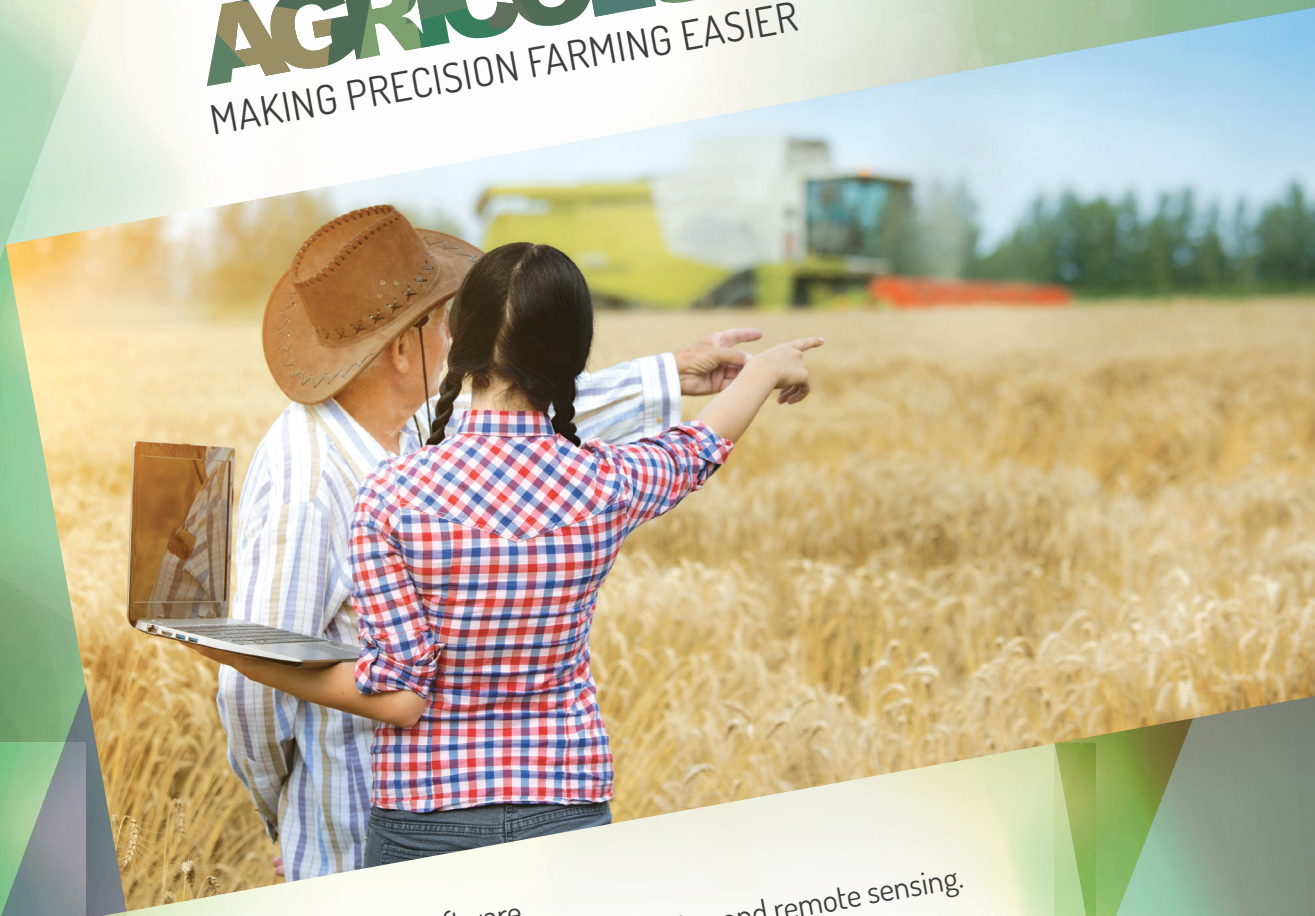
AGRICOLUS®

MAKING PRECISION FARMING EASIER



A cloud ecosystem of Precision Farming software.
Decision Support System, forecast models, smart crop protection and remote sensing.
A complete solution for farmers and agronomists.

"PRECISION CROP MANAGEMENT IS ABOUT DOING THE RIGHT THING, AT THE RIGHT TIME, IN THE RIGHT PLACE, IN THE RIGHT WAY"

Pierce and Novak (1999), talking about Precision Farming

Agricolus s.r.l. is an innovative startup working in Precision Farming.

It is based on ten-year international experiences in research, analysis, advice and development of useful applications for agricultural management.

Agricolus s.r.l. wants to support farmers, agronomists and other operators of agricultural world in optimizing agronomic practices, by integrating skills and the most up-to-date data collection and analysis technologies.

GIS Technologists, Data Scientists, Agronomists and Developers working for smart agriculture.

WANT TO BECOME AGRICOLUS PARTNER OR RESELLER?
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PRECISION FARMING

Agricultural production is the result of synergies between physical elements (soil, atmosphere, water) and biological (plants and parasites): such interactions are characterized by sudden changes that we must observe and analyse. In order to choose the best solutions, we need tools that read the changes and more precise and punctual means for optimising work and resources consumption.

The most important step of the agricultural evolution has been the massive use of equipment, machineries and instruments for easing the physical work of the farmer, reducing time of working with tools such as tractors, plows, harrows, harvesting machines, sprayers machines, etc.

Due to climate change and variables that intervene in the system, maintaining optimal conditions is increasingly difficult and mistakes in crop management can create serious damage to the company's economic sustainability.

Precision farming introduces monitoring and control activities, which can also relieve the mental work of the farm specialist. Thanks to software able to study the field situation in real time and to suggest the best practices to optimize resource use, it is possible to get maximum yield and minimize losses by taking advantage of the possibility of predicting risk situations and avoiding unnecessary intervention.

Precision Farming is characterised by three basic phases:

CONTROL ••• PREDICTION ••• DECISION

Control and prediction of infestations, fertilization and irrigation requirements (key elements of precision farming) allow great economic benefits for the farm.

Precision Farming aims to bring a significant increase in the quality of products with a significant reduction in the invested economic resources, while paying close attention to the environment.

FORECAST MODELS

Chemical control is one of the crop protection techniques which has great impact both economically and environmentally. Fungicides and insecticides are given more or less independently of seasonal trends or the proven presence of pathogens: they are used to ensure crop protection from the beginning of the season until the end of it.

Modern crop protection strategies aim to reduce the use of chemical means in order to limit crop management costs, improve quality of products, safeguard the animal and plant species in the agroecosystem.

The emerging of a stronger environmental awareness, the attention to human health, the awareness of the economic costs of treatment by farmers, have led to the spread of integrated pest management and organic farming. And, at the same time, the evolution towards crop protection techniques with a lower environmental impact in conventional agriculture.

Forecast models are probability models based on meteorological parameters, which are locally determined. They describe quantitatively (through probabilities and statistics) the relationships between the crop, the adversities and the surrounding environment, providing useful data for business decisions.

Forecast models calculate at any time in the crop cycle the probability of pathogen infestation, the phenological stage of the crops and the probability of a meteorological event occurring.

Specific algorithms for each pathogen and crop are able to detect the risk of infestation in real time, while forecast models of the phenological stage of crop allow to predict the stage of development even remotely. Weather forecasts contextualize the other data, so it is possible to make concrete decisions about the treatments to be carried out and minimize controls in the field.

DSS

Decision Support System (DSS) is a methodology or a set of formal tools to provide support for communication between farmers and technicians, to support decisions coherent with the objectives of the decision-maker and to lead to clear and effective implementation actions.

DSS are features that automatically collect, organise, interpret and integrate information. Useful data can be drawn from them, suggesting the most appropriate actions to respond to different crop needs, whether they are long-term strategic or tactical decisions to be taken in the short term. DSS for agriculture collect and organize data from different sources such as forecast models, remote sensing and crop scouting to support farmers and technicians in farm management.

The close correlation between the system and its user makes it necessary to have a strong customization regarding the various types of decisions and data coming from different sources. The DSS must be flexible and dependent on the case study.

DSS are able to support technicians and farmers in the analysis of decisions about the most important farming activities such as fertilization, irrigation and pest control.

Why use DSS in precision farming? The advantages are several:

- they support the farmer or technician in maintaining control over all variables necessary to assess decisions;
- they help the farmer or technician by providing numerical forecasts, even in the very short term;
- they can be managed remotely;
- they store all information by creating a historical database.