

Australian Plant Phenomics Facility
The Plant Accelerator
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To all fellow plant scientists

The Plant Accelerator, headquarters of the newly established Australian Plant Phenomics Facility, is expected to open its doors in January 2010.

Academic and commercial plant scientists undertaking public-good or for-profit research projects are encouraged to use this new state-of-the-art facility.

About The Plant Accelerator

The Plant Accelerator is a world-leading plant growth and analysis facility, which accelerates pure and applied plant science research Australia-wide and internationally.

The facility's latest technology equipment in imaging, robotics and computing will allow continuous measurements of the physical attributes (phenotype) of plants automatically and non-destructively. These measurements aim to relate the performance of particular plants with their genetic make-up.

The Plant Accelerator is a purpose built plant phenomics facility, which includes a range of greenhouses, high-throughput imaging stations, growth rooms, laboratories and seed storage space.

Greenhouses - The building offers 34 temperature controlled greenhouses in PC2 and non-PC2 environments, which range in size from 24m² to 72m². Its double glazed UV permeable acrylic skin provides good insulation properties and allows for UV penetration. A number of greenhouses are quarantine approved; whilst others are suitable for growing rice (these offer a humidity range between 50-90%). In addition, there are VIP greenhouses that are fitted with blackout curtains to manipulate day lengths.

Smarthouses - The building also contains two large areas referred to as "Smarthouses", which offer a conveyor system and imaging stations (LemnaTec Scanalyzer) for the non-destructive phenotyping of plants. Automatic programmable watering to weight of plants on the conveyor system is available.

A total of 2,400 carts can be transported on the conveyor system at any given time through five imaging chambers. Data gathered from these imaging stations provide the following:

- **Far infrared** - Leaf temperature
- **Near infrared** - Leaf water content and information on some polymers
- **Near infrared (roots)** - Soil water content
- **Visible light (RGB)** - Shoot mass, leaf number, shape, angle, other morphometric data, and leaf colour and senescence
- **Fluorescence imaging** - Plant 'health' (state of chlorophyll)

The facility provides dedicated bioinformatics support to help manage and analyse your data. Data storage and quarantining of data for a period of six months will be available (and can be extended at cost if required).

Further information about The Plant Accelerator is available on our website at <http://www.plantaccelerator.org.au/>

The Plant Accelerator provides an exciting new opportunity in plant science, with potential uses being many-fold. For example, the scale of throughput allows a forward genetic approach to be used to tackle many questions where such an approach was previously unimaginable. The facility can be used to screen populations for novel variation; and it can be used to correlate specific (genetically tractable) traits in controlled environments with behaviour in the field.

The Plant Accelerator offers expertise and scale to advance your research program. We have an excellent team already in place to provide a sustainable, professional operation of the complex new facility. Our team is dedicated to assist you in designing research projects in plant phenomics and looks forward to discussing how The Plant Accelerator can enhance your research.

The construction of The Plant Accelerator is expected to be completed by mid December. We anticipate starting experiments immediately and look forward to hosting increasing numbers of facility users as 2010 progresses.

Please feel free to contact us if you require any further information about the facility.

Yours sincerely,

Professor Mark Tester
Director, Australian Plant Phenomics Facility