

Will digital tools

revolutionise weed control?



Benjamin Perriot – “Digital tools are designed to maximise the effectiveness of precise and timely treatments.”

Sensors and automated devices are offering new ways of making weed control easier. For Benjamin Perriot, head of weed management team at Arvalis, “they have the potential to overcome issues, all we need to do now is make sure all the right conditions are gathered for their implementation.”

Perspectives Agricoles: What can we expect from digital apps?

Benjamin Perriot: Weed control has become one of the main issues in arable cropping systems. Faced with agronomic, economic and environmental challenges, digital technologies can help us to use less phytochemicals while preserving yield potential. Onboard IT devices and decision support tools that take into account an increasing number of factors, help meet those objectives. There are various possibilities available that should most probably be combined.

For example, it is possible to combine mechanical weeding of inter-rows and chemical weed control in the rows. Tractor and hoeing machine auto-steering is particularly useful if there is a slope as it limits the risk of errors. Those mechanical weeding solutions are no longer restricted to hoed crops and are increasingly used for cereals⁽¹⁾.

P. A.: Which technologies seem most accomplished?

B. P.: Satellite guidance is already operational.

RTK technology, which allows precision within a few centimetres, is steadily becoming more widely used. Camera guidance is also benefitting from technical developments that should make its use in mechanical weeding more affordable. With regard to phytochemical applications, the challenge is to effectively detect weeds using sensors on board working tools or on drones. This detection can be instantaneous as spraying is taking place, with adjustment of application areas in real time, or delayed by first mapping the presence of weeds. When used in combination with variable rate application technology such as GPS-controlled switching off relevant sections of the sprayer or automatic selection nozzle holders, those maps are instrumental in the development of precision spraying. Going even further, prototypes of weed control robots have now appeared. However, their cost, autonomy and work throughput ratio will need to improve. Likewise, some drones are able to carry out targeted applications of plant protection products. This is another avenue to explore but aerial treatment regulations do not currently allow this method to be used in France.

P. A.: Are such innovations developing rapidly in the field?

B. P.: By the time a prototype is created, then operationally tested, presented at agricultural shows, and finally marketed on a large scale, a few years have usually elapsed. There are currently numerous projects on the horizon, including some led by start-ups who often focus on a very specific aspect. We have noticed a gap between the desire to meet the challenges presented by weed control and concrete field applications.

In order to facilitate technology transfer, it is crucial, right from the start, to remain close to farmers' own practices, and to integrate an economic dimension, while foreseeing future developments as much as possible, in particular regarding regulations. Arvalis is contributing to this work, including with its Digifermes®, which are experimental platforms dedicated to digital technology, open to all those who wish to test tools that they are developing.

(1) See *Perspectives Agricoles* n° 448, October 2017, p. 56.