

High Resolution Plant Phenomics Centre at the APPF

The Australian Plant Phenomics Facility (APPF) is Australia's leading plant phenotyping facility, providing open access to world-class technology and expertise to accelerate the development of new and improved crops, and more sustainable agricultural practice.

As Australia's leading plant phenomics facility our depth and breadth of expertise is unmatched



The APPF is a world-leading research infrastructure facility. It provides Australian scientists with a competitive advantage, drives cross-disciplinary research and international collaboration, and contributes to bridging public research and agricultural business.

The facility is a distributed network of research infrastructure platforms, located across three renowned research organisations with world-class expertise in plant and agricultural sciences:

- The Plant Accelerator® (TPA) at the University of Adelaide's Waite Campus
- High Resolution Plant Phenomics Centre (HRPPC) at CSIRO Agriculture and Food
- Research School of Biology, Australian National University

HIGH RESOLUTION PLANT PHENOMICS CENTRE AT THE CSIRO

The APPF's CSIRO node, the High Resolution Plant Phenomics Centre (HRPPC), combines expertise in plant science and engineering to develop and build:

- cutting-edge phenotyping technologies to support medium-throughput phenotyping of model and potted plants in controlled environments, and
- novel plant phenotyping solutions to support research experiments at large scale and high-throughput in the field. Field applications include ground and aerial platforms with a capacity of over 250,000 plots p.a. and the first high-resolution plant phenotyping capability for glasshouse/field environments - the Cropatron.

The strong mechatronics and software engineering capability at the HRPPC is driving R&D into cutting-edge phenomics technologies that benefit a range of new industries, e.g. pharmaceuticals. The centre focuses on supporting and refining existing platforms, for example, integrating advanced sensor technologies to measure new traits in new crops and to keep pace with the demand for deeper insight into plant behaviour and function, and innovation to increase capabilities. Our engineers have developed phenoSMART®, a science gateway that provides a national data service for on-demand phenotyping analysis.

Controlled environment

A range of services are available in the controlled environment space, from plant establishment in growth cabinets right through to high resolution imaging of material in our PlantScan, CabScan and TrayScan systems.

Field research

We offer a range of high-throughput field phenotyping services including airborne thermal, multispectral and RGB imaging from our phenoAIR™ system, ground based phenoMobile® Lite LiDAR assessment and ArduCrop canopy temperature measurements.

Data

Our software engineering team offers tailored data analytics solutions for phenotyping experiments. These are delivered through the cloud based phenoSMART® platform as well as data and metadata management through PODD.

phenoSMART® is a collaborative e-infrastructure platform. This platform allows the user to easily extract information and value from the data collected using phenotyping tools. The architecture of the platform also serves as a base to allow computational tools developed by other research groups across Australia to be made available to others and/or the agribusiness sector.

The PODD system delivers an open source (GNU Affero GPL, v3) and free data management service to capture, manage, secure, annotate, distribute and publish raw and analysed data from phenotyping projects undertaken at the Australian Plant Phenomics Facility. PODD also provides the ability to manage a repository of associated contextual information (metadata) based on standard ontologies (controlled vocabulary) to support data discovery and analysis services.

Expertise at the High Resolution Plant Phenomics Centre (HRPPC)

The HRPPC combines expertise in plant science and engineering to develop and build (i) cutting-edge phenotyping technologies to support medium-throughput phenotyping of model and potted plants in controlled environments, and (ii) novel plant phenotyping solutions to support research experiments at large scale and high-throughput in the field with a capacity of over 250,000 plots p.a.

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Discover more: plantphenomics.org.au

Australian Plant Phenomics Facility High Resolution Plant Phenomics Centre

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