

Service ID S00333



Location At user's premises, Spain

Validation of AI-based models of crop fields

Provider service

Universitat de Lleida (UdL)

Link to content

<https://agrifoodtef.eu/services/validation-ai-based-models-crop-fields>

Type of Sector

Arable farming

Accepted type of products

Physical system, Software or AI model, Other

Type of service

AI model training, Collection of test data, Data analysis, Performance evaluation, Provision of datasets, Test execution

Description

We provide experimentation fields for herbaceous crops (like wheat, barley, maize, soybean, sunflower, pea, rapeseed, camelina, and more), along with sample laboratory analysis or crop characterisation if required. All combined are used as testbeds for data acquisition throughout the crops' growth cycle for training predictive models or helping the company's development and improvement of their AI-based algorithms for agronomy applications, such as automatic weed detection for precision spraying solutions, biomass and yield estimation, phenological characterisation, etc. This service also helps the validation of agricultural technology solutions based on, but not limited to, systems that require physical testing, such as proximal remote sensing technologies, including UAVs (unmanned aerial vehicles, or drones), computer vision systems for weeding machines, spraying applicators, etc.

How can the service help you

This service is designed to meet the needs of companies to validate or refine their agricultural technologies under real-world conditions. It enables the adjustment and adaptation of predictive models, algorithms, or systems to specific environments and crops by providing high-quality field datasets and testing setups. Before using this service, you might have an algorithm or model that works in a controlled setting but lacks calibration for a specific real-field variability. After the service, you will have access to comprehensive datasets, including field imagery, crop characterisation, and environmental parameters, enabling you to fine-tune your solution for optimal performance. To illustrate, if your algorithm identifies phenological stages in soybeans but requires adaptation for maize identification, our service enables you to gather and link real-time drone imagery with crop-specific data. This guarantees that your solution is not only functional but also accurate and reliable under diverse conditions.

How the service will be delivered

This service can be partially customisable due to the availability of crops currently being grown in the experimental fields, which are determined by ongoing agronomic trials and seasonal cycles. While adjustments to crop species, varieties, or planting layouts can sometimes be accommodated, these must align with operational constraints and be planned well in advance. Customers should communicate their testing requirements early to ensure the service meets their objectives. Any limitations regarding the feasibility of customisations will be discussed during the planning phase. • Measured laboratory parameters can be customised. • Field adjustments may include crop species and varieties selection, planting configurations, or sampling strategies.

Service customisation

Data collection will be performed throughout the crop cycle, for example, with drone flights or other imagery systems, and representative sampling will be conducted during key phenological stages. Sampling and laboratory analysis will provide relevant agronomic parameters, such as yield, biomass, nutritional composition (water, nitrogen, or carbon content), or any other physiological characterisation. The datasets will be delivered alongside detailed reports adapted to the customer's needs. These outputs enable the customer to calibrate their algorithms or models effectively. The duration of the service depends on the specific crop and its growth cycle, typically spanning several months.