Service ID S00317

Location Spain

Testing and validation of an AI-based NDVI detection algorithm in a pivot

Provider service

University of Cordoba (UCO)

Link to content

https://agrifoodtef.eu/catalogue-of-services/testing-and-validation-ai-based-ndvi-detection-algorithm-pivot-irrigation

Type of Sector

Arable farming, Horticulture, Tree Crops

Accepted type of products

Data, Physical system, Software or AI model

Type of service

Collection of test data, Data analysis, Test design, Test execution, Test setup

Description

The evaluation process will encompass a comprehensive analysis of the entire parcel, concentrating on areas where the irrigation system distributes water. Zones with an NDVI below a specific threshold, identified via satellite imagery, will be highlighted. To obtain more granular data, drone flights equipped with LiDAR technology will be conducted, revealing areas of vegetation stress that may not be adequately detected by satellite imagery. The results from both systems will then be cross-referenced to assess irrigation efficiency accurately

How can the service help you

The validation of the system, developed by the customer, addresses the critical needs for optimized water distribution and improved agricultural efficiency. Before using this service, companies may struggle with inconsistent AI-based identification algorithms leading to the identification of potential errors in NDVI levels, which can negatively impact crop health and yield. By the capture and analysis of real-time data collected by drone flights, the service provides means to improve the accuracy of NDVI identification. After implementing the service, companies benefit from improved system accuracy and enhanced productivity through tailored water and nutrient application across different crops and conditions.

How the service will be delivered

The service will be customised according to customer needs (model, pivot, crop, season…).

Service customisation

The service is conducted at the Rabanales Experimental Farm and includes two drone flights equipped with LiDAR sensors. The first flight takes place during the crop's peak growth stage in its phenological development, while the second occurs after harvest, when the soil is bare. This method measures the crop's maximum height on a specific day, which is then cross-referenced with NDVI values from the model to evaluate potential differences in crop vigour.