

## Commercial Report to NCR-101 Committee on Controlled Environment Technology and Use

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AGRITECHNOVE INC.

5 Morin St., PO 420

St-Anselme, Quebec

Canada, G0R 2N0

Tel: 418-885-9595, Fax 418-885-4957

Agritech@total.net

Some projects designed by Agritechnové and their innovative characteristics:

### **Major Ongoing Projects :**

USDA/ARS/BL3-AG, Beltsville, MD: A 1,500 square feet of BL3-AG contained research lab and contained research greenhouses, divided in 4 zones. Type of Research: plant pathogens, viruses, fungi, bacteria and noxious weeds, both indigenous and nonindigenous. It is a maximum containment facility. About the submit the "Final Turnover Documents".

Special Considerations:

- BL3-AG containment level
- Pressure differential from +0.05 " wg up to a maximum of -0.25 " wg.
- As containment requirements, HEPA filters on ventilation intake and exhaust, Air Handler Units with A/C systems.
- Contained Drainage goes to Biowaste Treatment System.
- Structure and glazing: Structural silicone with extrusion used a cap over glass connections.
- Laboratory equipment: Autoclave, Oxide Ethylene Chamber, Biosafety Cabinets, Fume Hood, Canopy Hood, Dew Chambers, Fumigation Chamber, Washer/Dryer
- Showers IN/OUT.
- Control system: greenhouse computer control system for the entire building (greenhouses, labs, basement) and DDC controllers driving the Air Handling Units. Both systems (Greenhouse computer and DDC controllers) are in communication.

ACADIA UNIVERSITY, Environmental Sciences Research Centre, Wolfville, Nova Scotia, Canada: 7,000 sf of new Architectural Greenhouse space for research and plant exhibit, divided in 12 zones. 6 compartments under air conditioning system, large conservatory and a specialized Wetland Research zone. Final Documents to be submitted in few weeks from now.

Special Considerations:

- Architectural Greenhouse Structure
- Wetland Compartment; special devices for creating tides movement.
- Propagation compartment.
- Mechanical Room located two floors below
- Sensors Input: Sensors connections located in compartment for various sensors type monitoring. Sensors inputs connected directly to the computer control system.

USDA/ARS/APHIS, Pacific Basin Agricultural Research Center (PBARC), Hilo, Hawaii: 24,000 sf of insectary and 10,000 sf of BSL-3 greenhouses. Complete design for the greenhouses and consultation on insectary. Design will begin within few weeks.

Special Considerations:

- BSL-3 containment level
- Insectary
- Tropical Outdoor Conditions.
- Good coordination between consultants, as the project location far from the Mainland.

### **Projects Currently Under Design :**

UNIVERSITY OF MARYLAND Research Greenhouse Complex, College Park, MD: 45,000 square feet of greenhouses for varying types of research. This will be a design build project with the detailed engineering under the contractors responsibility. About the submit Final Documents.

IOWA STATES UNIVERSITY, REIMAN GARDENS CONSERVATORY, Ames, Iowa: 6,000 sf of Conservatory and 6,000 of production greenhouses. Design just began 2 days ago with kick-off meeting.

UNIVERSITY OF MINNESOTA, Plant Growth Facilities, St-Pauls, MN: Huge research greenhouse projects with 31,000 sf divided in 4 different wings, 34 compartments, included 1,200 sf of BSL-3 greenhouse space.

PLANT SCIENCE INSTITUTE, Donald Danforth Plant Science Center, St-Louis, MO: 13,000 of research greenhouse space in 13 compartments.

PARADIGM GENETICS, Plant Growth and Analysis Facility, Triangle Park, N.C.: 2,500 of research greenhouse space in 10 air conditioning compartments.

AAFC Fredericton, N.B, Canada: 9,000 square feet over 17 zones and 3 corridors. Project has been on hold for cost reason, but is back under design phase.

**Under construction:**

USDA SARL, Weslaco, TX: A one zone 1,600 square feet roof top containment greenhouse. Insulated glass units are used throughout the custom designed structure. The glazing system is structural silicon without the traditional glazing bars. The shade system is external to prevent insects form being trapped in the shade material and has been designed for high wind loads.

VIRGINIA COMMONWEALTH UNIVERSITY (VCU)-Research Project, Richmond, VA: A new roof top research greenhouse to be divided in four zones. One zone shall reproduce a desert climate, a second zone will provide a tropical climate and two zones will provide a temperate environment.

UC RIVERSIDE, Riverside, CA: 11 greenhouse zones attached to a new insectary building. The project includes varying levels of containment (BSL-1, BSL-2, BSL-3) as the facility will be housing foreign organisms.

AAFC Agassiz, BC, Canada: 10,000 square feet over 13 zones for horticultural and greenhouse crops. Shop Drawings Review

AAFC Lethbridge, Alberta, Canada: 29,000 square feet over 32 zones for cereal crop research. Requires high light levels of  $400 \mu\text{mol} \cdot \text{s}^{-1} \cdot \text{m}^{-2}$ . Basement under central corridor will house all services including evaporative coolers. Will be tendered soon.

**Others:**

UNIVERSITY OF WISCONSIN, Walnut Street Greenhouse Complex, Madison, Wisconsin: 15,000 sf of research greenhouses, divided in 24 zones and 3 corridors. Very interesting project but currently on hold as the future heating plant located south of the greenhouses will cast too much shade on the greenhouses. Should be back on design phase next fall.

CANADIAN INTERNATIONAL DEVELOPMENT AGENCY, Potato Seeding Laboratory, Setif, Algeria: Complete design of 13,000 sf of greenhouses, supervision of Construction on site.

JOLIETTE COLLEGE, Joliette, Québec, Canada: Complete design of 6,300 sf of greenhouses for teaching purposes.

Agritechnove has currently more than 200,000 sf of greenhouses under its supervision on construction phase, design phase or about to begin. There is an impressive demand for Level-3 Containment research facilities and Agritechnove remains very active in this specialized field.

Bruno Faucher, M.Sc., P.Eng.  
Agritechnove inc.  
agrnbfau@total.net