

# Artificial Intelligence to predict the evolution of the Olive Fly

**Researchers at the Pablo de Olavide University in Seville, under the coordination of Professor Francisco Martínez Álvarez, participate in a project led by the company ec2ce that aims to develop a predictive model to control the pest of the olive fly (*Bactrocera Oleae*), which favors a controlled application of phytosanitaries that improves the sustainability of the olive grove.**

The project, entitled "IA2GIP: Artificial Intelligence applied to integrated pest management" has been funded by the Spanish Ministry of Economy, Industry and Competitiveness, within the framework of the State Plan for Scientific and Technical Research and Innovation 2013-2016; and the entities Novadrone, the Andalusian Institute of Technology (IAT) and the University of Seville also participate.

The main innovation of the project is the integration of mathematical modeling, artificial intelligence and sensors to provide recommendations to the farmer. According to the Sevillian educational center, the development and combination of several technologies, including the use of deep learning, genetic algorithms, neural networks, fuzzy logic and techniques of optimization (and in general of automatic learning) are required to allow the use of huge amounts of information in real time.

The work under development in this project combines the use of large data volumes (big data) with artificial intelligence systems modeling to create a tool that supports the decision making process in pest control systems. This process will be based on public and private data and will also add field data, taken in a traditional way and others taken by means of Remotely Manned Air Systems and equipped with the appropriate sensors.

The University Pablo de Olavide has highlighted that the olive fly is the main plague affecting olive oil producers, generating losses of up to 80% of the value of the harvest due to both production decrease and oil quality. In some cases, on holdings dedicated to table olives, losses may even amount to 100%. According to the institution, this insect directly attacks the fruit and the pest evolves explosively making it difficult to control and assuming significant costs for the producer.

In his view, the use of predictive models to determine when and to what extent an explosion of fly-to-fruit disease would lead to the application of control systems at the optimum time.

The project in which the UPO participates intends to incorporate into the current predictive models new learning techniques and new input variables based on images obtained by drone flight and thus develop a new predictive modeling system that allows to advance the evolution of the pest of the olive fly until four weeks before. In his opinion, this improved tool will be easy to use by farmers and will tell them what to do; and with it they will be able to improve their production, increase the quality of the oil and reduce the use of pesticides, thus protecting the environment and putting into practice a more sustainable agriculture.

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