The Greenhouse Complex

of the Southern Crop Protection and Food Research Centre

Agriculture and Agri-Food Canada's Southern Crop Protection and Food Research Centre in London, Ontario is home to a new state-of-the-art $10-million greenhouse complex. The new facility is an exciting milestone in the Centre's record of research excellence in field crops, bio-based products and processes, genomics and biotechnology, and integrated pest management.

The greenhouse will provide controlled environment facilities for research that contributes to the productivity, yield and sustainability of the agricultural sector. Research projects in the greenhouse will help: identify fruit tree germplasm that is resistant to the plum pox virus; reduce the reliance of cereal grain crops on commercial nitrogen fertilizer; use protein trafficking technologies to develop plant-based animal vaccines; improve the nutritional quality of dry beans; and develop higher yielding, higher quality alfalfa cultivars for the dairy and cattle industry. Collaborative partners include the University of Guelph, Western University, the Ontario Bean Producers' Marketing Board and the Grain Farmers of Ontario.

Facts and figures

- Total greenhouse area: 600 m^2
- Total greenhouse bench area: 257 m^2
- Height to gutters: 6.4 m
- Header house area: 560 m^2
- Number of high pressure sodium lights: 220

Designed for maximum flexibility and space use efficiency

- A combination of large and small compartments enables researchers sharing similar environment needs to work within the same space.
- Tall wall sides provide uniform environmental conditions and permit culture of diverse plant species.
- The state-of-the-art environmental control system provides a wide range of temperature, lighting and humidity settings, and enables archiving and tracking over the course of the experiment.
- Rolling benches permit maximization of usable space with convenient access.
- Each compartment is fitted with automated irrigation and fertilizer injection systems.

More about the bio-containment facility

- The facility meets the Canadian Food Inspection Agency's rigorous bio-containment standards for research involving level 2 plant pathogens.
- The greenhouse is segmented into three independent bio-containment zones allowing incremental use of the facility.
- Segmentation allows researchers to conduct experiments along the continuum of bio-containment restrictions.
- Each zone has its own drainage catchment for neutralization of organisms that may pose an environmental risk.
- Compartments are under constant negative pressure towards areas of higher containment.
- Supply and exhaust air are filtered or screened in order to contain and exclude pests.
- Access to different bio-contained zones is by swipe card only.
- Each zone is equipped with an eye wash station and emergency shower.

Header House

Soil preparation, pot filling, and planting operations normally take place in the header house. It is also where pesticides are prepared under tightly regulated, safe-handling protocols. The new header house is equipped with:

- 25 m^2 of sink and bench space;
- washrooms, lockers and shower facilities;
- 42 m^2 soil preparation room;
- pot clean-up and autoclave facility for waste; decontamination; and
- additional space for cold rooms and growth cabinets.

Future expansion

Pesticide-free wing

A second smaller greenhouse wing located immediately south of the current greenhouse will accommodate research on insect pests. This greenhouse will be used for research that does not allow the use of pesticides for insect control.

Bio-containment laboratories

The south end of the header house will be extended to accommodate construction of two new bio-containment laboratories. These labs will be used for preparation of plant and insect materials associated with experiments requiring bio-containment protocols.

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Catalogue No. A59-6/2013E-PDF
ISBN 978-1-100-22576-0
AAFC No. 12067E

Electronic version available at www.agr.gc.ca

Paru également en français sous le titre Le complexe de serres du Centre de recherches du Sud sur la phytoprotection et les aliments

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