

USDA / ARS NEW BSL-2 CONTAINMENT RESEARCH GREENHOUSES



PROJECT:	RANGE 1 REPLACEMENT GREENHOUSES
OWNER:	USDA/ARS, Beltsville Agricultural Research Station. Beltsville, MD, USA
CLIENT:	RMF Engineering Inc. Baltimore, MD, USA Mr Ken Balenske, P.E., Project Manager
AREA:	- Citrus Quarantine Greenhouse: 5,650 sf, headhouse / greenhouse - Vector Control & Containment Support: 4,600 sf, greenhouse - Total of 10,250 sf
COMPLETION:	August 2006

The project started in April 2002 after a severe storm damaged beyond repair the old Range 1 greenhouses that were on site. The project kept the headhouse shell, an historic building that had to be preserved and renovated. The project includes two large wings of greenhouses dedicated to specific research fields. One is for research on Citrus plants and the other mostly for the production of plant material to be used in the nearby BSL-3 Ag greenhouses. The two new facilities are approved by APHIS for BSL-2 work based on the latest requirements. In total, there are 10 new research compartments in addition to central corridors, one new headhouse with autoclave, a mechanical/electrical room and links to the existing and renovated headhouse building.

The greenhouses are entirely glazed with glass and provided with screen boxes where fans exhaust the air in an insect-proof screened cage. Cooling pads are provided from a central water tank and distribution system. The benches are not anchored to the floor and allow for any benching arrangement while providing for ADA compliance as needed. The facilities are provided with horizontal shading systems, vertical shading systems, supplementary lighting up to 125 microeinstein, snow-melt heating, perimeter heating, bench heating, tempered water and fertilized water for irrigation selectable at each compartment from central systems.



The headhouse section is equipped with a large, roll-in steam autoclave with exhaust canopy hood, large sink with sand traps and deluge sprayer. The greenhouses are under control of a specialized, dedicated greenhouse computer control system with 375 distinct input/outputs.