

Using High Tunnels to Produce High-Value Organic Vegetable and Nutraceutical Crops in Canadian Climates



A 3-year research project was initiated in 2014 at the University of Guelph. High tunnels (and their associated technologies) will be evaluated against traditional field production for season extension & increasing profits for organic production of high-value organic crops (e.g. bitter melon, tomato, pea shoots & pods etc.).

Specific objectives are:

1. Select, evaluate and develop protocols for using high tunnel technologies in harsh Canadian climates including:
 - a) screens to reduce insect and pathogen pressures
 - b) shading materials to reduce and diffuse high-intensity, direct light during summer months,
 - c) plastic mulch (different colors) and drip tape to reduce weed pressure and improve nutrient and water use efficiency;
2. Investigate microclimate conditions at different seasons under high tunnels;
3. Determine cost-benefit of using high tunnels in Canadian climates.

9-plot design with 3 field plots & 6 high tunnels (24x36 ft each, arranged in a Latin Square experimental design). Each main plot has 4 sub-plots for simultaneous evaluation of multiple crops/cropping systems.



Fig. 1. High tunnels are under construction.



Fig. 2. Six high tunnels are installed at the Guelph Centre for Urban Organic farming (GCUOF).

A multidisciplinary research team is involved in this research project:

Dr. Youbin Zheng: Greenhouse organic crop production, plant nutrition

Mr. Dave Llewellyn: High tunnel infrastructure and plant production

Dr. Yun Kong: Vegetable production under controlled environments

Dr. Rene Van Acker: Weeds management

Dr. Ralph Martin: Sustainable food production

Dr. Mary Ruth McDonald: Integrated vegetable crop management

Dr. W. David Lubitz: Engineering, microclimate

Ms. Martha Gay Scroggins: GCUOF co-ordinator

Mr. Evan Elford: New Crop Development Specialist (OMAFRA)

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