

## Controlled Environment Systems Research Facility Guelph BlueBox SALSA System

These plant growth chambers were originally designed as two totally sealed and environmentally controlled spaces in which some of the contributions of plants to the function of life support are studied. More recently, the SALSA BlueBoxes have been retrofitted with multispectral, double layer LED systems in a variety of configurations, however their first lighting systems utilized plasma (microwave) lamps to study the effect of inner canopy irradiation on crop production. The walk-in plant growth chambers are capable of a high degree of closure and are dedicated specifically to plant canopy lighting studies and nutrient recycling analysis and control controlled environment agriculture.

### Technical Specifications

- Volume = 29 m<sup>3</sup> (430 ft<sup>3</sup>) (4.5 m x 2.8 m x 2.3 m) per chamber.
- Plant Growing Area = 5 m<sup>2</sup> (54 ft<sup>2</sup>) (2 m x 2.5 m) per chamber.
- Argus Titan control system - full data graphing and recording of all sensors and actuators.
- BB1 holds twelve Intravision 1600 Watt water-cooled multispectral and programmable LED lighting systems on two levels and with individually addressable UV (368 & 380nm), blue (448nm), white (5650k), green (568nm), red (660nm) and far red (735nm) irradiation sources.
- BB2 is equipped with twelve Intravision fixed wavelength Blade LEDs (three growing levels) and four spectrum adjustable Aurora LEDs, both on custom racking systems with integrated NFT hydroponics.
- Carbon dioxide enrichment and continuous recording from 0 to 20,000 ppm using LI-COR NDIR gas analyzers.
- Temperature control range from 15°C to 35°C +/- 0.5°C.
- VPD control from 0.2 to 1.5 kPa.
- Constructed of primarily non-off gassing inert materials to reduce plant effects from VOCs common to many building materials.

### Environment control

Temperature  
Humidity  
Carbon dioxide  
Light  
EC and pH  
NFT hydroponics

