Backgrounder

Phytotron

- A phytotron is a completely closed greenhouse that provides the ability to conduct processes not possible in the outside environment, such as:
  - specialized crossing techniques,
  - detailed studies of disease and plant adaptation to drought,
  - cold temperatures and other abiotic stresses, and
  - the ability to conduct plant research throughout the year.

- One of the largest controlled-environment facilities in the world, the University of Saskatchewan's phytotron is comprised of 183 growth chambers that range in size from one-to-20-square metres. These chambers provide a controlled environment (humidity, temperature, day length and light intensity) for plant research and breeding. Unlike a field or greenhouse, the phytotron allows researchers to determine how soils, plants, water, light, wind and pests interact under a variety of conditions.

- Intense lighting duplicates sunlight within the controlled chambers, thereby allowing plant development to move rapidly through the early generations of breeding programs. The environment enables plant breeders to produce three generations of plants in any given year, thereby accelerating the development and market access of new crop varieties suitable for Saskatchewan conditions.

- The phytotron at the University of Saskatchewan plays a key role in the development of crop varieties and plant science research in Western Canada. This research provides farmers with new and innovative crop varieties, better information about production, and higher yielding crops.

Funding

Funding will go toward the purchase of eight chillers and 171 controllers for some of the phytotron's 183 chambers. The new equipment will allow the facility to reach full capacity, enhancing research and plant breeding programs.

The total estimated cost for the project is $12.5 million.

- Western Economic Diversification Canada $4.5 million
- University of Saskatchewan.....$3 million
- Saskatchewan Ministry of Agriculture .....$2 million
- Saskatchewan Pulse Growers.....$1 million
- Western Grains Research Foundation.....$1 million
- Donations from other sources.....$1 million
- **TOTAL.....$12.5 million**

Testimonials

Western Grain Research Foundation Board Chairman, Dr. Keith Degenhardt
“Pulses, wheat, oats, barley, flax, canary seed, all of the breeding programs at Crop Development Centre rely heavily on the phytotron to advance their programs and develop improved varieties that grow well in farmers' fields and increase profitability for producers in Western Canada.”

Saskatchewan Pulse Growers Chair, Murray Purcell
“In 2009, $1.8 billion of pulse crops was exported from Saskatchewan. This would not have been possible without the new pulse varieties developed here at the University of Saskatchewan and the use of the phytotron."

Associate Dean, Research and Graduate Studies, College of Agriculture and Bioresources, Graham Scoles
"The phytotron has been and continues to be critical to the work of the college, particularly the pulse breeding and research programs. Not only does it support the breeding programs by allowing more than one generation per year to be grown, but it allows graduate students to perform research projects in areas such as disease and nitrogen fixation under controlled conditions ensuring that experiments can be executed successfully."