Il progetto LIFE AGRESTIC ha ricevuto finanziamenti dal Programma LIFE dell'Unione Europea

Short technical note

The LIFE AGRESTIC Decision Support System

Decision Support Systems (DSS) are aimed to provide specific support for the sustainable management of crops in the field. They integrate data from many information sources, to provide growers with effectual advice and specific risk alerts.

Problem

Agricultural land can represent an important carbon sink, as appropriate crop managment can foster the carbon sequestration from the atmosphere in the soil. Improving the crop management, supporting the farmer in taking the most appropriate decisions, can result in decreased utilisation of technical inputs and an increased carbon sequestration.

Solution

Decision Support Systems can support the farmer in taking crop management decisions, with the aim to optimised the use of technical inputs. DSSs are IT platforms that collect crop data in real time, through sensors and scouting tools, organize the data in Cloud systems, interpret them via advanced modelling and big data techniques, and integrate them automatically, generating information, alarms and decision support advice.

Impact

In the LIFE AGRESTIC demonstration sites, the optimised management thanks to the use of DSSs, led to a decrease in nitrogen applied to crops, in the number of treatments for pest control, in irrigations (for irrigated crops), fuel consumption. Overall, this resulted in a reduced carbon footprint and a descrese of management costs, if compared to the standerd practice.

Practical recommendation

An holistic DSS can support the farmer in every stage of crop management, since the phases before crop sowing (soil tillage, fertilisation), ideal sowing time and seed dose, alarms for the risk for pest and diseases to guide sprays, highlighting the need for irrigation interventions. Moreover, DSS allow to record all the crop operations perfomed in the field. A DSS able to manage the whole crop rotation, allows the farmer to clearly see the effects of the virtous management of the farm on the following crops (i.e. the decrease of need for nitrogen fertilisation after a legumionos crop or a catch crop), enbling to appreciate the long term effect of certain practices. All the savings allowed by the use of the DSS did not alter the yield and the quality of the product, that are improved or not different respect the conventional management.

Applicability box

Theme

Decision Support Systems

Keywords

Optimisation

Crop rotation

Geographical coverage

Europe

Application time

Whole crop management

Required time

Few minutes for constant consultation and input on crop operations

Period of impact

Whole crop cycle

Equipment

Computer, tablet, smartphone

Internet connection

Picture 1: Sunflower in the LIFE AGRESTIC demonstration site in Foggia (Apulia, Italy). On the left, the plot demonstrating the Efficient Crooping System, in which the crop was sown following the DSS reccomendations. On the rigt, the plot demonstrating the Conventional Cropping System, in which sunflower was sown according to the usual timing for the area.

Coordinatore: HORT@ From research to field

Partner: Università Cattolica del Sacro Cuore; Sant'Anna Scuola Universitaria Superiore Pisa; ART-ER Attractiveness Research Territory; isea www.agroservicespa.it; Università degli Studi di Milano; new Business Media gruppo tecniche nuove

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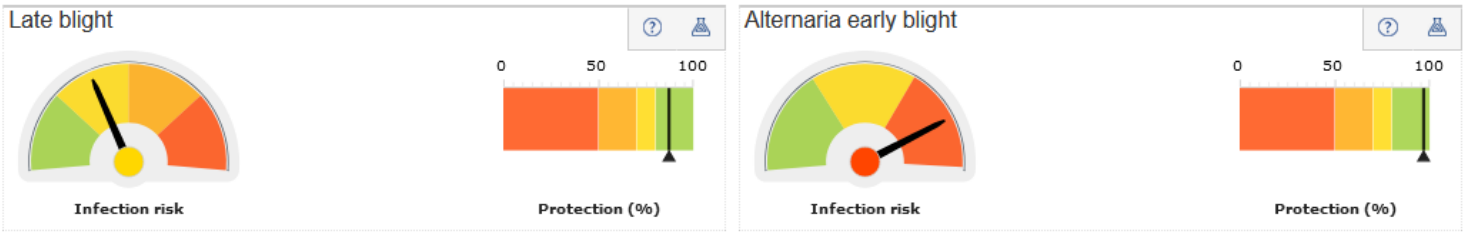

Picture 2: Example of the DSS output for the main fungal disease in tomato. The use of Decsion Support System resulted in three treatments saved in the tomato cultivation in the year 2020 in the LIFE AGRESTIC demonstration site in Ravenna (Emilia-Romagna, Italy).

Further information

- LIFE AGRESTIC web page www.agrestic.eu

About this short technical note and LIFE AGRESTIC

Authors: Horta

LIFE AGRESTIC: The LIFE AGRESTIC project aims at fostering the adoption by EU farmers of innovative and efficient cropping systems with a high climate-change mitigation potential, and spreading innovative views and tools for climate ready and resource efficient agriculture.

Project website: www.agrestic.eu

Project partners: Horta srl; ART-ER S.Cons.p.a; ISEA srl; New Business Media Srl; Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna; Universita' Cattolica del Sacro Cuore; Università degli Studi di Milano