



ABSTRACTS

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PANTHEON (PRECISION FARMING IN HAZELNUT ORCHARDS) FOR THE IMPROVEMENT OF INTEGRATED PEST MANAGEMENT (IPM) EFFECTIVENESS

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We are presenting PANtHEON, a project funded by the H2020-SFS-2016-2017 Call, Research and Innovation Action, Topic SFS-05-2017, which is aimed at the development of the agricultural equivalent of an industrial Supervisory Control and Data Acquisition (SCADA) system to be used for the precision farming of large orchards of hazelnut (*Corylus avellana* L.).

The project will be focused on the develop of unmanned aerial platform (UAV) and ground vehicles able to navigate in the orchard and to perform autonomously required operations. These instruments are useful to collect data on the plant growth habits, yield and on its phytosanitary status. All data will be sent to a central unit where an expert system will be able to assess the plant's health and to suggest the decision-making process concerning the required agronomic interventions. The latter are based on the measured indices and on the historical data of each plant. The crop protection action will consist in the monitoring of pests and diseases incidence in the orchard and in the quantification of the intervention threshold for each damage. The field data will be also used to calibrate the indicators, based on remote sensing data, and to optimize the quantities and the typology of pesticides used for insect pests and disease control. The considered biotic stress factors are: *Phytoptus avellanae*; *Curculio nucum*; true bugs (*Halyomorpha halys*, *Gonocerus acuteangulatus*, *Palomena prasina*, *Piezodorus lituratus*, *Raphygaster nebulosa*, *Nezara viridula* and *Dolycorum baccarum*) involved in economic detriment due to the quality losses by kernel abortion, malformation and emergence of unpleasant flavor; Cytospora canker, caused by the ascomycete *Cytospora curricula*; *Fusarium lateritium*; the bacteria *Pseudomonas avellanae* and *Xanthomonas arborol* pv. *corylina*.

In conclusion, one goal of this project is to improve the average health condition of the orchard, and to increase the effectiveness of the IPM techniques for a more sustainable management of the ecosystem.

Key words: Robotics, Crop protection, Stink bugs, phytosanitary status