



## RESEARCH GREENHOUSE

**BUILDING:** Plant Growth Facilities

**OWNER:** University of Minnesota  
St. Paul, MN, USA

**CLIENT:** RSP Architects  
Minneapolis, MN, USA  
M. Brian Gatzlaf, architect

**AREA:** 32,000 sf

**COMPLETION:** 2005

This project started in 1996 with the evaluation of the existing 100,000 SF of greenhouses on campus, along with a general survey made to 5 departments on what they thought will be the next 15 years of greenhouse use. Compilation of information allowed us to determine how much of existing could be remodeled and how much new construction was required. Starting late in 1999, design of 4 new blocks of greenhouses was done, to be built where existing greenhouses were to be demolished. The project also included a new BSL-3 insect rearing laboratory with 3 individual greenhouse compartments. One wing is dedicated to plant propagation and teaching while the other 3 wings are solely for research purposes. The new greenhouses provide 32000 SF subdivided into 28 independent zones and 4 corridors, not counting two new headhouses with classrooms, laboratories, potting rooms and other facilities.

**SPECIAL FEATURES** - The project included many special research tools specially designed to the science requirements of the users. This included rhyzotrons (large temperature controlled stainless steel/aluminum boxes allowing root development studies ) and hydroponic benches (system allowing the simultaneous testing of 5 different nutrient solutions on 20 benches randomly located within a single greenhouse compartment).



**TECHNICAL SYSTEMS** – The project is entirely designed and constructed following BSL-2 requirements. All new greenhouse space is under a specialized computer control with 2400 input/output points. The control system has non-assigned inputs and computer controlled power outlets in many zones allowing the plugging of special sensors and the use of such data to modify the control strategy of the compartment. Agritechnove provided professional services up to commissioning, including the development of commissioning checklists, verification of control screens, etc.

