Service ID S00364

Location France

Qualification of Intelligent Weeding Technologies

Provider service

INRAE

Link to content

https://agrifoodtef.eu/catalogue-of-services/qualification-intelligent-weeding-technologies

Type of Sector

Arable farming, Greenhouse, Horticulture, Tree Crops, Viticulture

Accepted type of products

Design / Documentation, Physical system, Software or AI model

Type of service

Performance evaluation, Test execution, Test setup

Description

The AgroTechnoPôle, under the leadership of INRAE-TSCF, has pioneered a groundbreaking testing facility designed to assess alternative weeding technologies. This innovative test bench accurately simulates various crop and weed scenarios—including maize, wheat, beans, mustard, and chamomile—allowing for realistic evaluations. By replicating real-world conditions, we can effectively analyse the performance of weeding systems in a controlled and reproducible environment, ensuring the development of more efficient agricultural practices. With this innovative test bench, we can critically assess the spatial precision of perception and decision-making systems. It comprehensively analyses the effectiveness of diverse solutions that integrate perception, decision-making, and action, whether through mechanical, laser, electrical, or targeted spraying weeding methods. The tests occur at AgroTechnoPôle (INRAE—Montoldre, France) and last 2 to 4 weeks, depending on the technology to be tested.

How can the service help you

Innovative weeding systems are an essential alternative for future agriculture; however, manufacturers or innovators may face uncertainties about the accuracy and reliability of their developments, requiring validation tests that can be costly in time and resources.

Our cutting-edge facility is explicitly designed to evaluate alternative weeding technologies. It simulates various crop and weed scenarios and analyses their performance under controlled and reproducible conditions. Additionally, it allows you to test your machine dynamically, enabling you to compare the results obtained for different development maturities. The test bench is designed to evaluate the perception and action the weeding machine performs. That is, in the first case, to compare the nature and position of the identified plants with the reality of the environment.

And to verify if the target has been reached in the second case. Consequently, this evaluation can assist you in developing your position servo-controls, perception, and identification algorithms, enabling you to create a precise and tailored weed control system quickly and cost-effectively. The test bench is available throughout the year, so you can use it anytime, regardless of the weather outside. The tests occur at AgroTechnoPôle (INRAE - Montoldre, France) and last 2 to 4 weeks.

How the service will be delivered

This service is designed to be flexible and can be tailored to meet specific customer needs. For example, we can create various test environments based on the targeted crop types and weeds. Additionally, we evaluate different technologies for weed control, including mechanical methods, lasers, electrical systems, or targeted spraying solutions. The number of trials can also be adjusted to fit your requirements.

Service customisation

Testing is conducted at the AgroTechnoPôle (INRAE - Montoldre, France). The duration of the service varies depending on the technology being tested and the evaluation parameters, ranging from 2 to 4 weeks. While it is preferred for a technical representative from the manufacturer to be present to configure and operate the system correctly, this is not essential. The technical teams at INRAE may take control of the system under test, depending on the application's complexity and the nature of the technical exchanges.

This approach provides an additional option for customising the service. For effective development and fine-tuning, the designers must be present on-site. INRAE's scientific and technical teams are available to provide advice and ensure that the development and trials proceed smoothly. Deliverables include a detailed test report on the system's precision and efficiency, which is provided following the service and a technical meeting.