

Multi-source digital pest surveillance in citrus fruit for more sustainable crop protection

Farmers in Cyprus are using a cloud platform which combines satellite and field data to help improve decision-making in citrus fruit production, leading to significant reductions in pesticide applications

Horizon Europe project CERBERUS has developed a smart crop protection solution, which has been tested on their pilot sites for citrus fruit in Cyprus and Spain over the past two years. The multi-actor project has created a user-friendly cloud platform capable of processing Copernicus satellite images together with data from smart traps, close-range monitoring, and citizen observations to provide decision and operation support for crop health management. The solution facilitates early detection of pests and enables precise, more targeted spraying of crop protection products. This efficiency saves time and money, and limits environmental impact. Chara Christodoulou, Plant Health Coordinator of The Cyprus Phassouri Plantations Co. Ltd. (CPPC), the citrus plantation hosting the pilot site in Cyprus, says, "We can already confirm that the system has improved our decision-making process and helps us avoid unnecessary interventions by providing accurate and timely information on pest activity."

Chara explains, "CPPC is the largest citrus producer in Cyprus, with our annual production exceeding 20 000 tons of fruit. **Pest management is one of our most important challenges.**" At the same time as the market is demanding ever more 'perfect' fruits, the destructive Mediterranean fruit fly or 'medfly' (*Ceratitis capitata*) is increasingly present as the climate warms. **The medfly lays its eggs inside the fruit**, causing internal damage and significant economic losses.

The CERBERUS solution is a **holistic approach based on the use of multiple information sources, including digital technologies, to strengthen the connection between pest detection and targeted interventions.** By merging the data collected, the project's cloud platform makes a comprehensive assessment of crop health and pest pressure and generates AI-based risk maps and specific spraying recommendations in easy-to-use formats.

Spraying is adjusted accurately as a result, ensuring the crop receives the minimum necessary amount of treatment and significantly reducing spray drift and runoff. Chara says, "Through the platform, we now have continuous information about pest population dynamics and activity levels. This allows us to make more informed decisions regarding pest management and apply treatments only when and where there is a real need."

The information input into the cloud platform comes partly from field surveillance. Chara has installed smart pheromone traps in her fields so that the medfly can be tracked and counted remotely. The cloud platform also automatically downloads and processes satellite images using the EU's Copernicus Earth Observation services. This supports the calculation of vegetative indices and provides preliminary signs of anomalies indicating crop stress in the fields, some of which is due to pests.

Additional data comes from a citizen science programme run by the CERBERUS project. In Cyprus, 15 citizens - non-professional farmers, students - have already obtained a kit from the project to set up traps in their gardens and fields. They are encouraged to regularly check their traps and upload pest information via an app.

CERBERUS has 6 pilot sites in total, testing their solution on other Mediterranean pests and disease-transmitting vectors impacting specialty crops: citrus, olives, and vineyards in Cyprus, Spain, and Italy. The project trials continue until the end of 2027. In Cyprus, they are beginning a new important stage, testing a smart sprayer developed through the project. Chara concludes, "We believe that these tools will support more sustainable production by helping growers optimise pest management practices, reduce unnecessary inputs, and improve the overall efficiency of their crop protection programmes."

Background information

- [EU CAP Network digitalisation portal](#)
- [Innovation & knowledge exchange | EIP-AGRI thematic newsletter on digitalisation \(June 2026\)](#)



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Project information

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- > Project website: cerberusproject.eu
- > [Project page on EU CAP Network project database](#)
- > Further information on the CERBERUS smart sprayer in this [practice abstract](#)

Project photos:

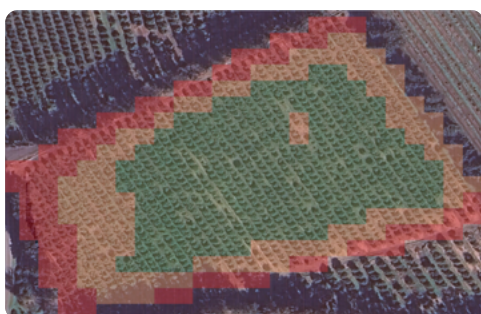
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Citrus fruit affected by medfly © **Adobestock**



A smart trap for medfly in-situ at the pilot site in Cyprus © **CPPC**



Spraying map generated by CERBERUS system
© **CERBERUS project**



Chara Christodoulou, Plant Health Coordinator of The Cyprus Phassouri Plantations Co. Ltd. (CPPC) – CERBERUS pilot site
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EU CAP Network 'Innovation & knowledge exchange | EIP-AGRI' activities related to digitalisation

EU CAP Network digitalisation portal

Browse the EU CAP Network website's digitalisation portal. It is divided into sections:

- Digital tools, automation and platforms (including robotics, AI, drones and sensors, precision farming, food processing, Digital Innovation Hubs...)
- Data-driven decision making (including digital marketing, decision support tools, data sharing...)
- Digital skills development
- Digital infrastructure enhancement

For each topic, you can find related news, events, publications, thematic work, and good practices, including inspirational ideas.

Access the [portal](#).

Events

- [EU CAP Network cross-visit 'Robotics and artificial intelligence'](#)
- [EU CAP Network seminar 'Innovative tools for advisors'](#)
- [EU CAP Network workshop 'Sensing the future: practical applications of proximal and remote sensing for farmers and advisors'](#)
- [EU CAP Network seminar 'Robotics and Artificial Intelligence in farming and forestry'](#)

Focus Groups

- [EIP-AGRI Focus Group on Digital tools for sustainable nutrient management](#)
- [EIP-AGRI Focus Group on Precision farming](#)

Other publications & videos

- [EIP-AGRI Challenge video: Digital tools for nutrient management](#)
- [EIP-AGRI Challenge video: Robotics and artificial intelligence in farming and forestry](#)

- [EIP-AGRI Challenge video: Practical applications of proximal and remote sensing for farmers and advisors](#)
- [Agrinnovation magazine - Issue 11 - Inspiring stories on digitalisation](#)

Inspirational ideas

- A digital forest inventory tool in your pocket (Slovenia)
- [Multi-source digital pest surveillance in citrus fruit for more sustainable crop protection](#) (Cyprus)
- [Advisors and winegrowers tackle severe fungal disease using drone-based data](#) (Luxembourg)
- [Olive groves and drones - science fiction turned reality](#) (Spain)
- [Smart spraying for sustainable farming](#) (Greece)
- [Satellite-assisted robots to tackle weeds and increase the productivity and sustainability of dairy farming](#) (Spain)

Operational Groups

[195 Operational Groups working on digitalisation](#) are available in the [EIP-AGRI project database](#) (update June 2026)

- Austria (5)
- Belgium (7)
- Croatia (5)
- Finland (13)
- France (6)
- Germany (43)
- Italy (31)
- Latvia (13)
- Lithuania (3)
- Luxembourg (1)
- Netherlands (37)
- Spain (28)
- Sweden (8)

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Horizon multi-actor projects

Many multi-actor projects working on digitalisation are available in the EIP-AGRI project database

Multi-actor projects are research and innovation initiatives where diverse stakeholders with complementary expertise - such as researchers, farmers, and local communities - work together to co-create solutions to real-world challenges.

➤ Browse multi-actor projects on digitalisation [here](#)

Thematic networks are collaborative platforms supported by Horizon Europe, where individuals, organisations, and Operational Groups share existing knowledge and best practices on a specific theme, presenting them in easily accessible formats for end-users such as farmers, foresters, and advisors.

➤ Browse thematic networks on digitalisation [here](#)

