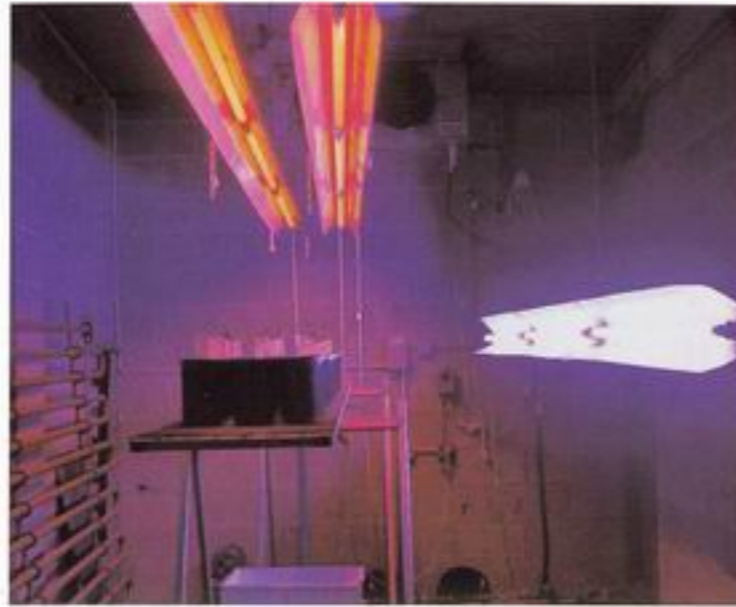




### Light Emitting Diodes

- Available in blue (460nm), red (660nm) and far red (735nm).
- Very little heat output.
- Instant start up, rapid switching options means we can study the effects of short bursts of light, down to 0.2 of a second.
- Variable output control and very high relative intensities (eg from 0 to over 200 micromoles of far red) allow for study of both low and high light responses.
- We can also examine R/FR switching and B/R/FR ratios by placing different coloured tubes in the frames and switching them separately.
- LED's are available in specific narrow band wavelengths- they are a monochromatic light source.
- Unlike our other light sources there are no other peaks to filter out.
- Thus when used in our light proof cabinets, the only source of light is in the wavelength of interest.

### Photomorphogenic research



The School of Plant Science is an ideal location for the study of plant responses to light. Research is conducted in the phytotron bays or our growth cabinets in 2 light exclusion areas.

- A dark transition area containing 4 growth cabinets leads to a total light exclusion area.
- This contains 4 more growth cabinets and 2 darkrooms with total light exclusion.
- Thus plants do not need to be transferred (with the risk of unwanted light contamination) to study the effect of dark to light transitions.
- Effects of white, red, blue and far red light are studied.

### Contact:

Ian Cummings,  
Controlled Environment Facilities Manager  
School of Plant Science  
University of Tasmania  
GPO Box 252-55, Hobart, TAS, Australia 7001  
Ph 03 62262648 (international +61 3 62262648)  
Fax 03 62262698 (international +61 3 62262698)  
Email: Ian.Cummings@utas.edu.au

# Controlled Environment Facility



UNIVERSITY  
OF TASMANIA

School of  
Plant Science

## School of Plant Science

### Controlled Environment Facility

The School of Plant Science Controlled Environment Facility consists of a range of glasshouses, growth cabinets and specialized environments. The recently upgraded \$3 million facility offers a highly diverse range of environmental options with very accurate control over light, temperature, CO<sub>2</sub> and humidity. The facility is used by active research groups in the areas of plant genetics, hormonal responses, photomorphogenesis and ecological studies. The close proximity of the School to a diverse range of plant communities enhances the facility as an ideal center for ecological studies.

Continued development and implementation of state of the art technology is one of the reasons the School has been successful in attracting continuous Australian Research Council funding since 1963. The international nature of our staff, and the international employability of our graduates, is further testament to the quality of our facilities, research programmes and course structure.

### Controlled Environment Glasshouse

- 6 Individually controllable cells.
- Temperature control within 1 degree of set point.
- Humidity control.
- CO<sub>2</sub> control.
- Extension/supplementary lighting.
- Growth cabinet levels of control under natural light conditions.
- Ideal for ecological, comparative, and climate changes studies.

## Phytotron Glasshouses

2 phyto-tron (*light-control*) glasshouses with a series of phytotron bays.



- Highly versatile system.
- Plants placed on truck/rail system that run into dark bays.
- Bays can be dark or have extension lighting.
- 7 bays in all, individually controllable so a range of photoperiods can be run in parallel.
- Or individual trucks can remain on the apron area under our standard 18 hour photoperiod.
- Bays are temperature controlled and with the addition of lighting can be used as large scale growth cabinets.
- Large scale makes it ideal for genetic analysis and screening

## Growth cabinets



- 26 controlled environment cabinets, range of sizes and capacities.
- Flexible lighting configurations from total dark to 800 micromoles from a range of light sources.
- Temperature accuracy within 0.2 degrees, range 0 to 45 degrees.



### Control systems

- Highly accurate control systems ensure reliable environmental control is maintained at all times.
- A central computer monitors systems and alerts any anomalies via a mobile phone.
- Zone control is through CPU's and a series of touch screens.
- Failure of one part of the system does not affect other parts and can usually be corrected from another zone.