



PRACTICE ABSTRACT

Digital technology

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AGRICOLUS DSS

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Agricolus is a Decision Support System (DSS) which collects, analyses and interprets data from forecast models, crop scouting and remote sensing. It provides farmers with information to help prevent and fight the main diseases of olives, tobacco, vineyards, vine, corn and other crops. This DSS pursues various objectives: 1) prevent plant disease, 2) support decisions on the distribution of sanitary products, and 3) gather and compare data related to productivity, treatments and infections of fields and crops.

Agricolus is a cloud platform accessible from both web and mobile devices. It operates as a monitoring tool providing meteo-climatic data and innovative forecast models of the spread of phytopathologies on crops at plot and farm level. The forecast models provide precise information suggesting the best time to apply treatment and also on which specific part of the area.

A combination of technologies collect data. Internet of Things (IoT) sensors gather data from soil and leaves and send information to the platform about specific parameters. For example, meteo-climatic sensors provide data on precipitations, humidity, wind direction and speed, and temperature. The weather forecast systems provide data on single fields. An advanced data storage and management system collects and archives data on possible presence of phytopathology.

All those data are combined in provisional models to provide valuable information on the risk of plant disease in advance, to allow farmers to take decisions on what actions to undertake on their crops. The accuracy of the model and the specific localisation system enable a quick intervention in the field, leading to increased productivity and profitability.

Application scenario

Provide farmers with data for optimising pest treatments management and recognition of diseases in crops

Digital technologies

Cloud platform, IoT sensors, forecast models, web, mobile devices

Socio-economic impact

- Economic: input saving, productivity and profitability, improve quality production
- Environmental: decrease in the use of phytosanitary products, prevent the spread of crop diseases
- Social: alternative channels to social networks for knowledge exchange

More info:

<https://www.agricolus.com/agricolusdss/>



Purpose of the tool

Agricolus is a Decision Support System (DSS) tool for agriculture. The main purpose is to provide farmers with information in advance on the risk of phytopathology spread. This monitoring tool has two further objectives: to provide information on the use of sanitary products, and to collect data on the effects of phytosanitary products in plots and on farms. While the first purpose is directed to the farmers, the second and third aims are also of interest of companies selling phytosanitary products, enabling them to conduct an analysis of the effectiveness of their products and to promote the optimal use of the treatments. The issue of data property and open data is relevant in such tools and should be considered to guarantee farmers' rights.

Description of the tool

The tool utilises sensors (IoT and meteo-climatic) to collect data and "feed" forecast models. The digital technology can improve the precision of data collected, but it cannot improve the accuracy of the forecast model, which depends on the main assumptions used to build the model. Results on those Decision Support Systems are given in probability terms. The main users of single field data are farmers or technical advisors. However, the combination of data from different fields can be of interest both for public administrations that regulate farms and evaluate the environmental impact of chemicals and pests, and for private companies producing chemicals to consider the efficiency of their products.

Areas of socio-economic impacts

Social	Increased knowledge and less dependency on technical advisors.
Economic	Reduction in the cost of inputs for large-scale farms with high chemicals consumption. Limiting loss in production due to plant diseases. Increasing effectiveness of phytosanitary products on specific plant diseases. Higher quality of products.
Environmental	Reduction in the use of phytosanitary products to fight plant diseases, depending on the accuracy of the forecast model. Increase in the capacity of environmental monitoring for public administrations.