

DECISION SUPPORT TOOLS

Do they change the way farmers work?



As more and more variable weather and economic conditions make the context in which farmers operate increasingly complicated, decision support tools (DSTs) are becoming more refined and widely used. Here are some details on their utilisation from Emmanuelle Gourdain, modelling specialist at ARVALIS - Institut du végétal.

Emmanuelle Gourdain: "DSTs are not decision-making tools, that is the user's prerogative. They are decision support tools."

Perspectives Agricoles: What are the working principles of DSTs?

Emmanuelle Gourdain: One of the main challenges when making decisions about cultural operations during the season is the ability to analyse the situation. Some decision support tools also have a role to play in strategic choices. DSTs provide additional data to complement the information provided by advisors and field observations. They help to integrate multiple data into the decision making process.

As for any other tool, their implementation must be relatively easy and intuitive so that users can operate them themselves. DSTs are becoming more widespread with the development of digital technologies. They are mostly accessed via the Internet, on tablets and smartphones. They are usually based on descriptive or predictive mathematical models, and provide risk indicators.

P. A.: Is there still room for improvement?

E.G.: They are the driver behind DSTs. They play very specific roles, either to help understand a system, or predict the way it is going to evolve, or the way a parameter will. Their design requires specific agronomic, IT and statistical skills. Their main function is to quantify the way the situation is evolving in order to suggest how to adjust cultural operations.

Models are developed using historical databases and are defined for a given scope of validity. They must be updated regularly in order to take into account weather variations, bioaggressors' resistance, varietal characteristics, etc. They provide information, for example, on the presence (or absence) of diseases.

They therefore help to identify which parcels require particular monitoring, as well as potentially to reduce the number of farmer's visits. Where possible, they also help to reduce cultural operations. When it is collated into a management chart, this information can be useful for organising work, in particular taking into account weather conditions.

P. A.: Will agronomic advice benefit from this progress?

E.G.: DSTs are designed to integrate increasing amounts of information coming from various sources, thus improving the relevance and reliability of their forecasts. The user also has an active role to play, by inputting the data which is then used by the models. This provides a more precise analysis at farm or even parcel level.

New technologies significantly help to achieve this objective, with the development of sensors onboard agricultural machinery or in fields. Database and communication system management is becoming a major challenge. New scientific disciplines, including around the use of big data, are emerging. DSTs are not decision-making tools (and in the field of agriculture, they may never be), they are what it says "on the tin": they help the user reach a decision. He remains at the centre of the process. He is the only one who is able to integrate not only technical information, but also all the other contextual components into his decision.