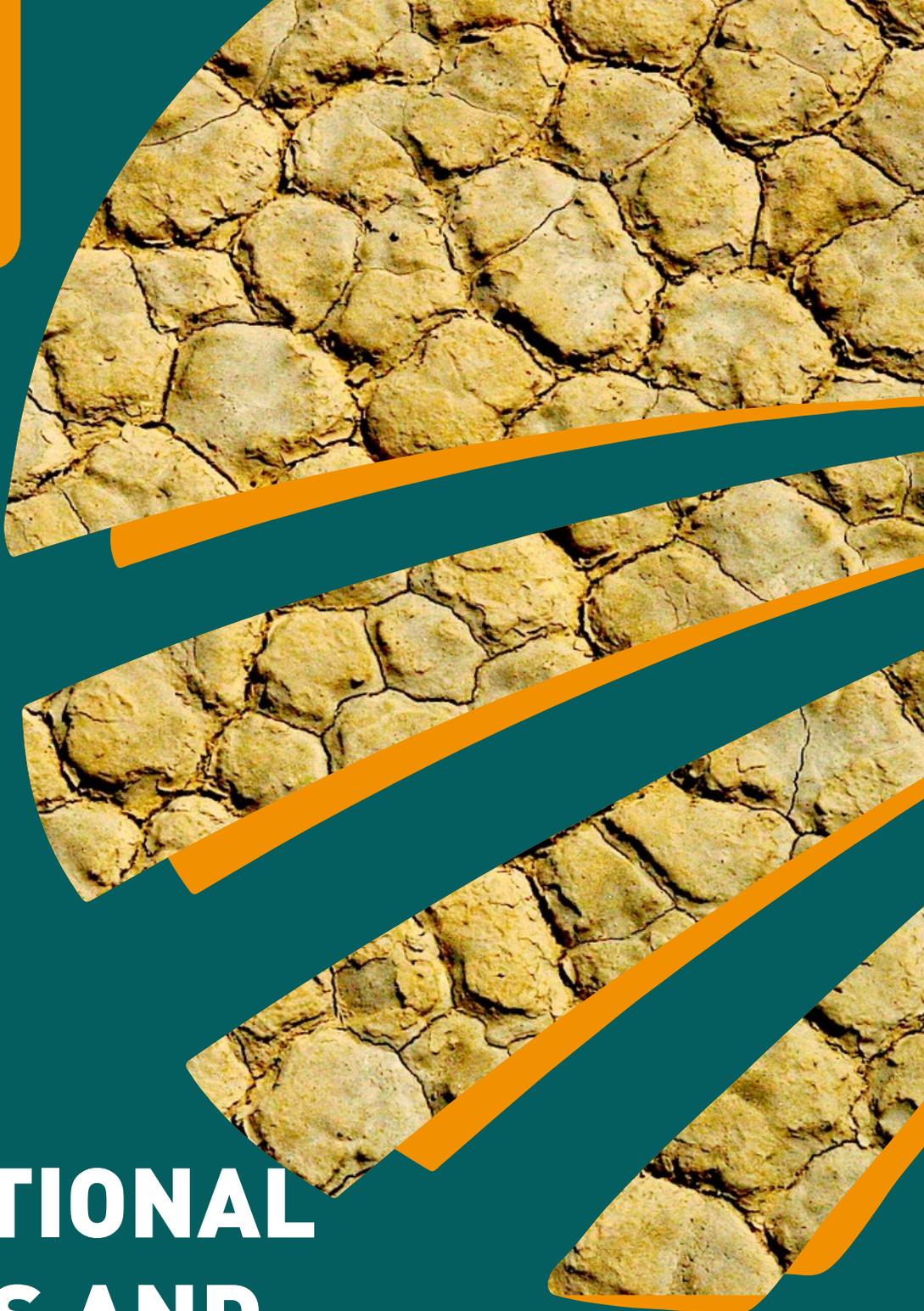


**CLIMATE CHANGE  
AND CARBON  
FOOTPRINT  
REDUCTION**



# **OPERATIONAL GROUPS AND INNOVATIVE PROJECTS**



**Unión Europea**

Fondo Europeo Agrícola  
de Desarrollo Rural

*Europa invierte en las zonas rurales*



GOBIERNO  
DE ESPAÑA

MINISTERIO  
DE AGRICULTURA, PESCA  
Y ALIMENTACIÓN



**RRN** RED  
RURAL  
NACIONAL



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# OPERATIONAL GROUPS AND INNOVATIVE PROJECTS

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**Climate change and  
carbon footprint reduction**

*# EsRuralEsVital*

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# Introduction

This publication is a collection of Operational Groups and Innovation Projects on the theme of climate change and carbon footprint reduction, carried out in Spain and Europe. The National Rural Network (NRN) has been entrusted with creating this publication to meet its purpose of **disseminating and raising awareness about innovative initiatives and fostering knowledge exchange and transfer** from the sphere of research to practical applications.

**Innovation is a fundamental instrument** in all areas, but especially in rural areas since this is a disperse environment with difficult access to knowledge, the results from research, training, market developments and new technologies.

The main instrument to promote innovation in rural areas is the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI). **EIP-AGRI aims to speed up innovation in the agri-food and forestry sector**, and therefore in rural areas, as well as to **disseminate successful examples of experience in the territory** through specific innovative projects. In addition, it seeks to match the range of science available to the demand from different sectors and help solve specific problems or make the most of opportunities in order to help increase competitiveness and improve living conditions in rural areas.

The Operational Groups (OGs) are groups of stakeholders from different sectors: agriculture, livestock, forestry, agri-food and forest-based industries, from public or private R&D&I training and consultancy centres, technology centres, non-profit institutions and more. These parties get together to solve a problem or make the most of an opportunity using an innovative, multisectoral and collaborative approach via an innovative project. Their work is subsidised by EAFRD through national and regional rural development programmes to set up the group and prepare its innovation project, as well as to implement it.

Furthermore, in the European context, there are other policies with synergies appearing within their commitment to innovation in rural areas. The Horizon 2020 research framework programme covers matters related to the agri-food and forestry sectors. Under this umbrella, there are thematic networks and research projects.

**This dossier presents the outcomes from the exchange of experiences between the Operational Groups and Innovative Projects about climate change and carbon footprint reduction, organised by the NRN.** It includes information units describing the Operational Groups and Innovative Projects, fostered by Measure 16 of the rural development programme in Spain in this matter, thematic networks and Horizon 2020 projects, whether or not they participated in the conference, in order to help disseminate them and enabling the different stakeholders to consult them

# Conference to exchange experiences between Operational Groups and Innovative Projects in the matter of climate change and carbon footprint reduction

On 15 September 2020, the National Rural Network (NRN) organised an exchange of experiences between the Operational Groups and EIP-AGRI Innovation Projects and Horizon 2020, working on the matter of climate change and carbon footprint reduction. More than 100 people attended this virtual meeting to exchange experiences representing research centres, companies, public administration, farming and environmental organisations, cooperatives, rural development groups and social action associations.

## Objectives:

The meeting was held with the following aims:

- To help create networks among the various parties involved or with an interest in climate change and carbon footprint reduction.
- To contribute to the exchange of information and results obtained among the different Operational Groups and the projects of EAFRD and the H2020 European research programme, related to these topics.
- To highlight the innovative work developed by the Operational Groups and Innovative Projects.



## Conference held in two stages:

- An analysis was made of the work being carried out by the NRN as regards disseminating the work by the Operational Groups and the Innovative Projects, including the H2020 Programme. Furthermore, the innovative measures in rural development programmes encouraged by EIP-Agri were also examined. Finally, current climate change policy in Spain was explained, as well as its implications for the agricultural sector.
- In order to bring about an exchange of innovative solutions in the sphere of climate change and carbon footprint reduction, the attendees saw presentations by nine Operational Groups, EIP-AGRI Innovation Projects and H2020 Programme, given in three parallel sessions, after which the key points discussed in each room were shared.

## Key ideas:

- Noted were the advances in innovation, allowing for the development of improvements in the adaptation of crops to different climate scenarios. The importance of the design, development and optimisation of systems, methods and practices of production and cultivation, as much with respect to climate change as to crop sustainability, were all underlined.
- The challenges focus on the impetus towards new strategies that are more environmentally sustainable. Technicians and researchers agree on the need to increase carbon sequestration in three complementary areas: forest systems, crops and agroforestry systems.



- Different innovative methodologies available for farmers that can account for carbon sequestration in agricultural soils were considered. For example, the guide with agricultural recommendations for sequestering carbon in agricultural soils, drawn up by GO CARBOCERT, can be consulted at this [link](#).
- Through the Operational Groups and Innovative Projects, new technologies are being developed with the goal of mitigating climate change, such as techniques for management of the soil in a more sustainable manner. For example, the regenerative techniques for degraded soils used by GO 4 Retornos.
- It became clear that there was a need for effective transmission of the results obtained through the projects by way of conferences and workshops tasked with disseminating the information. In addition, it must be taken into account that entities located in the territory can play an important role in this process.



For more information about the conference, click [here](#)

*# EsRuralEsVital*

# STONE FRUITS: Innovative project to adapt stone fruits to climate change



## RURAL DEVELOPMENT PROGRAMME

NRDP

## YEAR CREATED

2016

## PROJECT COORDINATOR

Federación de Cooperativas Agrarias de Murcia (FECOAM)

## PARTNERS

Anecoop S.Coop. | Cooperativas Agro-alimentarias de la Comunidad Valenciana | ENAE Business School | Business Intelligence Technology S.L | Centro de Edafología y Biología aplicada del Segura | Instituto murciano de investigación y desarrollo agrario y alimentario



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## Description

The multiple effects of climate change, such as rising temperatures, a reduction in water resources and the increase in pests, diseases and soil salinisation, are having a dramatic impact on Mediterranean farming systems. This is particularly the case with stone fruits due to the fact that current production conditions are putting their viability into question.

The innovative project to adapt stone fruits to climate change aims to design, develop and implement innovative strategies and tools to help adapt and mitigate the effects of climate change (such as the use of bio-stimulating agents for winter dormancy, plastic covers and shade netting, strategies to optimise irrigation and more). In addition, it aims to generate a system of innovative activities to achieve an increase in competitiveness in the sector, adapting to the environment and mitigating its impact.

## Objectives

- Identifying and characterising specific agroclimatic areas and zones ideal for efficient and sustainable cultivation of stone fruits.
- Identifying and characterising stone fruit varietal groups and singular varieties suitable for introduction and cultivation in appropriate areas and zones, pre-selected and adapted to foreseen climate change scenarios.

- Design, development, experimental validation and optimisation of unique growing methods and practices that are sustainable, efficient and intended to foster the adaptation of selected orchards to the new agroclimatic conditions caused by the effects of climate change.
- Development of an integrated system to evaluate the above objectives, geared towards supporting and helping the interested parties to choose in each case.
- Development of a System for Information, Consultation and Decision-Making Support (SIAD), by integrating models with the previous objectives to as to take complex decisions. It will be implemented through an online computing tool based on advanced artificial intelligence technology and openly accessible for all interested parties.

## Expected results

- ▶ Providing solutions and tools to confront new climate scenarios in the fruit growing sector.

*"The multiple effects of climate change are drastically impacting Mediterranean agricultural systems, especially permanent crops such as stone fruit trees, putting at risk their viability. Professionals in the sector affected by the situation lack sufficient information to adapt their operations to the new environmental conditions".*

# CARBOCERT: Quantification and certification of organic carbon in Mediterranean agricultural soils **2**

## RURAL DEVELOPMENT PROGRAMME

NRDP

## YEAR CREATED

2018

## PROJECT COORDINATOR

Asociación Española de Normalización (UNE)

## PARTNERS

UNE | Aenor Internacional S.A.U. | Asociación Agraria de Jóvenes Agricultores | Instituto Andaluz de Investigación y Formación Agraria, Pesquera, Alimentaria y de la Producción Ecológica | Instituto de Investigación y Tecnología Agroalimentaria | Asociación Española para el Avance de la Ciencia



[www.une.org/cooperacion/carbocert](http://www.une.org/cooperacion/carbocert)



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## Description

The planet is currently facing two urgent environmental challenges; the need to reduce CO<sub>2</sub> emissions in the atmosphere and the fight against erosion and soil loss. These two challenges gravely impact crop productivity. However, Mediterranean agriculture could be one of the main solutions to mitigate climate change and avoid such soil erosion.

The CARBOCERT project identifies management strategies that will increase the carbon captured and stored in agricultural soils and in the fixed and lasting plant structures of the main agricultural crops in the Mediterranean environment, thus reducing CO<sub>2</sub> emissions from the atmosphere and contributing to climate change mitigation.

To do so, methods to quantify and certify carbon capture will be established. Recently, a guide with recommendations for carbon sequestration in agricultural soils was presented. The complete guide, by chapter or by crop, can be downloaded via the following link:

► [Carbocert Guide](#)

## Objectives

- The studies undertaken make it possible to draw up a series of agronomic recommendations to improve carbon capture in the crops studied: wheat, rice, vines, olives, citrus and almonds.

- Determining concrete methods to be able to quantify carbon in a simple, objective and viable way.
- Determining the foundation for a future certification framework that farmers will be able to adopt if they carry out beneficial climate change practices.

## Expected results

- Providing opportunities for farmers to apply methods concentrating on the quantification of carbon captured by crops.
- Allowing farmers to stand out in the market in terms of appropriate environmental behaviour and gain consumer benefits thanks to certification.

*"The CARBOCERT project falls within the EIP's stated objectives concerning agricultural productivity and sustainability, as it contributes to a more competitive primary sector and to the supply of more sustainable raw materials".*

# 4 RETORNOS: Regeneration of degraded soils

3

## RURAL DEVELOPMENT PROGRAMME

RDP Andalucía

## YEAR CREATED

2017

## PROJECT COORDINATOR

Campus de Excelencia Internacional  
Agroalimentario (CEIA3)

## PARTNERS

CEIA3 | Asociación Alvelal | Sociedad Cooperativa  
Agro-olivarera Nuestra Señora de la Soledad | La  
Almendrehesa S.L. | Grupo de Investigación  
AGR-200 de la Universidad de Almería



**4RETORNOS** >>>>  
REGENERACIÓN DE SUELOS DEGRADADOS



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## Description

Soil degradation increases due to monoculture and agricultural uses that are aggressive to the land and the environment, leading to the disappearance of organic matter and a loss of fertility in the soil.

The goal of the 4 Retornos project is to reverse this situation that is occurring in rural areas of Vélez, Alto Almanzora and Altiplano in Granada and Guadix, in the provinces of Almería and Granada.

This objective will be achieved through innovation, cooperation, and the development of a knowledge base among the scientific community and rural areas, by way of training seminars for farmers, applying regenerative soil techniques, reinforcing the links between agriculture and research, and fostering learning and training in the agricultural sector.

## Objectives

- Reducing erosion to prevent the loss of the fertile soil layer.
- Incorporating organic matter into the soil and thus improving its structure, favouring water infiltration and retention.

- Enhancing the level of soil nutrients, improving fertility.
- Supporting the implementation of regenerative techniques.
- Training farmers and facilitating knowledge transfer.

## Expected results

- ▶ Increasing awareness about soil management.
- ▶ Implementing soil management on a large scale, helping to reverse soil degradation.
- ▶ Fostering carbon capture linked to agricultural regenerative techniques.
- ▶ Increasing employment possibilities and the creation of new market niches.



*"It would not be possible to carry out the project without the participation of 22 farmers from 15 municipalities in the provinces of Almería and Granada, who are showing great interest in the project and in soil management".*

# LEÑOSOST: Project ACCIÓN. Carbon conservation and increase in woody crops. Adapting agricultural soils to climate change

# 4

## RURAL DEVELOPMENT PROGRAMME

RDP Comunidad de Madrid

## YEAR CREATED

2018

## PROJECT COORDINATOR

Instituto Madrileño de Investigación y Desarrollo Rural, Agrario y Alimentario (IMIDRA)

## PARTNERS

IMIDRA - Grupo de Conservación de Suelos y Aguas | Dña. Gloria Bermejo López | Consolida Bionatura, S.L. | Bodega y Viñedos Gosálbez Orti S.L. | Dra. M<sup>a</sup> José Marqués | Unmanned Technical Works S.L. | Unión de Pequeños Agricultores y Ganaderos de Madrid



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## Description

Approximately one quarter of the area of the Autonomous Community of Madrid is used for agriculture, with greater concentration in the Comarca de las Vegas area, making up 17% of the 8,030 km<sup>2</sup> of the total. Some of these soils have been left depleted and degraded due to their management and frequent tilling. This agricultural zone is facing problems and threats such as increasingly dry and hot weather, erosion of sloping areas, droughts, and the abandonment of agricultural work for more attractive employment opportunities.

In addition, the situation is worsened by the lack of environmental awareness and confidence or knowledge among farmers about more sustainable ways to manage agricultural soils.

The ACCIÓN project aims to evaluate and promote more sustainable soil management strategies amongst farmers, oriented towards mitigating the effects of climate change and contributing to the growth of agricultural soils as a carbon sink. The focus is on the woody crops established in the Autonomous Community of Madrid, located in poor soils, on slopes and with low vegetation coverage. These soils contain less than 1% of organic carbon, which makes them especially vulnerable to erosion and affects their soil structure and water retention capabilities. As such, it has an impact on the productivity of any kind of crop growing on them.

## Objectives

- Identifying and evaluating plots of land that are currently applying best practices to guarantee the conservation and improvement of the soil for woody crops.
- Determining the content of organic carbon in the soil of the selected plots of land every year, and evaluating the capacity of the different soils as carbon sinks to mitigate climate change by using crop coverage.
- Promoting the use of crop coverage amongst concerned parties.
- Establishing a simple indicator that can be easily applied to detect soil degradation based on the content of organic carbon and the intensity of the erosion.

## Expected results

- ▶ A study of the impact of crop cover for woody crops based on the climatic characteristics of the zone, developing methods for each of them.

*"It is necessary to implement incentivisation mechanisms so as to use alternative tilling practices that foster carbon sequestration. To do so, it is necessary to connect with the leading farmers in the area to attract them to the project and allow them to take charge of disseminating the new techniques".*

# NEW CROPS AS A RESPONSE TO CLIMATE CHANGE: Moringa and stevia

5

## RURAL DEVELOPMENT PROGRAMME

RDP Comunidad Valenciana

## YEAR CREATED

2018

## PROJECT COORDINATOR

Universidad Politécnica de Valencia (UPV)

## PARTNERS

UPV - Instituto Universitario de Ingeniería de Alimentos para el Desarrollo | CEE Llauradors de Somnis S.L.U. | Asociación Valenciana de Productores y Consumidores de Moringa  
Departamentos de producción vegetal y de ingeniería hidráulica y medio ambiente de la UPV | Fundación Cajamar



moresvia



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## Description

The viability of the Valencian agri-food sector must adapt to changing scenarios, confronting the need to innovate with crops capable of adjusting to the conditions of climate change.

Moringa (*Moringa oleifera*) and stevia (*Estevia rebaudiana*) offer crop alternatives, increasing the diversity of farming activities and producers' resilience. In addition, the transformation of these products helps raise added value and improve farmers' income.

The project New Crops as a Response to Climate Change: Moringa and Stevia aims to tackle this necessity head on, proposing to carry out the project directly in the fields and the subsequent processing of the stevia and moringa crops. To do so, a pilot plot will be set up where sustainable production practices will be carried out, such as natural methods for pest control.

## Objectives

- Developing stevia and moringa crops in an experimental plot in the Community of Valencia, adapted to the new climate conditions.

- Taking advantage of diversification opportunities in the Valencian agri-food sector: moringa can be used for different consumption purposes based on its sweetening capacity.
- Increasing the potential of both crops in developing processed products.
- Incorporating both products into the agri-food chain.

## Expected results

- ▶ A study of the both crops' potential for developing them as viable enterprises, as well as their processing procedures that generate added value and which do not harm the land and environment.
- ▶ Favouring the development of a business network based on common management of these crops.
- ▶ Fostering greater professionalisation in management among producers of these new crops, associated with improved profit scenarios, encouraging new generations to get involved and enhancing the resilience of the agri-food sector in the Community of Valencia.

*"Moringa is an excellent resource to tackle malnutrition in developing countries and it offers a healthy protein alternative in developed countries".*

# COVER-CO<sub>2</sub>: Evaluation of fertility, carbon sequestration and biological control after introducing temporary plant cover and rice straw mulching

6

## RURAL DEVELOPMENT PROGRAMME

RDP Comunidad Valenciana

## YEAR CREATED

2018

## PROJECT COORDINATOR

Instituto Valenciano de Investigaciones Agrarias (IVIA)

## PARTNERS

IVIA | Fundación Cajamar Comunidad Valenciana | Cooperativa de Productores de Semillas de Arroz S.C.L. | Cooperativa Valenciana del Camp Unió Cristiana



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## Description

After observing the negative effects of ploughing on ecosystems and the fertility of soils in intensive agriculture, non-ploughing methods are increasingly being used, taking advantage of the conditions of the soil without modifying or only minimally modifying its structure.

In the Community of Valencia, with the progressive introduction of localised irrigation, the practice is becoming more widespread as it has demonstrated the capacity for improving the physical and hydraulic properties of the soil.

By means of this method of conservation agriculture, the CO<sub>2</sub>COVER project aims to evaluate the different alternatives in the management of vegetation cover and mulching (vegetation cover made up of different natural organic and mineral materials), using rice straw mulching in Valencian citrus crops. The intention is to determine their effectiveness with regard to the improvement of soil fertility (physical, chemical and biological), as well as its capacity for the sequestering carbon to mitigate GHG (greenhouse gas) emissions.

## Objectives

- Improving the fertility of soils for citrus crops in the Community of Valencia.
- Improving the capacity of carbon sequestration in citrus-growing soils.
- Improving biodiversity and favouring the biological control of pests through conservation methods. .

## Expected results

- ▶ Improving understanding of the dynamic of organic carbon in the soil under different types of vegetation cover and mulching.
- ▶ Gaining an understanding of the influence of different vegetation covers and rice straw mulching on the main parameters of soil fertility.

*"Our research aims to favour a model of healthy, sustainable food, as well as the production of differentiated crops to achieve prices that give a better return on production costs and generate added value".*



# TOMPRINT: Carbon footprint of tomato for processing

7

## RURAL DEVELOPMENT PROGRAMME

RDP Extremadura

## YEAR CREATED

2017

## PROJECT COORDINATOR

Centro Tecnológico Nacional Agroalimentario Extremadura (CTAEX)

## PARTNERS

CTAEX | Solucionex Consultoría y Desarrollo S.L. | Tomalia S.Coop. | Pronat S.Coop. | Alimentos españoles S.L. | Tomates del Guadiana S.Coop. | Iaa365 S.L. | Agrupación Española de Fabricantes de Conservas Vegetales | Conservas Vegetales De Extremadura S.A.



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## Description

Extremadura accounts for 6% of world tomato production for processing, making it the largest producer within the Autonomous Communities of Spain, according to the World Processing Tomato Council (WPTC). As a result, this sector's environmental impact is considerable and it is important to work on mitigating it.

The goal of TOMPRINT is to work to reduce the water and carbon footprint. There is room for improvement in the following phases of the productive cycle: plant formation, crop development in the fields, and the processing of the tomato into the final product.

In addition, an application with a simple interface has been created. Just by including the input/output information of each phase of the project, from the greenhouse to exploitation and industrial processing, it calculates the quantity of CO<sub>2</sub> generated throughout the production cycle of the industrial tomato crop, as well as the amount of water consumed.

## Objectives

- Developing a digital application that tracks the water and carbon footprint at each stage of the production cycle, providing full results at the end of this cycle.
- Creating a versatile application adapted to all of the tomato processing industries in Extremadura.
- Achieving independent management of data, enabling confidentiality in each particular phase of each tomato processing industry.

## Expected results

- ▶ Environmental impact management, as quantified through the software application.



*"Thanks to the application, the carbon footprint of tomato production can be measured from the formation of the plant to its transformation into processed products".*

# Observatory of agro-ecological innovation against climate change

8

## RURAL DEVELOPMENT PROGRAMME

RDP Región de Murcia

### YEAR CREATED

2018

### PROJECT COORDINATOR

Asociación Observatorio de innovación agroecológica frente al cambio climático (AGROBSERVER)



## PARTNERS

AGROBSERVER | Casa Pareja S.A.T. | Castillo de los Chuecos S.L. | Agronature 2000 S.L. | Moysan Land S.L. | Asociación de Padres del Centro Ocupacional de Minusválidos familiares de personas con discapacidad intelectual del noroeste | Asociación para la Integración de Personas con Discapacidad Intelectual | Asociación Colectivo Paréntesis Últimos Panaderos S.L. | Productos Continental S.L. | Biojaral S.Coop. | Asociación Murciana de Restauración Cooperativa | Luis Tesón Rodríguez



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## Description

Agricultural systems must adapt to face the foreseeable problems generated by climate change, particularly in dry and sub-arid regions like Murcia. In the face of this challenge, underutilised and obsolete species and ancestral crops from diverse cultures and countries that have held steady in extreme climatic conditions over the course of time can be used strategically.

The Observatory has been set up with the goal of tackling the problem of adaptation to climate change in the region from an agro-ecological perspective. Promising species and varieties are selected through a participatory process, with the involvement of farmers, technicians, scientists, chefs and consumers, as alternatives to current dominant crops, with the capacity to adapt to climate change and the potential to penetrate the market. In this way, it contributes to the region's socio-economic development.

## Objectives

- Establishing a network of Innovation Centres.
- Selecting crops that are adaptable in the face of climate change and have good organoleptic and nutritional qualities.
- Obtaining new products based on the species selected for the food and cosmetics industries.

- Designing and implementing a campaign to promote the consumption of fresh products made from promising species.

## Expected results

- ▶ Making wholesome and healthy foods available to consumers that are inexpensive to produce and require few inputs.
- ▶ Creating employment connected to the production and processing of foods that are virtually unknown in the regional market.
- ▶ Mitigation and adaptation to climate change thanks to the recovery of species and varieties in danger of extinction, and to the low consumption of natural energy resources.

### ▶ Link to virtual exchange

*"The project gets to the very heart of Priority 5 in the Rural Development Programme about promoting resource efficiency and supporting the shift towards a low carbon, climate-resilient economy in the agriculture, food and forestry sectors".*

# AFINET: AgroForestry Innovation NETWORKS

9

## RESEARCH AND INNOVATION PROGRAMME H2020

H2020 Project

## YEAR CREATED

2016

## PROJECT COORDINATOR

Universidad de Santiago de Compostela (USC)

## PARTNERS

**ES:** USC, Fundación Empresa-Universidad Gallega (FEUGA) (ES) | **UK:** Organic Research Centre (ORC), ABACUS Agriculture Ltd. | **BE:** Institute for Agricultural and Fisheries Research (ILVO), Gestion Agricole S.L. (INAGRO) | **PT:** Instituto Superior de Agronomia (ISA) | **PO:** Institute of Soil Science and Plant Cultivation (IUNG-PIB) | **Hu:** University of Sopron, Cooperational Research Centre Nonprofit Ltd, (Soe-KKK) | **IT:** Instituto di Ricerca sugli Ecosistemi Terrestri (CNR-IRET) | **FR:** Association Française d'Agroforesterie (AFAF) | **FI:** European Forest Institute (EFI) | **EU:** European Agroforestry Federation (EURAF)



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## Description

Agroforestry systems are a set of land use practices involving a deliberate combination of woody vegetation with crop or animal systems in the same management unit to benefit from the resulting ecological and economic interactions.

AFINET (Agroforestry Innovation Networks) is a thematic network intended to foster the exchange and transfer of agroforestry knowledge among scientists and practitioners in agroforestry driven by innovation.

The network acts at the European Union level to put research results into practice and promote innovative ideas to tackle challenges and solve problems faced by practitioners.

## Objectives

- Establishing a system and methodological framework to exchange knowledge based on the Regional Agroforestry Innovation Networks (RAINs). These regional networks represent different climatic, geographic, social and cultural conditions and include a balanced representation of key stakeholders.

- Creation of a knowledge cloud of agroforestry information that will encourage knowledge exchange through the material available on the platform.
- Improving the applied knowledge about the different target groups' agroforestry practices.
- Maximising synergies among European, Spanish and regional policies related to the agroforestry sector.

## Expected results

- ▶ Creation of a virtual platform to publish information gathered and materials generated.
- ▶ Dissemination of agroforestry knowledge in a way that maximises the project's impact on the sustainability of European agricultural systems.

*"Agroforestry systems are one of the ways to manage the land so as to mitigate and adapt agricultural and forestry systems to climate change. Innovation is one of the most important factors in achieving this goal".*

# EUREL: Application of new technologies to reduce the carbon footprint in the Galician dairy industry

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## RURAL DEVELOPMENT PROGRAMME

RDP GALICIA

FEADER 2017/14B°

## YEAR CREATED

2017

## PROJECT COORDINATOR

Asociación Galega de Cooperativas (AGACA)

## PARTNERS

AGACA | Centro de Investigaciones Agrarias de Mabegondo (CIAM) | Cooperativa Agraria Provincial de A Coruña (CAP)



## Description

Galicia is Spain's top milk producer, sitting at number eight in the European Union, and producing 2,650 million litres (39% of the national total). The intensive production processes of recent years have had a significant environmental impact on the soil, water and atmosphere. To combat this, it will be necessary to train farmers in the efficient use of resources and to guide these processes towards milk production that is at once sustainable and competitive.

It will also be necessary to introduce tools geared towards taking up practices that improve efficiency in the use of energy resources, the recycling of nutrients and the reduction of Greenhouse Gases (GHGs). With a view to increasing the sustainability of milk production, the environmental parameters that affect this production should be learned, including the calculation of GHG emissions, or in other words, the carbon footprint generated.

EUREL advises Galician dairy farms about sustainable conditions by calculating the carbon footprint. The method used is based on the Life Cycle Analysis (LCA), taking the entire cradle-to-gate scope into account, as well as the information from the Ecoinvent database.



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## Objectives

- Calculating the carbon footprint on 10 dairy cattle farms of different type, size and output.
- Guiding farmers based on the study's results and by creating a best practices manual.

## Expected results

- ▶ Efficient use of resources based on organic fertilisation.
- ▶ Improvement of the sector's economic competitiveness.
- ▶ Minimising the impact on water, land and air resources in the production process.



*"The carbon footprint is just one indicator in understanding a farm's environmental impact. There can be no guarantee that a farm is sustainable if only the carbon footprint is taken into account".*

# AFCLIMA: Agroforestry Systems for cereal Production. Strategy for adaptation and mitigation of climate change

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## STATE PROGRAMME FOR R&D&I ORIENTED TOWARDS SOCIETAL CHALLENGES

R&D&I PROJECTS 2016

### YEAR CREATED

2016

### PROJECT COORDINATOR

Universidad de Santiago de Compostela (USC)

## PARTNERS

USC | Universidad de Extremadura Asociación Galega de Cooperativas (AGACA)



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## Description

Agroforestry systems (AFS), understood as the integration of trees and shrubs on the same land as agricultural crops, are seen to be a sustainable way of managing land and bolstering resilience in the face of climate change in agricultural and forestry systems.

AFCLIMA helps build knowledge of agroforestry systems to optimise production, protecting the environment by identifying cereal varieties capable of growing under the conditions of agroforestry systems, and increasing carbon sequestration, taking into account aspects of mitigation and adaptation to climate change.

AFCLIMA works at a national level to understand the potential of agroforestry systems in different soil and weather conditions, as well as the improvements and opportunities that agroforestry systems offer in terms of both production and the environment in these conditions.

## Objectives

- Identifying species and varieties of cereals (wheat, rye, barley, triticale and corn) adapted to shade (chestnut, walnut and oak) in agroforestry systems with different soil and weather conditions.

- Determining the phenological and physiological characteristics of cereals that make them suitable for use in agroforestry zones in summer drought conditions.

## Expected results

- ▶ Cereal varieties more compatible with wooded areas and capable of developing in shade conditions.
- ▶ The response of crops and wooded areas to shade and drought depends on the level of soil fertility and the seasonal availability of water.
- ▶ The productivity of the crops under shade conditions is related to their phenology.
- ▶ A certain amount of shade reduces the appearance of annual species and leads to improved production without using herbicides, thus making it compatible with organic farming practices.

*“Agroforestry systems are more complex and diverse than pure (agricultural or forestry) systems that help mitigate and adapt to climate change. Identifying the best cereal species and varieties for cultivation in forested areas improves production and the environment in agroforestry systems”.*

# GO-GRASS: Grass-based circular business models for rural agri-food value chains **12**

## H2020 RESEARCH AND INNOVATION PROGRAMME H2020

H2020 Project

### YEAR CREATED

2019

### PROJECT COORDINATOR

ATB - LEIBNIZ INSTITUT FUER AGRARTECHNIK UND BIOOEKONOMIE E V

### PARTNERS

ACRES | AARHUS UNIVERSITET - AU |



RISE RESEARCH INSTITUTES OF SWEDEN AB - RISE | VEREIN DER FREUNDE DES DEUTSCH POLNISCHEN EUROPA- NATIONALPARKS UNTERES ODERTAL E.V. | Prospex Institute | Universidade de Santiago de Compostela - USC | EUROPEAN SCIENCE COMMUNICATION INSTITUTE GGMBH - ESCI | Food and Bio Cluster Denmark | GREENOVATE! EUROPE | Gate2Growth | Zabala Innovation Consulting | IFAU APS | Glommers Miljöenergi | Noardlike Fryske Wâlden | Schut Papier | Research Institute for Organic Agriculture - ÖMKI | UNIÓN DE COOPERATIVAS ASOCIACIÓN GALEGA DE COOPERATIVAS AGRARIAS - AGACA | Romanian Association for Sustainable Agriculture - ARAD | Väståkra Gård | Institute for Food Studies & Agroindustrial Development - FAU | Velas | HiemstraBruin |



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## Description

The GO-GRASS consortium consists of a multidisciplinary team of 22 partners from eight European countries (Germany, Spain, Denmark, Sweden, The Netherlands, Belgium, Romania and Hungary). The project is based on four promising demonstration sites in The Netherlands, Sweden, Germany and Denmark. At these sites, partners collaborate with local farmers, research centres and technology companies to create different grass-based products and to release the potential of these unexploited resources. Three member partners from Hungary, Romania and Spain will also participate in the project to determine if the solutions tested in the demonstration sites can also be applied in their regions.

## Objectives

- Over four years, GO-GRASS will develop business models that are circular, profitable and sustainable, taking into account social, economic and environmental circumstances in rural areas across Europe. By harnessing regional assets, GO-GRASS aims to diversify and revitalise rural economies and provide quality jobs and opportunities in cooperation with entrepreneurs and local authorities.

- The raw materials obtained will go towards producing bio-based products to replace existing fossil-based alternatives such as fertilisers or plastic packaging. Reclaiming otherwise lost natural resources could have a considerable impact on the reduction of greenhouse gas emissions throughout the EU. The project is intended for large scale replication, especially in remote communities with unexploited resources.

## Expected results

- ▶ Developing a sustainable circular business model suited to remote areas with unexploited resources. .

*"Approximately 21% of the European Union's area is covered by pastureland, a largely underused resource. GO-GRASS has made a commitment to exploit this use potential, reducing imported nutrients and dependence on fossil fuels while searching for ways to obtain profits that strengthen rural communities".*

**The NRN** is the hub connecting all of the people and entities related to the rural environment with the aim of raising awareness of Rural Development Programmes and providing access to them. At the same time, its purpose is to make the population aware of the importance of the rural environment for our present and our future.

The unit responsible for the NRN is the Subdirectorate General for Rural Revitalization within the Directorate General of Rural Development, Innovation and Agrifood Training of the Ministry of Agriculture, Fisheries and Food.

*# EsRuralEsVital*



# CLIMATE CHANGE AND CARBON FOOTPRINT REDUCTION



**Unión Europea**

Fondo Europeo Agrícola  
de Desarrollo Rural

*Europa invierte en las zonas rurales*



**RRN** RED  
RURAL  
NACIONAL