalucía Consejería de Sostenibilidad, Medio Ambiente y Economía Azul



