



European Commission



AGRI RESEARCH FACTSHEET PLANT HEALTH

Why do research and innovation on plant health matter?

Plant health is under mounting pressure due to the increasing number and frequency of new and re-emerging pests resulting from intensification, globalisation, trade development and climate change, which increase their potential to establish themselves and spread. The introduction and spread of plant pests are a serious threat that can have far-reaching economic, social and environmental consequences. European agriculture and forestry need to be granted sufficient means to cope with

the above-mentioned threats to ensure their vital functions, avoid trade disruptions and ensure consumer confidence in food by mitigating the potential risks to plant health. Tackling numerous and highly dynamic biotic threats requires integrated approaches and the development of a wide range of tools for prevention, monitoring, control and management of pests and diseases along with risk management strategies. This includes seeking alternatives to contentious pesticides.

Plant Health under Horizon 2020 Societal Challenge 2 (SC2)



30

Projects or expected grants



159 M€

EU contribution 2014-2020



471

Participations in selected projects

Key themes

Integrated pest management – Emerging risks to plant health - alternative to pesticides – ecosystem services



Plant health under EIP-AGRI activities

Focus groups:

Integrated Pest Management for Brassica
Integrated Pest Management practices for soil-borne diseases
Protecting fruit production from frost damage
Pests and diseases of the olive tree
Pests and diseases in viticulture

bit.ly/2J6n1Nz
bit.ly/2IfNoiK
bit.ly/2KW7r7N3
bit.ly/2Nq6tpP
bit.ly/2XksU4t

Operational Groups (OGs) examples:

Innovative pilot project in the fight against the olive fruit fly
Biological pest control in commercial apple plantations

bit.ly/2GXnsZ
bit.ly/2uCwHfw
bit.ly/2GoLkV7

Horizon 2020 SC2 collaborative projects - Plant health

MA = Multi-actor

EMPHASIS ^{MA}

www.emphasisproject.eu

Total cost: 7 M€

EC contribution: 6,5 M€

Coordinator: University of studies of Torino

Mar. 2015 – Feb. 2019

EMPHASIS addresses native and alien pest threats for a range of both natural ecosystems and farming systems. The overall goal is to ensure a European food security system and the protection of biodiversity and of ecosystems services while developing integrated mechanisms of response measures to predict, to prevent and to protect agriculture and forestry systems from native and alien pest threats.

WINETWORK ^{MA}

www.winetwork.eu

Total cost: 2 M€

EC contribution: 2 M€

Coordinator: IFVV

Apr. 2015 – Sep. 2017

WINETWORK worked on the exchange and transfer of innovative knowledge between European wine-growing regions to increase the productivity and sustainability of the sector. Project partners exchanged their knowledge on two important vines diseases: grapevine trunk disease and Flavescence dorée. The project approach was based on interactions between a network of facilitator agents, regional working groups and two scientific working groups.

nEUROSTRESSPEP ^{MA}

neurostresspep.eu

Total cost: 7 M€

EC contribution: EUR 7 M€

Coordinator: Uni. Glasgow

Jun. 2015 - May 2019

nEUROSTRESSPEP seeks to identify new and 'greener' ways of controlling pest insect populations in the context of integrated pest management. The project plans to use the insects own neuropeptide hormones, or synthetic mimetics, to selectively control insect pests of agriculture, horticulture and forestry, while preserving beneficial insects (such as honeybees), covering the full spectrum from research lab to test field.

EUCLID

www.euclidipm.org

Total cost: 4,1 M€

EC contribution: 3 M€

Coordinator: INRA

Sep. 2015 to Sep. 2019

EUCLID aims at developing more sustainable pest management methods in Europe and China in order to reduce the negative effects of pesticides on human health and the environment, to reduce economic losses in agriculture, and to provide scientific support to EU and China policies. Tomatoes, leaf vegetables and grapes are the main crops of research of the project. Beyond these crops, the project will consider the entire food chain.

POnTE ^{MA}

www.ponteproject.eu

Total cost: 6,9 M€

EC contribution: 6,8 M€

Coordinator: Italian National research council

Nov. 2015 – Oct. 2019

POnTE focuses its activities on the investigation of three main pathosystems that threaten strategic crops and natural landscapes in the EU. The targets are *Xylella fastidiosa* and its vectors, 'Ca. Liberibacter solanacearum' and its vectors, *Hymenoscyphus fraxineus* and *Phytophthora* spp. Diseases surveillance and epidemiology given by current methods will integrate improved survey protocols and remote sensing. Innovative Integrated pest management will include microbiome studies and sustainable biocontrol strategies.

NEURICE ^{MA}

neurice.eu

Total cost: 4,7 M€

EC contribution: 4,6 M€

Coordinator: U de Barcelona

Mar. 2016 to Feb. 2020

NEURICE will develop strategies for rice productivity, stability and quality. It will do so by developing new commercial rice varieties harbouring salt tolerance alleles to protect the sector against deteriorating water quality in Mediterranean basins and apple snail invasion linked to salinization. The availability of commercial salt tolerant rice will prevent further dispersion of this devastating pest.

My Toolbox ^{MA}www.mytoolbox.eu

Total cost: 5,2 M€

EC contribution: 5 M€

Coordinator: Universitaet Fuer

Bodenkultur Wien

Mar. 2016 – Feb. 2020

My Toolbox aims to develop novel interventions aimed at achieving a 20-90% reduction in crop losses due to fungal and mycotoxin contamination. It will not only pursue a field-to-fork approach but will also consider safe use options of contaminated batches, such as the efficient production of biofuels.

MycoKey ^{MA}www.mycoskey.eu

Total cost: 6,4 M€

EC contribution: 5 M€

Coordinator: Consiglio

Nazionale Delle Ricerche

April 2016 – March 2020

MycoKey aims to generate innovative and integrated solutions that will support stakeholders in effective and sustainable mycotoxin management along food and feed chains. The project will contribute to reduce mycotoxin contamination mainly in Europe and China, where frequent and severe mycotoxin contaminations occur in crops, and where international trade of commodities and contaminated batches are increasing.

XF-ACTORS ^{MA}www.xfactorsproject.eu

Total cost: 7,1 M€

EC contribution: 6,9 M€

Coordinator: Italian National

Research Council

Nov. 2016 to Oct. 2020

XF-ACTORS is the first research project in Europe entirely devoted to research on the bacterium *Xylella fastidiosa*. It seeks to develop scientific knowledge on the pathogenicity, transmissibility and host susceptibility to the *Xylella fastidiosa* strains recovered in the EU outbreaks. This knowledge will be used for the implementation of tools for pest risk assessment, for prevention and reduction of the impact of the *Xylella*-induced diseases.

TROPICSAFE ^{MA}www.tropicsafe.eu

Total cost: 4 M€

EC contribution: 4 M€

Coordinator: University of

Bologna

May 2017 – Apr. 2021

TROPICSAFE aims to address economically important insect-borne prokaryote-associated diseases of perennial crops grown in tropical and subtropical areas, which are seriously affecting the trade of agricultural products and materials worldwide. Knowledge and technologies available in the EU will be deployed in tropical and subtropical regions for carrying out epidemiologic studies and develop integrated pest management strategies.

IWMPRAISE ^{MA}iwmpraise.eu

Total cost: 7 M€

EC contribution: 6,6 M€

Coordinator: Aarhus University

Jun. 2017 to May 2022

IWMPRAISE aims to support the implementation of Integrated Weed Management (IWM). It will demonstrate that adoption of IWM supports more sustainable cropping systems both agronomically and environmentally, which are resilient to external impacts without jeopardising profitability or the steady supply of food, feed and biomaterials. IWMPRAISE aims to develop, test and assess management strategies delivered across whole cropping systems for four contrasting scenarios representing typical crops in Europe.

MUSA ^{MA}www.projectmusa.eu

Total cost: 4 M€

EC contribution: 4 M€

Coordinator: Italian National

Research Council

June 2017 – May 2021

Nematodes and weevils of banana with Panama disease globally affect food security, causing yearly crop losses in Canary Islands, Caribbean and Africa. MUSA will develop integrated pest management methods based on microbial consortia and banana germplasm, studying plant reactions to different biotic stresses. This will be achieved by screening, testing and evaluating in the field, selected banana lines, seeking to identify genes involved in resistance and interaction with microorganisms.

VALITESTvalitest.eu

Total cost: 3,4 M€

EC contribution: 3 M€

Coordinator: ANSES

Nov. 2017 – April 2021

VALITEST will develop an improved framework for validation, which will allow the production of data for faster decision-making and support risk management to enhance early eradication of pests, thereby supporting the improvement of Plant Health, thus contributing to the sustainability and competitiveness of the European agri-food sectors.

INNOSETA ^{MA}innoseta.eu

Total cost: 2 M€

EC contribution: 2 M€

Coordinator: Universitat

Politecnica de Catalunya

May 2018 – April 2021

INNOSETA aims to set-up a self-sustainable Thematic Network on Spraying Equipment, Training and Advising designed for the effective exchange between researchers, industry, extension services and farming community. The network will cover spraying application needs in the most commonly used crops in Europe and will be organized in seven national innovation hubs linked with international interactive workshops.



<p>RUSTWATCH ^{MA} bit.ly/2QQqNPw Total cost: 5 M€ EC contribution: 5 M€ Coordinator: Aarhus Universitet May 2018 – April 2022</p>	<p>RustWatch will establish a stakeholder driven early-warning system to improve preparedness and resilience to emerging rust diseases on wheat, which is Europe's largest agricultural crop. RustWatch will explore the drivers shaping the new European wheat rust populations, assess their impact on agricultural productivity and develop research and communication infrastructures taking advantage of existing networks, including at global scale.</p>
<p>VIROPLANT ^{MA} viroplant.eu Total cost: 3 M€ EC contribution: 3 M€ Coordinator: Consiglio Nazionale delle Ricerche May 2018 – April 2021</p>	<p>VIROPLANT aims to apply next generation sequencing technology and empirical biological experiments to develop new environmentally friendly virus-based control strategies to manage bacterial, fungal and insect vector-transmitted diseases (phytoplasmas and viruses) as well as insect pests. It will create a database of new viruses (and virus derived biotechnological products) to increase the arsenal for the control of plant diseases caused by the most important biotic stresses.</p>
<p>OPTIMA ^{MA} optima-h2020.eu Total cost: 3.4 M€ EC contribution: 3.4 M€ Coordinator: Agricultural University of Athens Sept. 2018 – 31. Dec. 2019</p>	<p>OPTIMA will develop an environmentally friendly IPM framework for optimizing disease prediction models, advanced early detection methods based on spectral imaging and deep learning techniques. The application will be carried out with three prototype smart sprayers to minimize spray drift and apply variable rate spraying. OPTIMA will work on downy mildew in vineyards, apple scab in apple orchards and alternaria leaf blight in carrots. Synthetic and Bio-PPPs will be tested on their efficacy and a holistic IPM strategy will be based on the most effective products. The IPM system will be evaluated in 3 pilot areas together with economic and environmental assessment.</p>
<p>SuperPests ^{MA} superpests.eu Total cost: 3 M€ EC contribution: 3 M€ Coordinator: Agricultural University of Athens Sept. 2018 – Aug. 2022</p>	<p>SuperPests aims to address the most acute challenges posed by a subset of arthropod pest species that many producers of fruit and vegetable crops currently face. The project will develop and evaluate a suite of innovative products, tools and concepts, and integrate these with existing approaches in data driven integrated pest management programmes to reduce the use of pesticides.</p>
<p>HOMED ^{MA} homed-project.eu Total cost: 5 M€ EC contribution: 5 M€ Coordinator: INRA Oct. 2018 – Sept 2022</p>	<p>HOMED will provide a full set of science-based, innovative practical methods and tools to assess and control emerging or invasive pests and pathogens threatening EU forests. The project follows a holistic approach improving strategies of risk assessment and management by targeting the successive phases of invasion and developing mitigation methods for each phase, i.e. prevention, detection and diagnosis, surveillance, eradication and control tools.</p>
<p>PRE-HLB ^{MA} bit.ly/2QOGma6 Total cost: 8 M€ EC contribution: 6.6 M€ Coordinator: Agencia estatal consejo superior de investigaciones científicas Jun. 2019 – May 2023</p>	<p>Pre-HLB aims to develop and implement a holistic contingency plan to protect the citrus sector in the EU from Huanglongbing (HLB) disease drivers and to co-create new solutions to manage the disease through a multidisciplinary approach and in collaboration with experienced partners from America and Asia.</p>
<p>IPM Decisions ^{MA} bit.ly/2WiBISU Total cost: 5 M€ EC contribution: 5 M€ Coordinator: RSK Environment limited Jun. 2019 – May 2024</p>	<p>IPM Decisions will accelerate impact from farm decision support systems for integrated pest management (IPM) by creating a 'one stop shop' delivering decision-support systems, data, tools and resources through a pan-European online platform and an 'IPM Decisions Network'.</p>
<p>FF-IPM ^{MA} bit.ly/317ItLf Total cost: 6 M€ EC contribution: 6 M€ Coordinator: University of Thessaly Sept. 2019 – Aug. 2023</p>	<p>FF-IPM targets three highly polyphagous fruit fly species that cause devastating losses in the fresh fruit producing industry, the Mediterranean, oriental and peach fruit flies. The project aims to introduce in-silico supported prevention, detection and integrated pest management approaches for both new and emerging fruit flies. These approaches will be based on spatial modelling, novel decision support systems, and new knowledge regarding biological traits of the target species, fruit trading and socioeconomics.</p>

Interesting activities under other Horizon 2020 sections

Marie- Skłodowska Curie Actions contribute to the development of plant health science by supporting scholarships in most wanted academic fields, Innovative training networks (ITN) and research and innovation staff exchange (RISE). Interesting examples include:

- **Ochravine Control:** a research and innovation staff exchange (RISE) project which works on precision agriculture management strategies to reduce the occurrence of ochratoxins along the vine value chain products (EC contribution: 1,2 M€ - bit.ly/2pRyDvM)
- **Cure XF:** a research and innovation staff exchange (RISE) project which works on capacity building and awareness raising in Europe and third countries to cope with *Xylella fastidiosa* (EC contribution: € 1,8m - bit.ly/2Q4EpWO)
- **BINGO:** an innovative training network working on breeding of invertebrates for the next generation of Biocontrol (EC contribution: 3,3 M€ - www.bingo-itn.eu)

Basic science in the field is also supported by the **European Research Council** while more applied innovation is supported by the **SME instrument**.

- **ASTERIX** develops a field robots using machine vision and precise nozzle technology to shoot droplets of herbicide on each individual weed, reducing the usage by more than 90% (EC contribution: 50 000 € - bit.ly/2W33dUt).
- **POLYADAPT** exploits genomic tools for spider mites to elucidate regulatory and causal variants underlying the extreme adaptation potential of polyphagous agricultural pests (EC contribution: 1,9 M€ - bit.ly/2w0Im5K).
- **DESSA** provides accurate, farm-specific information to farmers on plant protection actions based on farm conditions to increase plant productivity and reduce agro-chemical use (EC contribution: 50 000 € - bit.ly/2VnzEc1)





In the pipeline – 2 projects to start under 2019 H2020 SC2 calls (22 M€)

Integrated health approaches and alternatives to pesticide use - Integration of plant protection in a global health approach MA	(1 project, 15 M€)
New and emerging risks to plant health MA	(1 project, 7 M€)

Funding opportunities - Open H2020 SC2 Calls for 2020 (33 M€)

SFS-04-2019-2020 Integrated health approaches and alternatives to pesticide use B. (2020): Alternative to contentious pesticides MA	(4 projects, 20 M€)
SFS-05-2018-2019-2020 New and emerging risks in plant health MA	(1 project, 7 M€)
SFS-06-2018-2020 Stepping up integrated pest management B. (2020) EU wide demonstration farm network MA	(1 project, 6 M€)





