Euphresco and its contribution to research on biological control

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EMBA webinar, 2021-05-28

Collaboration in science

- Exchange of information is at the foundation of modern scientific practice since 1776
- Today's science is an international endeavor
  - Provision of material
  - Sharing data and ideas
  - Exchanging knowledge
  - Interdisciplinary research groups
  - Important research infrastructures are shared

High quality science

Collaboration in plant health

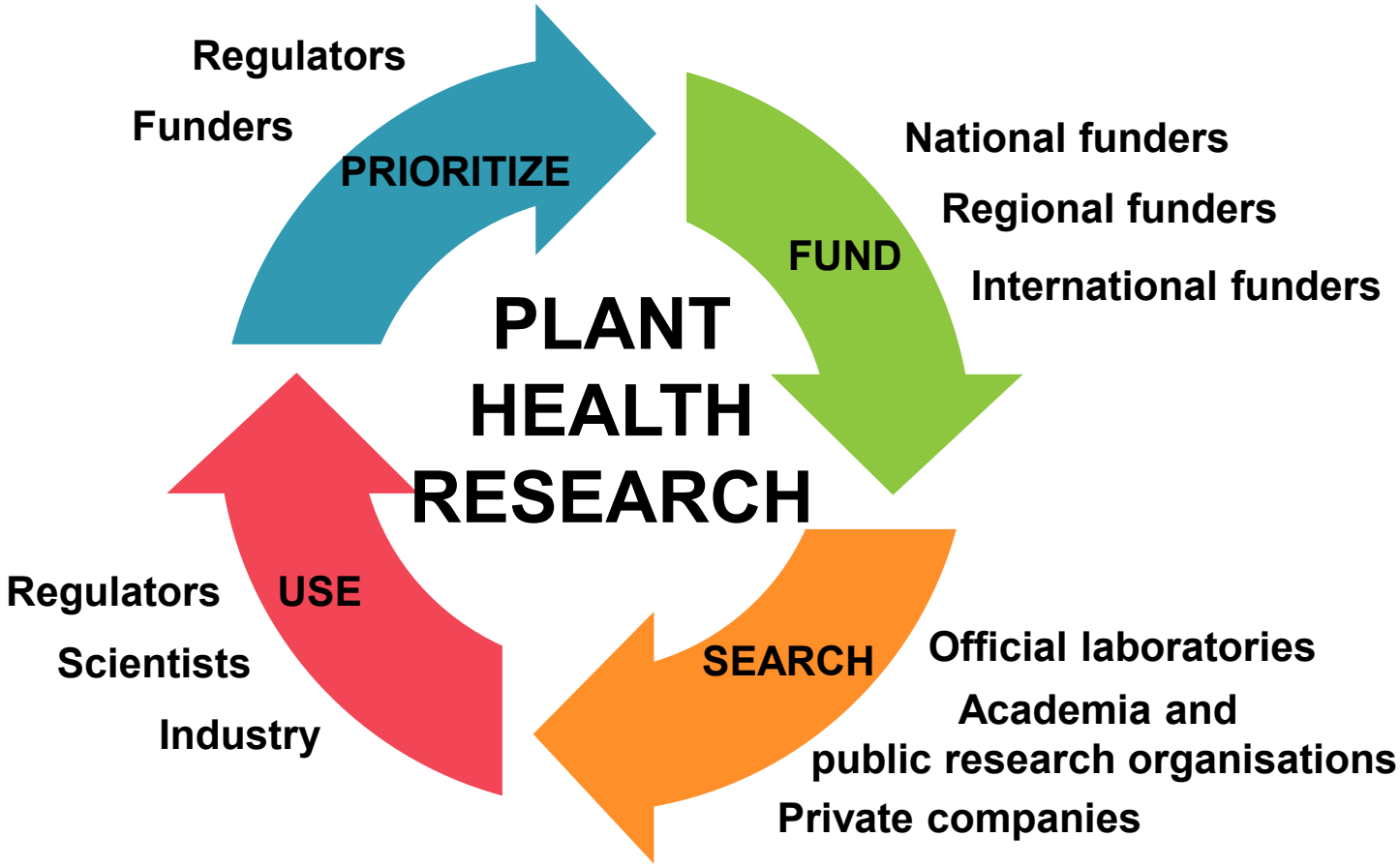
- Plant health issues are local
- Research seen through national prisms
- Reduced funds limit international collaboration
- Fragmentation of the whole research value chain
  - Research funders
  - Researchers
  - Policy makers

Euphresco
Network for phytosanitary research coordination and funding

What opportunities internationally?

- Euphresco network for phytosanitary research coordination and funding
- Since 2014 a self-sustainable network hosted by EPPO
- As of 2021, ca. 70 member organizations from more than 50 countries in 5 continents

Euphresco, the plant health forum



Euphresco
Network for phytosanitary research coordination and funding

Euphresco research strategy

- Small to medium-sized projects commissioned to provide evidence on specific questions

- Advantages compared to large projects
  - More projects for the same amount of money/more cycles of funding → better suited to address many challenges
  - Faster commissioning of projects and obtention of results → able to tackle emergency
  - More inclusive of organizations with limited resources
  - Less time spent on administration

Euphresco research strategy

- The projects are not necessarily intended to deliver break-through science and innovation, but fall into the category of explorative and applied science needed to support policy

- Euphresco projects contribute to
  - the development of regional and international Standards
  - the development/validation of measures
  - build capacity
  - harmonization of practices
  - provide an informal environment where PH stakeholders can communicate and collaborate

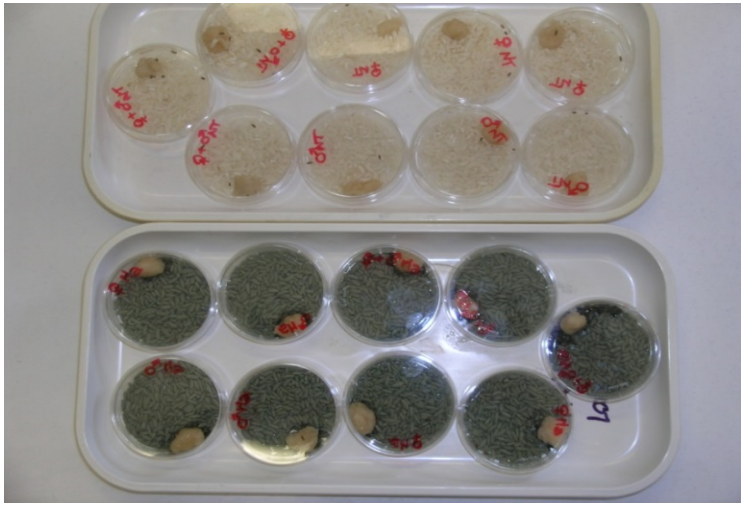
IPMDROS

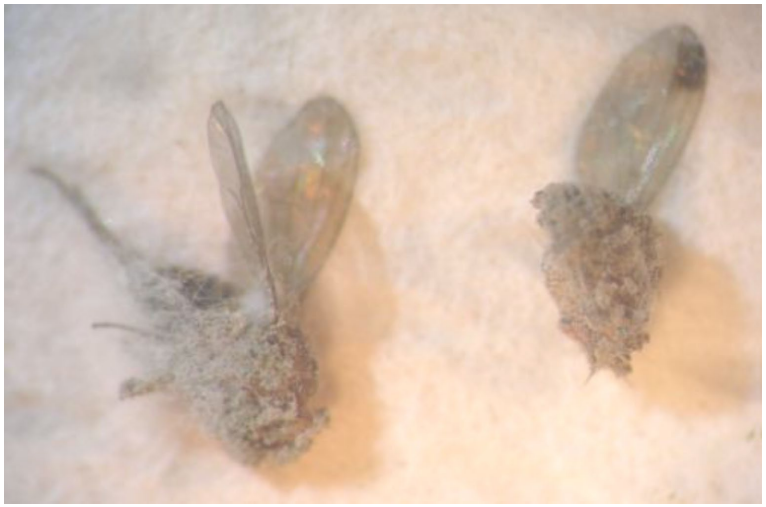
DOI 10.5281/zenodo.3245142

- **Title:** IPM strategies against *Drosophila suzukii*
- **Start date-end date:** 2014/07-2016/12
- **Coordinator:** Ismael Sanchez Ramos (INIA, ES)
- **Partners:** ES-INIA, TR-GDAR, AT-AGES, IT-CRA, BE-ILVO
- **Keywords:** biology, cold tolerance, surveillance, diagnostics, management, IPM

Evaluation of the use of entomopathogenic microorganisms

- Promising results were obtained with *Metarhizium anisopliae*
- Mortality of more than 80% on SWD adults and around 60% on SWD preimaginal stages in direct toxicity trials
- Use in the field recommended in IPM strategies, when climatic conditions are suitable and the density of insect population is not too high





PREPSYS

DOI 10.5281/zenodo.4014893

- **Title:** Tree Borers: risk assessment, risk management and preparedness for emerald ash borer and bronze birch borer
- **Start date-end date:** 2016/10-2019/09
- **Coordinator:** Hugh Evans (UKFC, GB)
- **Partners:** UKFC-GB, BFW-AT, TEAGASCA-IE, NVWA-NL, APHIS-US
- **Keywords:** risk analysis, surveillance, management

Prospects for biological control of emerald ash borer

- In North America, after assessment of potential impacts on nontarget hosts, four species of parasitoid (parasitic wasps) have been licensed for release in the USA and Canada
  - *Spathius agrili*, *Tetrastichus planipennisi*, *Spathius galinae, Oobius agrili*
- Released parasitoids have established and are beginning to reduce EAB populations
- Released species are matched to the most suitable climatic zone
- Data suggest that the native parasitoid *Spathius polonicus* is attacking and reducing populations of EAB established in the European part of Russia

FRUITFLYRISKMANAGE

- **Title:** *Ceratitis capitata*: better knowledge for better risk management
- **Start date-end date:** 2018/05-2020/04
- **Coordinator:** David Joao Horta Lopes (UAC, PT)
- **Partners:** UAC-PT, AGES-AT, ANSES-FR, JKI-DE, NVWA-NL, PIORIN-PL, INIAV-PT, IAFNG-SI, UNIPV-IT, BFT-ME, IVIA-ES, RDIPP-RO, CNSTN-TN, HAI-TN, NAAS-UA
- **Keywords:** biology, epidemiology, monitoring, detection, modelling

Biological control of *Ceratitis capitata*

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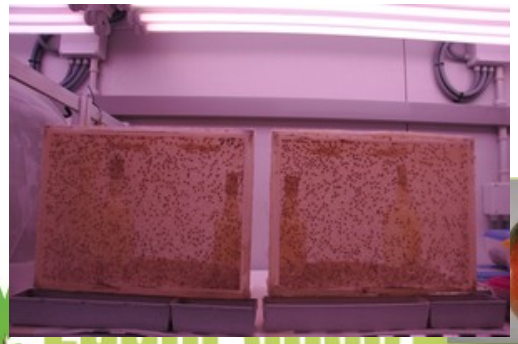
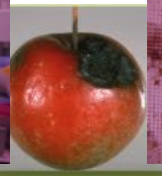
- 2 larvo-pupal parasitoids (*Diachasmimorpha longicaudata* and *Aganaspis daci*) and 3 pupal parasitoids (*Spalangia cameroni*, *Pachycrepoideus vindemmiae* and *Muscidifurax raptorellus*) under study
- Development of laboratory rearing protocols for *C. capitata* and its parasitoids
- Analysis of the parasitic fitness of a strain of *D. longicaudata* reared on irradiated larvae of *C. capitata*
- Incidence of Algerian climatic conditions (high temperature and low humidity) on the parasitic activity of *D. longicaudata* and *A. daci*
- Release of the two parasitoids in an experimental citrus orchard


BC-PREPARE

- **Title:** Preparedness in biological control of priority biosecurity threats
- **Start date-end date:** 2021/06-ongoing
- **Coordinator:** Neil Audsley (Fera, GB) and Gonzalo Avila (B3, NZ)
- **Partners:** Fera-GB, B3-NZ, JKI-DE, BPI-GR, CREA-IT, NVWA-NL, MAFF-SI, CSIRO-AU, UF-BG, EPPO-Int, FEM-IT, UNITO-IT, ICDPP-RO, ESHE-TN, Agroscope-CH, Cabi-CH
- **Keywords:** risk assessment

Preparedness in biological control of priority biosecurity threats

- Management (eradication) tends to be reactive once the pest arrives and an incursion is discovered
- Pre-emptive biocontrol is a novel approach to enhance preparedness for a potential invasion of pest species
- Main objectives are:
  - Review priority pests and the potential for pre-emptive biological control options
  - Establish a network and repository for the exchange of information
  - Produce a standard to assess feasibility to conduct pre-emptive risk assessment for the introduction of BCAs

There is a need to strenghten collaboration for plant health

International Plant Protection Convention

- **Strengthening Pest Outbreak Alert and Response Systems**
  - A global pest alert system with mechanisms to evaluate and communicate emerging pest risks is in place, providing regular information to NPPOs on changes in pest status around the word…

Carvajal *et al*., 2019

- **Global Phytosanitary Research Coordination**
  - To establish an international research coordination and collaboration it is important to develop an Commission policy on the matter and to agree on structures….

Giovani *et al*., 2020

Euphresco Network for phytosanitary r ordination and funding

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