Service ID S00363

Location At user's premises, Spain

Evaluation of Precision Herbicide Application Systems

Provider service

Universitat de Lleida (UdL)

Link to content

https://agrifoodtef.eu/catalogue-of-services/evaluation-precision-herbicide-application-systems

Type of Sector

Arable farming, Horticulture

Accepted type of products

Design / Documentation, Physical system

Type of service

Collection of test data, Performance evaluation, Provision of datasets, Test design, Test execution, Test setup

Description

This service tests the performance, efficacy and efficiency of herbicide application systems that use AI and robotics to optimise spray treatments, including spot spraying booms and variable-rate applicators. It evaluates the system’s ability to apply herbicides accurately, reducing usage while maintaining effective weed control. Through controlled field experiments and real-farm testing, we assess herbicide savings, weed control effectiveness, crop yield impact and environmental benefits compared to conventional broadcast spraying methods. The service also validates the system's adaptability to different environmental conditions, such as varying soil types, weather, and crop growth stages, and it is applicable to herbaceous and arable crops, offering valuable insights for improving targeted weed control and reducing unnecessary herbicide use.

How can the service help you

This service supports agri-tech developers, sprayer manufacturers, and AI solution providers in optimising intelligent spraying systems, leading to more efficient, environmentally friendly, and cost-effective weed management.

• Before the service, clients may have an application system that works in controlled environments but lacks real-field testing under varying weed densities, lighting conditions, crop types and/or needs to quantify herbicide savings, treatment precision, and environmental impact.

• After the service, they will receive quantitative performance metrics and data-driven insights into how effectively their system applies treatments, potential drift effects, and overall impact on weed control efficiency and crop productivity. This allows precision agriculture companies to optimise herbicide application strategies while reducing costs and environmental footprint.

How the service will be delivered

The service can be customised to test specific field conditions, crop types, weed species, specific herbicides, sprayer types or application strategies.Seasonal availability is limited to active crop growth periods, aligned with weed emergence periods (spring and summer).Customers should discuss customisation needs during the planning phase to ensure feasibility. If required, additional data processing or AI model evaluation services can be included.

Service customisation

The service will take place at controlled experimental farms and later at commercial farms, depending on the testing phase or the company’s needs.

Trials can be repeated across different crop types and growth stages to ensure diverse field conditions.

This process can take up to 6-8 months, depending on the crop and system evaluation, and includes setup, treatment application, and post-treatment evaluation.

Testing can involve:

• Water-sensitive paper tests to measure spray accuracy.

• Environmental condition monitoring (wind speed, humidity) to assess drift risks.

• Real-farm validation to compare spot spraying vs. broadcast spraying in terms of weed control rates, herbicide use efficiency, and crop yields.

• Real-time and post-processing performance assessment, including hit rates.