PROJECT FACTSHEET

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HEMS

Digitalising weed control process to empower farmers towards a sustainable and responsible use of herbicides.



Inspiration

Herbicide efficacy is an increasingly frequent hurdle of modern farming and a well-known increasing problem in Luxembourg. Following the newly adopted Sustainable Use Directive (SUD) of the European Commission, farmers should proceed to a more environmentally friendly method of cultivation and weed control. They should work towards reducing their herbicide input, while maintaining the good phytosanitary situation in their fields. But to this aim they need appropriate and accurate recommendations on herbicide efficacy, based on data collected from different farms, growing different crops, in different soil and environmental conditions.

Innovation

HEMS, funded as a pilot project of the H2020 DEMETER project, aims to empower farmers by providing them insights for a more sustainable and responsible use of herbicides. It has the ambition to digitalise a relevant part of the weed control process, by combining affordable and interoperable Internet of Things (IoT) devices and network infrastructure, as well as advanced data computing technologies.

To study herbicide efficacy, HEMS will set-up a Pilot in Luxembourg and the Grand-Est region of France, two areas that share similar weather conditions and crop practices. In each Pilot farm, HEMS will deploy several IoT devices and sensors in the field (soil-moisture sensors, weather station, etc.) for monitoring remotely local environmental / soil conditions in real-time. Such data combined with weather forecasts can helps farmers identifying the best weather-related time to apply herbicides, following and matching Herbicide Manufacturer's recommendations.

Moreover, by applying data analytics to the data collected in real-time in the field, HEMS will be able to separate between adverse environmental conditions (be it soil, humidity, or temperature), and actual herbicide resistance of the target weed. Evidence of herbicide efficacy will also be collected with ultrasonic sensors, and edge computing IoT devices (cameras).

Impact

HEMS is designed as a DEMETER enabled application, providing intelligent herbicide monitoring and management functionalities. It will propose a low-cost, and easy-to-adopt Internet of Things (IoT) system that can accompany farmers from the pre-planning of their herbicide applications, through to the final phases of efficacy evaluation. As such, HEMS will totally innovate the classical approach of weed control based on sampling of weed seeds and testing in the greenhouse.

Nowadays farmers, besides encountering and reporting poor products performance, do not have access to the information needed for choosing and applying “best” herbicides, while reducing the overall use and misuse. During the Pilot activities, HEMS will gather enough evidence of herbicide efficacy to help farmers make informed decisions, thanks to the knowledge obtained from their activities (past applications of herbicides, type of soil in their farm, weather conditions at the application time, etc.).

Partners

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