

Service ID S00390

Location Netherlands, Remote



Phenotyping as a Service for Plant Trait Evaluation

Provider service

Wageningen University WUR

Link to content

<https://agrifoodtef.eu/catalogue-of-services/phenotyping-service-plant-trait-evaluation>

Type of Sector

Greenhouse, Horticulture, Tree Crops

Accepted type of products

Data

Type of service

Data analysis, Data augmentation

Description

We provide a next-generation 3D plant analysis service designed to accelerate testing by turning raw plant scans into reliable, quantitative insights. Instead of relying on slow and error-prone manual measurements, our system uses advanced algorithms to automatically extract precise plant traits—helping you compare genotypes faster and more consistently. These scans are very useful to test your AI in plant segmentation. From a single scan—whether collected with research platforms like NPEC's MaxiMarvin (see service NPEC S00134) or newer approaches such as Gaussian splatting—we deliver a fully segmented 3D model that distinguishes each component: main stem, side branches, leaves, pot, or support pole. A detailed skeleton of the plant structure is then generated, allowing automatic calculation of key parameters such as internode length, branching angle, and phyllotactic angle. This provides a standardised dataset to test and further improve your detection and segmentation AI. Beyond trait measurement, our skeleton-based models can also be used for synthetic data generation—modifying features such as leaf positions or stem lengths to expand AI training datasets or simulate growth patterns across different varieties for virtual robot testing.

How can the service help you

This service fulfils several customer needs:

- Objective, reproducible phenotyping for testing AI, for breeding and for crop monitoring.
- Compatibility with any 3D plant scan from high-end research systems or low-cost scanning methods.
- Actionable trait data (internode length, branching angle, phyllotactic angle) as input for existing AI tools.
- Synthetic data creation and augmentation for AI testing or simulation testing.

Problems it solves:

- Reduces data processing bottlenecks by automating segmentation, skeleton generation, and trait extraction – helping with high-quality input for reliable testing.
- Provides high-quality, structured plant data essential for AI, robotics, and functional-structural plant modelling.

How the service will be delivered

The service is set up to deal with versatile point clouds (like .ply); therefore, customisation is in most cases not needed.

Service customisation

This service could be delivered through different options to suit different customer workflows and resources:

1. Data submission

The customer uploads raw 3D plant point clouds to our secure platform. We process the data in-house and return:

- Segmented point cloud
- Generated plant skeleton
- Calculated trait data (internode length, branching angle, phyllotactic angle)
- Optional synthetic data variations

2. Scanning arranged by us – see service Scanning as a service for synthetic data generation and modelling (Service S00389).

For customers without scanning capabilities, we can arrange plant scanning through on-site visits with a static portable photogrammetry setup.