

**University of Maryland – College Park
NCR-101 Station Report, 2001**

New Facilities Under Construction

1. General Greenhouse Complex

- 40K+ sq. ft greenhouses + 30k sq. ft. Head-house
- 33 zones, ranging in size from 865 sq. ft. to 3,000 sq. ft.
- Glass Glazing
- Steam Heat
- Fogging System and Positive Pressure Fans for Cooling
- Acme Exhaust Fans for Increased Air Flow
- Priva Control Systems
- Temperature and Humidity monitored for each zone with some Carbon Dioxide monitoring
- Automatic Shading System
- 400 Watt High Pressure Sodium Fixtures supplemental lighting with 100 Watt Incandescents for photoperiod interruption
- Fertigation injection system allowing custom blend delivery
- Chamber Pesticide Sprayer
- Rolling and Stationary benches in each zone
- Cold Frames and a Shade House will be installed as well

2. Center for Agriculture Biotechnology Greenhouse

- 6000 Square Foot
- 6 partitions each 24'w x 36' l
- Glass Glazing
- 17' sidewalls
- Roof Vents
- Priva Controls
- Temp/Hum sensors per zone
- Weather Station w/Wind Speed & Direction, Outdoor Temp/Hum. PAR Sensor
- 1000-Watt Metal Halide & High Pressure Sodium Fixtures
- Kool-Cel w/Exhaust Fans for Cooling
- Steam Heat
- Automatic Shade System
- Reverse Osmosis System
- Fertigation system
- Rolling and Stationary Benches

New Facility Control Systems

- Greenhouses will be controlled exclusively by Priva control systems
- Growth Chamber Controllers range from the following:
- Conviron Touch Screen control Systems – 4030 System
- EGC Control Systems – TC2 & C3 Control Systems

- Percival Digital & Analog Control Systems
- Climate Technologies Whatlow Series 982 Digital Control System
- Arabidopsis Research Growth Chambers will be monitored by Q-COM's missing Link system.
- Temperature/Humidity monitoring with future PAR and Carbon Dioxide systems.
- Web site developed for multi-user monitoring of Growth Chambers and environmental conditions.
- We are currently working with General Electric on developing lighting systems that will be more environmentally friendly as well as more energy efficient.
- The next step is to develop lamp-dimming programs for HID and Fluorescent lighting fixtures in Greenhouse and Growth Chamber environments.

New Facility Sensors and Instrumentation

- Li-Cor Instruments will supply temperature Sensors. (Lab Quality)
- Li-Cor Instruments will supply Humidity Sensors. (Lab Quality)
- Apogee Instruments will supply PAR sensors.
- Priva Control Systems will supply Weather Stations for each Greenhouse range.

Workshops Attended

General Electric Lighting Institute Seminar, August 27 – 29, 2001

New Lighting Technologies for the "People" Industries and how we may interpret and integrate these technologies into the Horticulture Field. Topics included:

- Incandescent Technologies - Eco-Friendly and Energy Efficient Products
- Fluorescent Technologies - T12, T8 & T5 Products
- Halogen Technologies - Less Heat, More Light, extended Life
- HID Technologies - Watt Miser's, Eco-Friendly, Longer Life, Higher Lumens, Better Colors, Metal Halide Lamps for H.P.S. Fixtures
- New Ballast Technologies - Energy Efficient, Eco-Friendly, Better Starting Technologies for extending Lamp Life

Consultations (John Korn)

- Design and Installation of State of the Art Greenhouses and Support Facilities for the Reduction of Generation times and the Development of Transgenic Cotton and Corn varieties. Dow Life Sciences Division (Dow Agro)
- Developed Greenhouse design for "Fast Track" Transgenic Cotton Greenhouses and Seed Multiplication of new Varieties for Cotton Seed Distributors of Wee Waa, New South Wales, Australia.
- Design Consultation on Monsanto Companies Transgenic Early Corn and Cotton Generation Greenhouses. Jerseyville, Illinois
- Designed Research/Production Greenhouses for Southeast Missouri State University, Cape Girardeau, Mo.
- Designing Hydroponic Production Greenhouses for Enhanced Urban Services, a "Welfare to Work" Training Facility in St. Louis, Missouri.