

AGRICULTURE 4.0 AND RURAL DEVELOPMENT

Management tools to support farmers decision-making



Parallel Thematic Session

AGRICULTURE 4.0 AND RURAL DEVELOPMENT

Management tools to support farmers decision-making

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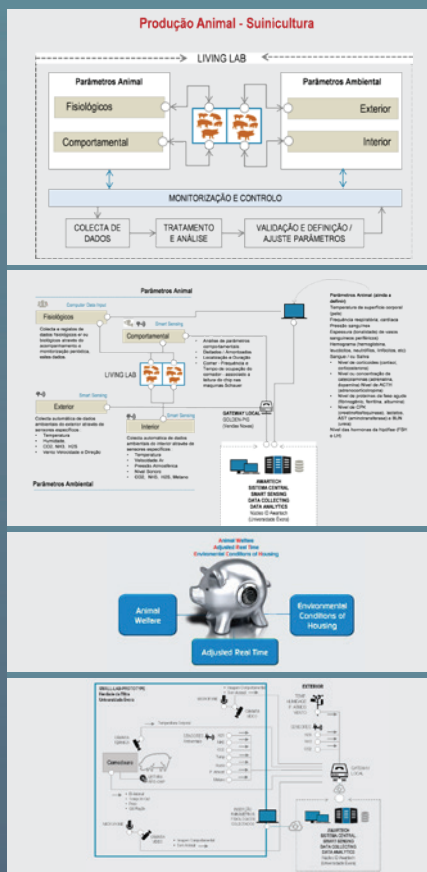


INDEX

AWARTECH - Animal Welfare Adjusted Real Time Environmental Conditions of Housing	5
CAPSELLA - Collective Awareness Platforms for Land Management based on Data Technologies and Agro-biodiversity	6
FERTINNOWA - Transfer of INNOvative techniques for sustainable WAter use in FERTigated crops	7
FitoAgro - Methodology and tools for a better management of new key pest of the pear and apples in the West region	8
GEO SUBER – Cork oak monitoring	9
Integration of IRRINET with a fertigation software program	10
ModelVitiDouro - A model for viticulture in the Douro Wine Region	11
ProTomate - Development of new forms of support to the management of tomato crops to enhance quality of the final product (advice based on models and IT tools)	12
SEMS - Smart Economic Monitoring Systems of production and operation costs related to precision and high mechanization	13
SMART-AKIS - European Agricultural Knowledge and Innovation Systems towards innovation in Smart Farming	14
VIGISPORES - development of a decision support system for the management of three fungal diseases on shallot	15



Supported by:



Start: September/2016
End: September/2019

Budget: 1.301.923 €

Colaborative Business R&TD Projects:

AWARTECH - Animal Welfare Adjusted Real Time Environmental Conditions of Housing

Awartech - Animal Welfare Adjusted Real Time Environmental Conditions of Housing

Practical Problem

The world is becoming each day more demanding in high quality food products, produced according to animal welfare regulations, ethic principles, and either social and environmental responsibility. These conditions demand a very high cost rationalization and increasingly value chain efficiency.

Partners

Type:

Agri Enterprise
Research /Teaching
Other company

Name:

Equiporave Ibérica
Universidade de Évora
Hexastep SA

Project

Objectives:

- Test and validate equipment and methodology for collecting and monitoring information on indicators of animal welfare, provided by the animal, in real time;
- Integrate all the information collected in an algorithm to be placed in a environmental control software and analyse its profitability.

Expected results:

The expected results of the AWARTECH is to create and develop a precision livestock innovative tool that controls and monitors, in real time, the environmental and welfare conditions that lead to the economic and productive sustainability of farms.

Results so far/first lessons:

Trials for the AWARTECH project have not yet started. They are foreseen to begin on September 2017.

Who will benefit:

Pig farming chain.

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MANAGEMENT TOOLS TO SUPPORT FARMERS



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 688813



CAPSELLA
COLLECTIVE AWARENESS PLATFORMS FOR ENVIRONMENTALLY-SOUND LAND MANAGEMENT BASED ON DATA TECHNOLOGIES AND AGRO-BIODIVERSITY



Start: January/2016
End: June/2018

Budget: 205.6750 €



Horizon 2020:

CAPSELLA—Collective Awareness Platforms for Land Management based on Data Technologies and Agro-biodiversity

Practical problem

Mainstream food production systems are becoming increasingly unsustainable due to unacceptable levels of food waste in industrialized countries. Alternative systems with reduced use of external inputs have to be promoted, based on an optimised use of agro-biodiversity and on improved food systems.

Partners

Names:

ATHENA Research and Innovation Center in Information, Communication and Knowledge Technologies (GR) Scuola Superiore Sant'Anna di Studi Universitari e di Perfezionamento (IT) Aston University / Aston Business School (UK) Agroknow (BE) Rete Semi Rurali (IT) Zephyr s.r.l. (IT) We Deliever Taste (CZ) Zuidelijke Land en Tuinbouw Organisatie (NL)

Project

Objectives:

CAPSELLA aims to a) raise awareness about the proper use and management of agro-biodiversity for addressing major sustainability threats on several layers: ecological, societal, economic, food quality; and b) offer innovative open data ICT solutions that will address needs coming from the communities.

Expected results:

CAPSELLA aims to bring together a set of agri-food related communities to interact both by holding targeted events and building a platform for data collection sharing. The intention is the collection of open data from the targeted communities towards building innovative ICT applications, thus enabling the development of smart applications either from the partners or from external communities.

Results so far/first lessons:

CAPSELLA has developed community driven scenarios, namely (a) agro-biodiversity at small farmers' level and (b) added value food supply chains. Based on the available data from the communities, CAPSELLA has developed seven open data ICT applications that are offering the desired functionalities to relevant communities.

<http://www.capsella.eu/>

Who will benefit:

Stakeholders from all spectrum of the agri-food ecosystem such as farmers, agronomists, food retailers and consumers

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MANAGEMENT TOOLS TO SUPPORT FARMERS DECISION MAKING



Coordinator
Represented EU countries



Supported by:

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 689687



Start: January/2016
End: January/2019

Budget: 2.999.273 €

Horizon 2020:

FERTINNOWA: Transfer of INNOvative techniques for sustainable Water use in FERTigated crops

Practical problem

Fertigation can lead to i) a significant increase in the water and nutrient use efficiency and ii) the reduction of the environmental impact. New technologies will enable the next step towards more sustainable water and fertiliser use, but we see that these technologies do not reach the farm level.

Partners

Names:

Proefstation Voor de Groenteteelt (BE); Proefcentrum Voor Sierteelt - PCS VZW (BE); Association Provencale de Recherche et D'Experimentation Legumiere (FR); Centro di Sperimentazione ed Assistenza Agricola (IT); Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek Tno (NL); Stichting Proeftuin Zwaagdijk (NL); Instituto Andaluz de Investigacion y Formacion Agraria Pesquera Alimentaria y de la Produccion Ecologica (ES); East Malling Research (UK); Fraunhofer Gesellschaft zur Foerderung Der Angewandten Forschung e.V. (DE); Centrum Doradztwa Rolniczego W Brwinowie (PL); Instytut ogrodnictwa (PL); Universidad de Almeria (ES); The Agriculture and Horticulture Development Board (AHDB) (UK); Fundacion Cajamar (ES); Centro de Investigaciones Cientificas y Tecnologicas de Extremadura (ES); Instituto Valenciano de Investigaciones Agrarias (ES); Instituto Navarro de Tecnologias e Infraestructuras Agroalimentarias SA (ES); Priva Bv (NL); Comité D'Action Technique et Economique (FR); Kmetijsko Gozdarska Zbornika Slovenije Kmetijsko Gozdarski Zavod Maribor (SI); Provinciaal Proefcentrum Voor de Groenteteelt oost-Vlaanderen Vzw (BE); Proefcentrum Hoogstraten (BE); Optima Agrik Pty LTD (ZA)

Project

Objectives:

FERTINNOWA aims to have a better understanding of the barriers that keep growers from implementing new technologies. For this, FERTINNOWA will collect, exchange, showcase and transfer innovative water management solutions to improve water use efficiency and reduce the environmental impact.

Expected results:

FERTINNOWA will:

- Perform a growers' survey to identify the applied technologies and experienced bottlenecks;
- List and evaluate available technologies from the technological, socio-economic, legal and practical perspective;
- Provide a technology database;
- Exchange at least 23 technologies;
- List remaining gaps;
- Disseminate all gathered information and experiences.

Results so far/first lessons:

- A survey amongst 377 growers was carried out showing that growers face similar problems but apply different technologies and practices to solve them;
- 134 technology review documents were completed and made available on the FERTINNOWA technology database (www.FERTINNOWA.be);
- Remaining bottlenecks were listed;
- The exchange of 23 technologies was initiated.

Who will benefit:

Growers, grower organisations, advisors, researchers, regional and national authorities, technology suppliers.

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MANAGEMENT TOOLS TO SUPPORT FARMERS DECISION-MAKING



Supported by:



Start: June/2017
End: June/2021

Budget: 500.860 €



Operational Group:

FitoAgro - Methodology and tools for a better management of new key pest of the pear and apples in the West region.

FitoAgro - Metodologia e ferramentas para uma melhor gestão de novas pragas chave da pera e maçã na região Oeste.

Practical problem

The exit of active substances, which leaves enemies uncovered and the need to develop alternative strategies to chemical control; climate change that causes changes in the enemy life cycles, which leaves to the adaptation of the forecast models and as well as the entry of new enemies for which it is necessary to define control methodologies.

Partners

Type:

Research/Teaching

Agri association

Agri enterprise

Name:

ISA - Instituto Superior de Agronomia; ESA de Santarém; ESA de Castelo Branco; Universidade Nova de Lisboa

Coopval, CRL; Associação de Produtores Agrícolas da Sobrena; Cooperativa Agrícola do Bombarral, CRL; Frubaça, CRL; COTHN – CC

Frutus, CRL; Granfer; Ecofrutas, Lda; CPF - Centro de Produção e Comercialização Hortofrutícola

Project

Objectives:

Define risk assessment methods, economic thresholds and decision-making rules for the new key pests of the pear and apples in the West Region, based on the biological and meteorological data, collected in the Biological Observation Stations of the producers partners of this Operational Group (OG).

Expected results:

Define and disseminate to field technicians and growers, by digital media and leaflets, information on: biological characteristics of emerging enemies;
Risk assessment and economic threshold to support farmers' decision-making;
Biological and biotechnical control means, alternative to chemical control;
Risk maps and forecasting validated models.

Results so far/first lessons:

This OG has advanced so far because it focused on analyzing existing information that resulted from previous projects.

Who will benefit:

Pear and apple producers and their organizations.

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AGRI INNOVATION SUMMIT 2017
More information: www.aislisbon2017.com





Supported by:



Start: July/2017
End: June/2020

Budget: 218.161 €

Operational Group:

GEO SUBER – Cork oak monitoring.

GEO SUBER - Monitorização do montado.

Practical problem

The practical problem is the lack of mechanisms to monitor the vitality of the cork oak forests in real time, fragility that has been identified in the past without significant advances until now and very relevant to an ecosystem that during the last 3 decades is in a process of loss of vitality.

Partners

Type:

Agri association

Name:

Unac - União da Floresta Mediterrânica; APFC – Associação de Produtores Florestais do Concelho de Coruche Limitrofes

Research/ Teaching

Instituto da Conservação da Natureza e das Florestas, I.P.; Faculdade de; Ciências da Universidade de Lisboa ; Instituto Superior de Agronomia

Agri enterprise

Systerra – Engenharia e Gestão Lda.; Companhia das Lezírias S.A.; Luís Filipe Bual Falcão da Luz; Pedro Sacadura Teixeira Cabral Duarte da Silveira; Sociedade Agrícola Monte da Sé, Lda.; Pedro Miguel Belo Ramos Courinha Martins; Anta de Cima – Sociedade Agrícola, Unipessoal Lda.; Sociedade Agrícola do Freixo do Meio, Lda.

Project

Objectives:

Ensure periodic monitoring of the cork oak vitality through remote sensing and provide the forest owner through an online platform with the information for the management, namely the annual inventory of dead trees and production of cartography in support of the cork oak cutting requirements.

Expected results:

On-line platform for cork oak vitality monitoring; Mobile application for visualization/ access the data; Periodic cork oak mortality cartography; Adaptive management recommendations; Simplification of mandatory procedures (identification of the dead cork oaks for felling); Assess the influence of the foliar index evolution on the cork harvesting; Georeferenced historical record of mortality

Results so far/first lessons:

In 2004 an inventory of cork oak mortality was carried out, based on digital aerial photography and spectral treatment of the images (2008, Ribeiro and Surov), demonstrating the potential of the remote sensing approaches. The actual Copernicus program (Sentinel 2 mission), made available free satellite images, with high spatial/ temporal resolution which is an opportunity for forest monitoring.

Who will benefit:

Cork producers, forest associations/cooperatives, forestry technicians, municipalities and forestry national authority

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Supported by:



Start: 01/09/2016
End: 31/03/2019

Budget: 251.149 €

Operational Group:

Integration of IRRINET with a fertigation software program

Implementazione nel servizio IRRINET di un software per la gestione della fertirrigazione

Practical problem

Emilia-Romagna APRD promotes an efficient use of water and nutrients. IRRINET DSS is a system to schedule irrigation which was developed by CER and provides day-by-day information on how much and when to irrigate crops. Still, it misses a fertigation management program.

Partners

Type:

Research institutes

Farms

Name:

Consorzio di bonifica di secondo grado per il Canale Emiliano Romagnolo, Bologna; Centro Ricerche Produzioni Vegetali, Cesena

Società agricola Sandri, Imola; Consorzio Interregionale Ortofrutticoli Soc. Coop. A R.L., Parma; APOFRUIT ITALIA - SOC. COOP. AGRICOLA Pievesestina di Cesena; Grandi Colture Italiane Società Cooperativa Agricola, Ferrara

Project

Objectives:

The main objective is to create a software for fertigation that optimizes the use of mineral fertilizers and reduces the releases of pollutants, in order to improve agriculture sustainability and adaptability to climate change. The software will be implemented in the irrigation service IRRINET DSS.

Expected results:

The use of the software, rationalizing the use of mineral fertilizers, could provide significant cost savings thanks to lower amounts of inputs used, reduce the environmental impact due to lower losses by leaching, improve crops productivity due to a stronger synergy water / nutrient and provide a registration service of fertilization for the regional government.

Results so far/first lessons:

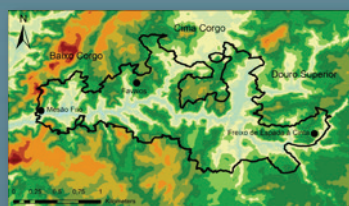
The software has already been created, integrated in IRRINET DSS and used for the calculation of the total annual amount of N, P, K for potato, tomato, corn and pear crops. The absorption curves of the tested crops have already been defined. Experimental tests were performed in field for calibration and validation of the model.

Who will benefit:

Farmers and producers organizations with irrigated and fertigated crops.



Supported by:



Start: January / 2015
End: December/ 2017

Budget: 140 459 €

PRODER:

Model for viticulture in the Douro Wine Region (ModelVitiDouro)

Modelo de previsão do desenvolvimento e produção vitivinícola na Região Demarcada do Douro

Practical problem

Activities in wineries and vineyards are often constrained by uncertainties on grapevine production. The ability to timely predict the production will bring obvious advantages, not only for a better planning of the activities in vineyards, but also for a better management of winery resources.

Partners

Type:

Name:

Agri Association
Research/Teaching
Agri Association

Adega Cooperativa de Favaiois C.R.L.
Universidade de Trás os Montes e Alto Douro
Adega Cooperativa de Favaiois
Adega Cooperativa de Mesão Frio
Adega Cooperativa de Freixo de Espada à Cinta

Project

Objectives:

The main goal of ModelVitiDouro is to develop a tool for predicting, on a daily basis, grapevine production in the Douro Wine Region. This tool represents an important added-value when planning agricultural practices in vineyards and is a decision support tool for winery management and stakeholders.

Expected results:

An user-friendly application will be delivered to the project partners. This application will be fed by meteorological data (temperature and precipitation) recorded by automatic weather stations at different vineyards, representing the wide range of climatic conditions within the Douro Demarcated Region (Baixo-Corgo, Cima-Corgo and Souto Superior)

Results so far/first lessons:

The model is already being implemented in the partner's wineries. The model still deserves improvements, such as the incorporation of new climatic parameters, other relevant non-climatic parameters and new historical data. The model will be continuously enhanced in close collaboration between UTAD and the wineries. Other wineries and wine producers may also benefit from the model.

Who will benefit:

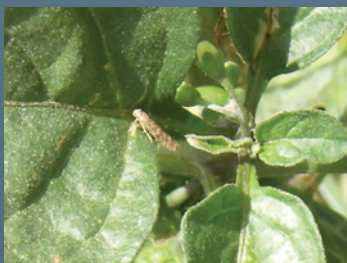
Although the three project wineries are the main beneficiaries, other agents may also benefit from the prediction model.



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Supported by:



Start: February/ 2013
End: March/ 2015

Budget: 181 630 €

PRODER:

PROTOMATE – A new support tool for the processing tomato crop management to guarantee the quality of the final product

PROTOMATE – Desenvolvimento de nova ferramenta de apoio à gestão da cultura do tomate para garantia da qualidade do produto final

Practical problem

Tuta absoluta was reported in 2011 in processing tomato crop and became the key pest of this crop at the Vale do Tejo region, causing high economic losses. In this context, production sector requested support for more knowledge about biology, monitoring and crop protection at an IPM perspective

Partners

Type:

Name:

Agri Enterprise
Other Association
Research/Teaching

Agromais, CRL
Centro Operativo Tecnológico Hortofrutícola Nacional (COTHN)
Instituto Superior de Agronomia da Universidade de Lisboa (ISA)
Instituto Politécnico de Santarém/Escola Superior Agrária (ESA/IPS);
Universidade de Évora (UE)
Federação Nacional das Organizações de Produtores (FNOP)

Agri Association

Project

Objectives:

The objective of the project was to develop a decision support system, contributing to the sustainable use of pesticides, biodiversity conservation and food quality. The development of this tool was based on the risk maps building and the occurrences in the main production regions

Expected results:

Protomate enhance the possibility to establish an easy-to-use risk evaluation assessment, decision-making rules for one of the key pests of the tomato crop - Tuta absoluta - and to deep the knowledge about the bioecology based on regional risk maps and occurrences. This information contributes to the development of a decision support tool, particularly to control Tuta absoluta

Results so far/first Lessons:

Crop protection of processing tomato crop in Portugal has been studied since 2001 to develop IPM strategies, particularly risk assessment methods and decision-making rules. Firstly to control usual problems (downy mildew and caterpillars) and also to study new species, *Frankliniella occidentalis*/TSWV. This project supported the continuity of technical knowledge about crop protection

Who will benefit:

The results will benefit directly the production sector, particularly decision actors and indirectly the consumers

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Supported by:



Start: 01/04/2016
End: 31/03/2019

Budget: 201.392 €

Operational Group:

SEMS - Smart Economic Monitoring Systems of production and operation costs related to precision and high mechanization

Monitoraggio economico dei costi di produzione e di esercizio riferiti a sistemi di produzione di precisione e a elevata meccanizzazione in agricoltura - SEMS

Practical problem

In general, the agricultural sector has poor ability to restructure and modernize. Interactive access to technical-economic information related to the main crops practiced in Emilia-Romagna, through the most common electronic devices, would improve the quality of farmers' decision processes.

Partners

Type:	Name:
Research and Experimental centre	CRPV soc. coop.
Research institute	UNIBO - Alma Mater Studiorum, University of Bologna
Advisory services	Experimental Farm Vittorio Tadini; Astra Innovazione e Sviluppo srl; Experimental Farm Stuard SCRL
Farms or Farmers organisations	Apofruit Italy; Asipo; Coams; Azienda Agricola Cicognani Gianni; Memento Agricultural Company

Project

Objectives:

Establish an online system for monitoring the economic sustainability of farms' production systems in Emilia-Romagna. Monitoring and benchmarking data availability, for a quick utilization by farmers are a preliminary step for more informed decisions about the introduction of tech innovation.

Expected results:

Implementation of a database which will be available to partners with information on the costs concerning the introduction of innovations on precision agriculture, high mechanization, and environmental sustainability techniques. Availability, through online consultation, of data on the production costs of main crops and costs related to the use of innovative machinery.

Results so far/first lessons:

The procedures for implementing the database have already boosted the cooperation and comparison between the farmers involved in the project, both as individual farms and through partner organizations.

The network of relationships, already existing and strengthened by the project and the participative processes adopted, seems to promise the success of the initiative.

Who will benefit:

Farmers will benefit from easier and better-informed choices on crops management and investments.

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MANAGEMENT TOOLS TO SUPPORT FARMERS DECISION



Coordinator
Represented countries



Supported by:

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 696294



Start: March/2016
End: August/2018

Budget: 1.997.731 €



Horizon 2020:

SMART-AKIS: European Agricultural Knowledge and Innovation Systems towards innovation in Smart Farming

Practical problem

Many smart farming solutions are available in the market nowadays. But many social and economic obstacles still remain for the wider adoption of such technologies by European farmers, who increasingly demand that new solutions fit their requirements.

Partners

Names:

Agricultural University of Athens (AUA - GR); Wageningen University & Research (WUR - NL); Leibniz-Zentrum fuer Agrarlandschaftsforschung (ZALF - DE); BioSense Institute (BIOS - RS); Association de Coordination Technique Agricole (ACTA - FR); Instituto Navarro de Tecnologías e infraestructuras Agroalimentarias SA (INTIA - ES); Deutsche Landwirtschafts-Gesellschaft e.V. (DLG - DE); Delphy (DELPHY - NL); Iniciativas Innovadoras SAL (INI - ES); Comité Européen des Groupements de Constructeurs du Machinisme Agricole (CEMA - BE); Fédération régionale des coopératives d'utilisation de matériel agricole de l'ouest de la France (FRcuma Ouest - FR); David Tinker & Associates Limited (DTA LTD - UK).

Project

Objectives:

Create and disseminate an inventory of Smart Farming solutions from the large stock of research results and commercial applications available. Foster the collaboration between the farming community, extension and advisory services, research and industry providers to promote innovation.

Expected results:

- Reports on research needs and interests of farmers on Smart Farming.
- 7 Innovation Hubs in Europe have held Innovation Workshops for innovation and market uptake projects.
- Smart farming platform:
- Searchable database of +1.000 Smart Farming Technologies.
- Assessment tool for best technology selection.
- Message board for networking.
- 1 EU & 7 national policy recommendations reports.

Results so far/first lessons:

- Online and free platform with a +1000 smart farming technologies database.
- Survey of over 270 farmers and experts all over Europe to understand and respond to the needs and interests of Smart Farming by farmers and the factors hindering the adoption of Smart Farming in Europe.
- Multi-actor Innovation Workshops held to generate, transfer and uptake smart farming solutions.

Project website: www.smart-akis.com

Who will benefit:

Farmers, research, advisory and extension services, agronomists and agricultural consultants, agricultural industry



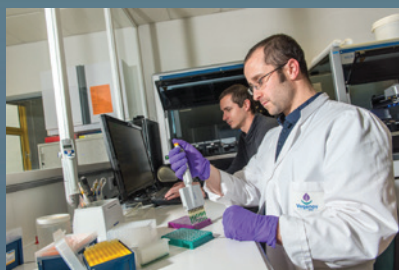
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AGRI INNOVATION SUMMIT 2017
More information: www.aislisbon2017.com



Supported by:



Start: 01/01/2017
End: 31/12/2019

Budget: 292.022 €

Operational Group:

VIGISPORES: development of a decision support system for the management of three fungal diseases on shallot

VIGISPORES: développement d'un outil d'aide à la décision (OAD) pour la gestion de trois maladies fongiques de l'échalote

Practical problem

Shallot production in Brittany represents 78% of the national production. Three major airborne fungal diseases pose significant issues for crop management: mildew and two *Botrytis*. Currently, plant protection strategies are not adapted to the real spore airborne concentration on the field.

Partners

Type:

Farmers organisations

Research institute

Research and advisory organisations

Name:

CERAFEL; Chambre d'Agriculture de Bretagne

Vegenov

CATE; Terre d'Essais

Project

Objectives:

The objective of VIGISPORES project is to develop a decision support system enabling farmers to protect shallot crops against these three diseases in a more efficient way, by linking spore trapping network to a DNA-based detection and quantification.

Expected results:

Measurement of spore trapping heterogeneity factors at field scale.
Definition and validation of the damage thresholds for mildew and *Botrytis* on shallot.
Development of references to manage plant protection strategies on shallot crop.

Results so far/first lessons:

In 2017, we already developed and validated tools for DNA-based detection and quantification of the fungi spores in laboratory.

Who will benefit:

VIGISPORES project will directly benefit growers of shallot and onion.





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