



LAYMAN'S REPORT

LIFE16 ENV/ES/287
[01/09/2017 > 31/10/2021]



AGROGESTOR



[LIFE 16 ENV/ES/287]

Con la contribución del instrumento financiero LIFE de la Comunidad Europea / With the contribution of the European Community financial instrument LIFE



THE LIFE AGROgestor project is a commitment to knowledge generation and sustainability in the sector, based on the collaboration of public entities and administrations, via the creation of two digital platforms for agricultural knowledge and advice.

Over the past 4 years, these two platforms - AGROasesor and AGROgestor, have been deployed in 2 demonstration pilot schemes in 9 different geographic environments, to support the digital transformation in the agricultural sector, based on the development of decision support tools and testing training and advisory models.



What is LIFE AGROgestor?

The AGROgestor project has implemented a demonstration of Collective Management of crop information, through the development of sustainable services in irrigated agriculture, aimed at water management, efficiency in the use of irrigation water, and quality of water bodies.

The project has focused on reducing the environmental impact of irrigated agriculture, through a decision support system that facilitates effective and sustainable Planning and Collective Management.

The project has established a training and awareness channel to support the sector in the adoption and integration of digital tools in farm monitoring, focused on the service which these tools offer to improve farm management.

The main result of the project is an innovative ecosystem of Digital Platforms: AGROgestor and AGROasesor, in support of strategic plans to promote the use of sustainable practices in agriculture systems, through knowledge generation and evaluation processes.

The project has created live tools which are in constant development that involve the implementation of advisory services to address the digital challenge, under the umbrella of the Agrogestor Alliance.

 IRTA	 L'AGRARIA	 esporc	 cita
 agrarum	 RIEGOS del alto aragón	 Junta de Castilla y León	 Agència Catalana de l'Aigua
 Finca Bizcarra	 MELILLERÍA	 Junta de Castilla y León	 CR TESORO DEL CADILLO
 ITAP	 EQUILIBRIO	 CR CRUZ BERMEJA	 CR HOYA DEL ALJIBE
 CR LA MOLINETA	 INTIA	 ORVALAIZ	 SAT VALLEIZARBE

PROJECT ACTORS

The public entities associated with the project have promoted the development of this project and its pilot programmes, in continuous collaboration with the ICT company tasked with the programming. An information and consultation process has been followed to involve actors through

working groups in pilot areas and on-line collective management workshops, such as water basin sessions and transnational workshops. The COVID pandemic promoted new techniques for interaction with multi-actor groups, linked to the objectives of boosting digitization.

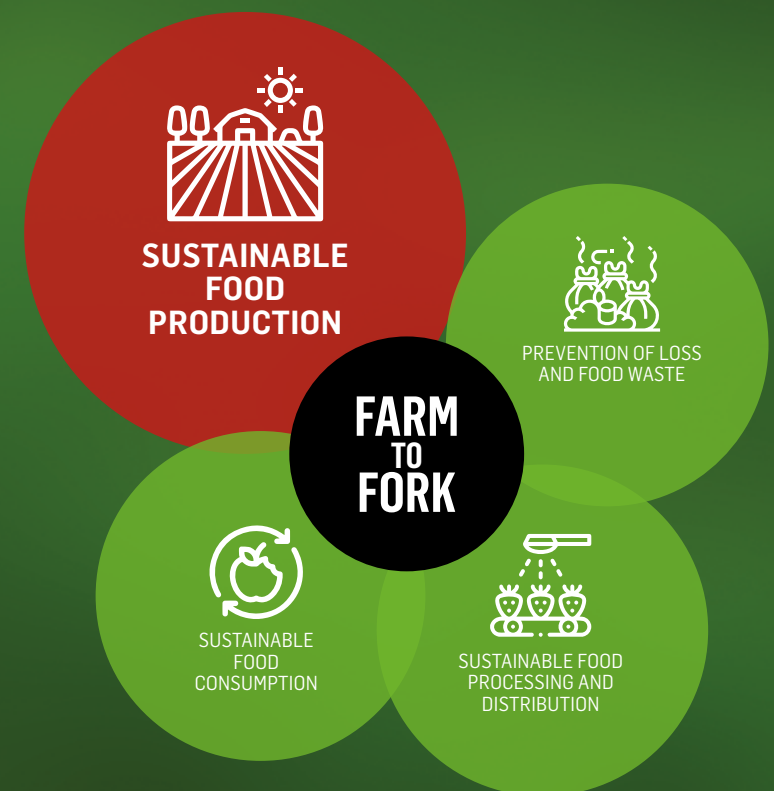
 COOP. GRUPO OBANOS	 Gestion Ambiental de Navarra	 aguacanal	 CR DEL SECTOR 1 DEL CANAL DE NAVARRA VALDEIZARBE
 iMiDRA	 CONSEJO DE REGANTES Hortifuenta	 Grupo heliconia	 Parque Agrario de Huchabrada
 CR DEL CANAL DE TODESILLAS	 NEIKER	 GARLAN	 AGENCIJA ZA PROMICENJE PROMISLOVNEGA NEKRETNOSTI
 Serfica	 ctaex	 cooperativas agro-alimentarias	 AEMet
 proDEVELOP	 EUFRAS	 FAIRshare	 griSat



What challenges are tackled?

The project focuses on reducing the environmental impact of irrigated agriculture by developing tools and promoting good practices, through collective information management.

LIFE AGROgestor is aligned with the EU's 'Farm to Fork' strategy: The tools developed are aligned with the transition strategy toward a sustainable food system, and with the specific CAP objectives on climate and environment. We have worked with two specific environmental objectives: **Water use efficiency and water quality of bodies of water.**



How was it designed?

We have used INDICATORS to create tools to analyse farms and support farmers and technical decision-makers.

We have carried out demonstration actions to evaluate the ADVISORY and TRANSFERENCE systems supported by digital tools. These demonstration actions have integrated multi-stakeholder groups, which have been actively involved, in the analysis of the model of tools that adapt to collective management, and to the needs for the governance of environmental programmes.



WHAT HAS BEEN ACHIEVED?

LIFE AGROGESTOR has created tools to implement and evaluate measures embedded in the Eco-schemes of the new CAP. The analysis of nutrient balances at the agricultural field level, and the raft of indicators offered by AGROgestor, are tools to promote strategic cultivation itineraries, adapted to sustainability criteria.



The main products of the project are two linked platforms, **AGROgestor** and **AGROasesor**, in an innovative digital ecosystem, which the partner organizations have used to support digital transformation in the agricultural sector. AGROgestor enables the collective management of management areas based on digital integration, which farmers/users perform via the AGROasesor platform.

THE INSTRUMENTS DEVELOPED ALLOW:

[01] Promote management based on environmental, economic and technical indicators that are truthful and quantifiable (currently, 31 environmental, technical and economic indicators are evaluated); AGROgestor platform.

[02] Promote multi-stakeholder advisory ecosystems that integrate farmers as a source of knowledge and digital data on their farms and enable monitoring through collective and individual indicators. The model allows the stimulation and support of agricultural extension services, with new information techniques and digital management: AGROasesor platform.

[03] Promote the digitization of field operations and the use of the Copernicus program's remote sensing services in a proactive approach to bridging the digital divide. An example is the use of remote sensing as a tool to improve the efficiency of irrigation water and nitrogen use: AGROasesor platform.

AGROGESTOR ALLIANCE

CASTILLA LA MANCHA > ANDALUCÍA
NAVARRA > CATALUÑA > PAIS VASCO
COMUNIDAD DE MADRID > ARAGÓN

WE PROMOTED COLLABORATION BETWEEN 7 AUTONOMOUS COMMUNITIES

The project has managed to promote **collaboration between 7 Autonomous Communities** to continue to jointly leverage and evolve the platforms developed in the project, **through a collaboration agreement signed by 7 public entities.**



Agrogestor Alliance: We promoted knowledge management through digital tools

The Agrogestor Alliance came about within the framework of the Life Agrogestor project with the aim of continuing to promote knowledge management through digital tools.

In December 2020, the European Commission published the Green Deal as the “Roadmap” to give the EU a new growth strategy to turn the Union into a modern, resource-efficient and competitive economy where net greenhouse gas emissions have ceased by 2050, economic growth is decoupled from resource use and there are no people or places left behind.

As part of the Green Deal, the European Commission published in May 2020 two strategies that will mark the development of the European agri-food sector: **The Strategy for Sustainability and the “Farm to Fork” Strategy.** Furthermore, the new CAP will be a key tool for achieving these ambitions and makes it clear that knowledge and innovation are fundamental to an intelligent, resilient and sustainable agricultural sector.

We know that the European agri-food sector will be affected in the coming years by the climate emergency, digitization, loss of biodiversity, lack of workforce in new generations, as well as the demand from the public for more sustainable food.

Therefore, involvement and providing innovative and collaborative solutions in the agri-food sector will be key to achieving the objectives of the Green Deal.

The AGROGESTOR ALLIANCE is a commitment to generate knowledge and sustainability in the sector, with the collaboration of public entities and administrations, through

the evolution of the digital ecosystem created within the project: the AGROgestor and AGROasesor platforms. This ecosystem is designed to support the advisory and transference objectives promoted by the new CAP:

- Integral advisory service (incorporating digitization and Decision Support Tools, advisory priorities by sub-sector, indicators for farm diagnosis).
- Transference methodologies with greater impact for the sector (group revitalisation, face-to-face counselling and new advisory technologies).
- Monitoring of ECO-SCHEMES to support the transition to the objectives of the Green Deal.

In short, THE AGROGESTOR ALLIANCE will allow the entities to continue to work on promoting new advisory models, supported by digitization, with the aim of promoting good agricultural practices; it is an opportunity to promote the digitization of the sector, and to support the incorporation of indicators in the environmental management of farms.



AGROasesor PLATFORM FEATURES



MANAGEMENT OF FIELD OPERATIONS AND ITINERARIES

Traceability and inventory management.



DST FERTILIZATION

Nutrient balance and dynamic recommendation depending on the season, for each plot.



CROP CYCLE MODELLING

Key crop states in each field.



CROP MONITORING WITH REMOTE SENSING

Inter-field zoning maps.



DST IRRIGATION

Recommendation adapted to the cycle and development of the crop.



AGROasesor PLATFORM

The AGROasesor platform integrates farming operations on the field, with advice via Decision Support Tools (DST). Each user manages the data regarding their actions on their fields: They can keep phytosanitary and fertilizer administrative notebooks up to date with the support of updated SIGPAC information in each campaign and access digital soil map information or satellite images that are incorporated into crop monitoring.

The platform connects the management of field operations with advice, via the use of Decision Support Tools, on fertilization, irrigation, satellite crop monitoring and sustainability indicators.

The Decision Support Tools (DST) models allow the integration of existing knowledge and the integrated management of nutrients (N, P and K) and irrigation into the situation of each crop, in each season, on a specific field, with its soil management characteristics and climatic conditions.

The entire platform has evolved within the framework of the LIFE AGROGESTOR project to adapt the functionalities to collective management.

The platform also integrates the creation of Crop Itineraries, which technical consultants can use as recommended Itineraries for their farmers, through the notifications module.

DISCOVER THE AGROASESOR PLATFORM...





AGROgestor PLATFORM FEATURES



AGC
**CREATION OF COLLECTIVE
MANAGEMENT AREAS**



AGC
**SCENARIO ANALYSIS:
31 INDICATORS FOR PRODUCTIVITY,
EFFICIENCY AND SUSTAINABILITY**



**STRATEGY
ITINERARIES**



**CLIMATE SCENARIO
ANALYSIS TOOLS**



**AEMET METEOROLOGICAL
NOTIFICATIONS**



**SIMULATION OF AN
ENVIRONMENTAL PROGRAMME**



AGROgestor PLATFORM

The AGROgestor platform offers **Collective Management Services for Sustainability Indicators** capable of interacting with entities that usually provide services related to crop irrigation and with the most widely used tools that these entities provide for irrigators and managers. The platform allows collective managers to select a collective management area (CMA) based on various criteria (geographic, cultivation, hydrographic demarcation, municipality) and calculates 31 indicators associated with environmental programmes.

The AGROgestor platform integrates utilities to support collective crop management for the provision of advisory services at the field and farm level.

AGROgestor offers **Collective Management services** via Indicators for Productivity, Efficiency and Sustainability.

AGROgestor allows **climate change scenarios** to be created and analysed, management strategies to be simulated and proposed based on selected crop itineraries, and finally evaluate on-going strategies using the indicators module.

AGROgestor also has a **tool for characterizing climate change scenarios** where, based on the reference variables of temperature, precipitation and evapotranspiration, it is possible to select and classify different time scales and define sets of agri-climatic data with which to run crop simulations using the decision support tools on the AGROgestor platform.

**DISCOVER THE
AGROgestor
PLATFORM...**



The AGROgestor platform offers Collective Management services via Indicators for Productivity, Efficiency and Sustainability:

- **Economic:** Production and gross margin.
- **Water use:** Water consumption, water productivity and water footprint and its components (blue, green and grey). Water Stress Index.
- **Nitrogen Management:** Total consumption of N, mineral, and organic. Organic N in relation to total N, excess N, N contribution from irrigation water.
- **Phosphorus Management:** Total consumption of P2O5, mineral, and organic. % organic P over total P, excess P2O5.
- **Emissions:** Carbon footprint and energy.
- **Use of phytosanitary products:** Number of phytosanitary treatments in a campaign, toxicity in fresh and marine water, terrestrial and human toxicity.
- **Biodiversity:** Evaluation of different crops in rotation, or incorporation of legumes, in the last 4 years. Incorporation of crop residues.

AGROgestor IN 3 KEY POINTS

- [1] Create and analyse scenarios.
- [2] Simulate and propose management strategies.
- [3] Strategy reassessment using 31 indicators, supported by a climate scenario simulation tool.

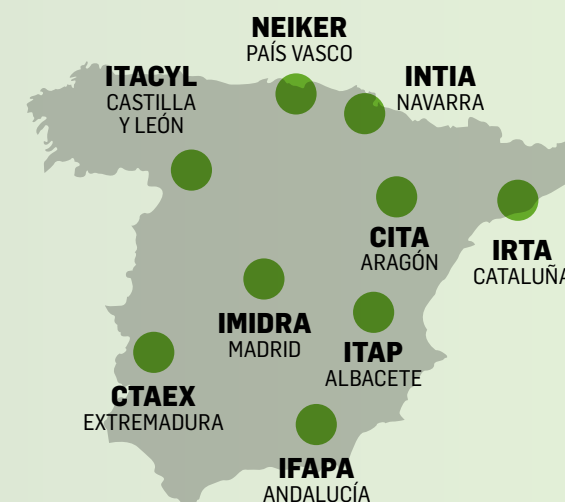


AGROGESTOR PLATFORM

Transference of results

Through the development of 9 pilot schemes in 9 Autonomous Communities, we have been able to address replication, validation and transference objectives.

THE LIFE programme promotes the demonstration of transference in the EU and the tools developed have been validated at the project's pilot schemes - with agri-climatic diversity, different types of crop and production structures - through the collaboration of communities of irrigators, cooperatives and farms, in 9 Autonomous Communities at the national level. In addition, the project has developed a European partnership through three transnational workshops.



In the project we have developed three environmental pilot schemes across three campaigns, to analyse the interaction of different environmental problems in irrigation agricultural systems:

- **CASTILLA LA MANCHA.** Ambiental Albacete Programme. Environmental Program. Collective management in basins at risk of overexploitation.
- **NAVARRA.** Río Robo Environmental Program. Sustainable management in Vulnerable Zone to Nitrate pollution.
- **CATALUÑA.** Torelló Environmental Program. Collective management in areas with a high load of livestock manure.

STRATEGY ITINERARIES

These pilot schemes have promoted strategy itineraries that have improved the selected sustainability indicators. Through the use of the ecosystem of digital platforms, we have analysed the 2018 campaign as an initial scenario, **to establish a baseline, and the 2019 and 2020 campaigns** have been used for the implementation of strategy itineraries.

To monitor sustainable soil use, we have used the excess nitrogen and phosphorus indicators, referring to each crop evaluated, in the different areas of collective management, which has allowed us to accurately analyse the fertilization strategies followed and crop choices, and develop proposals for improvement. By taking the strategies followed in these pilots together, **we reduced N surplus by 110%, saving 8 kg N/ha.**

We have been able to assess the levels of greenhouse gas emissions, noting an improvement in emission values in terms of CO2 equivalent. The final value of the environmental pilot schemes is 26,654,792 kg CO2 equivalent/year emitted in 4,367 ha, corresponding to 0.438 kg CO2 eq/kg of product in 2020, compared to 0.580 kg CO2 eq/kg in

EXPLORE THE 9 PILOT SCHEMES...



AGROGESTOR PLATFORM | TRANSFERENCE OF RESULTS

2018. This has meant a **reduction in emissions by 25%**.

In order to assess the efficiency of water resources management, it has been very interesting to be able to assess the water footprint of each crop and to **show the reduction of consumption in relation to the production obtained (m³/t), a final reduction of 22 %** was identified from an initial consumption of 403 m³/t to 314 m³/t between 2018 and 2020.

5 pilot schemes have been run, focused on analysing collective management through the use of the developed platforms and interaction between management groups. Another 4 Autonomous Communities have launched further pilot schemes in which the implementation of a platform management model developed in the project has been tested from scratch. In total, we have launched 12 demonstration pilot schemes in the 2018-2021 campaigns, which are the spearhead for the AGROGESTOR ALLIANCE to further promote sustainability in the sector.

The analysis of the lessons learned in all the workshops has allowed us to **set the priority objectives** that will be addressed by the AGROGESTOR ALLIANCE:

- **Disseminate Decision Support Tools** and encourage digital adoption.
- **Promote itineraries for the self-regulation of the agricultural ecosystem**, based on the soil as a service provider (nutrients, structure improvement, inter-cropping, CO₂ capture...)
- **Promote digital integration and technological modernisation** of farms based on the proximity of technicians and/or pioneers and farmers.
- **Promote demonstration actions and use cases** of the AGROasesor and AGROgestor platforms.
- **Support technical consultants to extend environmental awareness** to farmers, incorporating pilot training actions.

- **Publish baseline KPIs for agri-climatic crop zones** and disseminate the use of global environmental indicators.
- **Validate field-level balance models.**

The project also held 3 European-level workshops in 2020:

- **EUFRAS Workshop (Web-conference "Preparing Advisers for the Digital Era")**
- **H2020 FAIRshare Workshop**
- **DG-AGRI study FaST Workshop.**

Thanks to these 3 transnational workshops carried out as part of the project, lines of collaboration have been addressed focused on the dissemination of tools to assist decision-making and interaction and collaboration between platforms.

The NAVIGATOR FaST platform was successfully deployed during 2021. This platform, which DG-AGRI will offer for public use, integrates a powerful nutrient balancing tool, adapted to different levels of ground, soil and crop information; there has been active collaboration to integrate the AGROasesor balance model into the new platform.

WHICH COUNTRIES AND COLLABORATION MODEL ARE BEING ANALYZED?

Also, during 2021, the FAIRshare project has used the AGROasesor platform as an example of advisory services in internal project workshops and at the annual meeting of the Global Forum for Rural Advisory Services (GFRAS)

-110%
Reduced N surplus by 110%

-25%
25% reduction in kg of CO₂ eq per ton of crop produced

-22%
Irrigation water consumption per ton of crop produced by reduced by 22%

AGROGESTOR PLATFORM

Dissemination, Training, Advice and Environmental Awareness



Numerous outreach activities have been carried out:

Around 12,000 web visits, 24 informative panels and posters, 3 technical articles and 4 scientific articles, 18 press releases, 44 conferences, and 22 open days with more than 4000 participants. There have been 24 networking actions.

The project has developed an extensive training and environmental awareness programme.

45 training courses have been run and attended by 240 people, on platform management, AGROasesor and AGROgestor, for which 20 manuals and 5 training videos have been prepared. These are simple manuals to allow the



VIEW ALL 10 USE CASES...



ACCESS THE 3 GOOD PRACTICE MANUALS WITH 30 KEY IDEAS...

management of digital platforms to be done directly by farmers, or to serve as material for consultants and collective managers as facilitators of digital integration.

In the AGROgestor project, we have developed tools and materials to promote environmental awareness

in the collective management of environmental programmes. We have encouraged synergies between actors, selecting valid elements to support and evaluate governance through three manuals.

A total of 10 use case worksheets have been developed to

show the use of new technologies in sustainable management. And 3 good practice manuals have been published.

10,000ha
Pilot schemes
8,000ha
Irrigation

15
Agricultural cooperatives

150
Farms

31
Indicators

66
Communication actions

45
Training courses

26
Awareness actions

+5,000
Attendees

20/5
20 Manuals and 5 Videos

10/3
10 Use Cases and 3 Good Practice Manuals

AGROGESTOR PLATAFORM

Environmental benefits and impact on European policies

The Digital Ecosystem implemented in the project **demonstrates the feasibility of creating a digital registration and evaluation system** at the farmer level, integrated into a digital reference advisory system using strategy itineraries.

The digital tools play a **key role in the development of the eco-schemes proposed in the new CAP**: Indicators, quality data management, knowledge generation, evaluation of measures. To this end, LIFE AGROGESTOR has created tools to implement and evaluate measures embedded in the Eco-schemes of the new CAP.

This project, developed by public advisory and research entities, has made it possible to analyse the feasibility of digital services for the integration of knowledge, advice and evaluation in agriculture systems by the public sector and the administration of all the regions involved, valuing multi-stakeholder management that allows for the integration and collective use of both public information and self-gained knowledge.

The AGROGESTOR ALLIANCE will continue to evolve this digital ecosystem, to channel strategic plans that encourage the use of sustainable practices, such as precision farming, organic agriculture, conservation agriculture...

Value is also placed on impartial, transparent and robust advice, based on a publicly owned, back office of applied experience, ensuring that there are no commercial interests in advice given to farmers. The ability to transmit experience and knowledge from an integral point of view, incorporating environmental and economic indicators, has also been highly valued; thus, the use of A DIGITAL ADVISORY ECOSYSTEM will enable these objectives to be successfully addressed.

The project has shown that multi-stakeholder management is possible, making it easier for public information and self-gained knowledge to be integrated and adapted for the collective.

Our vision for the future: Continue to bring farmers and technicians closer together, tools to evaluate farms and support decision-making, based on the sharing of information and knowledge.

[OUR VISION FOR THE FUTURE]

Continue to bring farmers and technicians closer together, tools to evaluate farms and support decision-making.

[MULTI-ACTOR MANAGEMENT IS POSSIBLE]

Facilitating that public information and self-gained knowledge can be integrated and adapted for the collective

[IMPARTIAL, TRANSPARENT AND ROBUST]

We value impartial, transparent and robust advice, based on a publicly-owned, back office of applied experience.

Assessment of actions that administrations could encourage to promote digitization in the monitoring of Eco-schemes

Providing tools for security and control				3.2
Providing advisory tools				3.2
Report and extract benchmarks			2.8	
Generate and share knowledge digitally				3.1
Validation of digital advisory tools			2.9	
Promoting platform interconnection (standardize procedures)				3.4
Training				3.6

LEAST IMPORTANT

MOST IMPORTANT

Features most valued in advisory services

Impartiality, independence, knowledge sharing				3.4
Proximity and accessibility				3.5
Digital adoption facilitators			2.8	
Experience and expert knowledge				3.2
Comprehensive, technical, economic and environmental advice				3.2
Advice supported by digital tools				3
Interoperability between different digital tools			2.9	

LEAST IMPORTANT

MOST IMPORTANT

Survey of participants at the Final Project Seminar, which took place on 22nd October 2021.



AGROGESTOR



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