

SYNOPSIS



**Owner : UNIVERSITY OF
FLORIDA / GAINESVILLE**

**Architect: CUH2A / HDR,
ATLANTA, GA**

**Area : Total 2340 SF (756 SF
Greenhouse / 1580 SF
Headhouse)**

Completed May 2010

Costs: Greenhouse \$2.1M

GREENHOUSE



BSL-3 PATHOGEN RESEARCH FACILITY

The greenhouse portion of the project started in April 2007. Agritechnove teamed up with CUH2A (to become later part of HDR) A/E team to completely design the rooftop BSL-3 greenhouse/headhouse complex. The custom-designed greenhouse is divided into 3 individual compartments of 250 SF each. The greenhouse is entirely glazed with insulated glass units held in place using a structural silicone system ensuring complete airtightness of the envelope. Each compartment is air conditioned and provided with 11 tons of cooling capacity. The system is designed to have greenhouses holding 65 F during summer in Gainesville. The air handling maintains a permanent negative pressure (-0.15 " WG) in each compartment by offsetting air supply and return. All air handlers, HEPA filters and exhaust blowers are located on the roof and in the mechanical mezzanine below the greenhouse and A/C air is constantly re-circulated with fractional outside air input.

One greenhouse zone is organized to allow insect research. The zone has a removable screened vestibule and was designed to keep insects from reaching hard to reach places such as inside tubular structural members. Each greenhouse compartment is equipped with the following: energy trusses, vertical and horizontal shading system, fixed and rolling removable benches, RO water, process cold water, fertilizer injection, hose station and automatic watering.

The headhouse is subdivided into non-contained and BSL-3 contained areas. The regular headhouse space includes an access corridor, a reception/marshalling area, non-contained locker room, work area with sterilizer. The BSL-3 contained headhouse has an equipment decon/pass-through area, contained lockers and showers, a large headhouse/work area, a clean lab area and an emergency exit area. The headhouse is connected to each of the 3 greenhouse zones through airtight doors. It is fitted with equipment such as steam sterilizer (autoclave), soil bins, 6 ft biosafety cabinet, refrigerator, freezers (regular and ultra-low), movable stainless steel benches, several working tables with sinks, etc. All greenhouse effluents are directed to a cooking tank designed to devitalize all by-products of the waste water system.

The headhouse and greenhouses control require over 250 distinct input/output. This control is split into (1) a specialized, dedicated greenhouse computer control system and (2) the main campus building automation system for air handling, cooling and heating and related functions. The interface between the 2 control systems is such that greenhouse users can still control the greenhouse temperatures and all other functions while the campus maintenance staff have the air handler motors under their monitoring and alarm system.