



Australian Plant Phenomics Facility

Plant Phenomics Group 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.

plantphenomics.org.au

The Australian Plant Phenomics Facility has three nodes strategically located at



We are proudly supported by



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



Image: wheat head - Erica Seccombe/NCI, Australia



The Australian Plant Phenomics Facility (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

PLANT PHENOMICS GROUP AT THE AUSTRALIAN NATIONAL UNIVERSITY

The APPF's ANU node is part of the ANU Plant Science Division which is a world leader in plant research.

Services

Our ANU node provides five essential services:

- On-site phenomics and plant growth services - NextGen growth and phenotyping facilities for Australian and international researchers including greenhouses and growth chambers with time-lapse imaging.
- Genomics and bioinformatics, study design and data analysis support - analysis of phenotypic and genomics data and the opportunity to collaborate with world-class researchers in genomics, photosynthesis and bioinformatics.
- Development and streamlining of cross-scale approaches in monitoring for scaling from lab to field, chamber to crop, and forest.
- Research and development of open source hardware and software pipelines and visualisation tools for enabling lower cost high-throughput phenotyping (HTP) and environmental monitoring.

- Collaborative, cross-disciplinary approach to tackling the grand challenges associated with HTP and environmental monitoring.

The ANU node provides the only quarantine approved growth cabinets in Canberra for research purposes. A range of controlled environments are available, capable of high resolution phenotyping of up to 2,000 small plants in custom and climate-simulated growth environments (LED-based). Quantitative phenotypic screening for *Arabidopsis* and similar sized small plants can be conducted including RGB, hyperspectral and fluorescence imaging.

Our shipping container based Growth Capsule systems support dynamic multispectral LED lighting and high-precision environmental controls for growing wheat and other tall crops in high light environments.

Virtual reality

Virtual and augmented reality are the new frontier in scientific visualisation. The APPF ANU node is a leader in the development of systems for visualising phenomics and environmental sensing data and point clouds in virtual and augmented reality (VR and AR).

EcoVR is a virtual reality tool for recreating any forest or field site as a virtual space, where time-lapse sensor and phenomics data can be overlaid on a 3-dimensional model of the landscape. VR and AR represent immense opportunities for revolutionising phenomics and education, and also for industry collaborations to develop new visualisation platforms for precision agriculture. These tools can deliver actionable information to farmers in situ and can be used by the forestry industry to understand how the landscape, environment and genetics interact to impact forest growth.

Discover more: plantphenomics.org.au

Australian Plant Phenomics Facility Plant Phenomics Group

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