New Facilities and Equipment

- Apogee Instruments SS-110 Field Spectroradiometer
- Hydrosystems SuperDos 45
- HE Anderson E-1S
- We recently completed retrofit of a 30+ year old Conviron E15 growth chamber from the original T12 light configuration and refrigeration system, to a compressor free, T5 light design. The project was supported by funding from Guelph Hydro, which awarded funds for energy savings retrofits. There are plans to retrofit remaining E15 and E8 chambers in a similar manner, but using LEDs rather than T5s. Testing is underway on different LED fixtures to determine which spectrum will work best for the wide range of plants grown in the Phytotron.

Unique Plant Responses

- None to report from Phytotron staff. Please see list of recent publications.

Accomplishments and Impacts

- The University of Guelph Phytotron has been providing service to the plant research community in Guelph for 12 years. During the 2015/2016 fiscal year, the Phytotron supported the work of 137 researchers from 24 research labs. As of January 2017, there were 42 active projects in the growth chambers and growth rooms and 14 active projects in the greenhouse. Additionally, there were 61 projects in the growth chambers and rooms and 19 projects in the greenhouse that were already in progress, but completed before the end of the 2015/2016 fiscal year.
- Addition of the Apogee SS-110 spectroradiometer has allowed us to: 1) compare light from different light sources in our growth chambers (ex T5 vs various LED fixtures under evaluation for future retrofits); 2) manipulate and consistently report R:FR ratio to researchers during growth chamber set up; 3) provide researchers with a way to make reflectance/transmittance measurements of their plant material; 4) more accurately
measure PAR under different fixtures (ex. LEDs) that our quantum sensors may underestimate.

- The recently completed E15 growth chamber retrofit (from T12 to T5 light and removal of traditional refrigeration system) has been estimated to use 80% less energy in its new configuration. The retrofit also has the benefit of reducing future repair costs by removing the traditional refrigeration system (often costly repairs >$1000) and using campus chilled water to control temperature by way of a control valve and actuator (comparatively inexpensive, <$1000). Future retrofits of older growth chambers will incorporate LED lights and further reduce the energy consumption of our older growth chambers.

Recent Publications


