

NCR-101 Committee on Controlled Environment Technology and Use
John Innes Centre Norwich, UK September 9-12, 2001
Tuskegee University - Station Report
George Washington Carver Agricultural Experiment Station, 100 Campbell Hall,
Tuskegee University, Tuskegee AL 36088 USA.
Tel. (334) 72-8333; Fax. (334) 727-4481.

New Facilities Planned

- A new 8,000 sq. ft. Food Processing and Food Safety facility will be constructed within the year. Funding for the facility is provided by USDA/CSREES. This facility, when completed, will serve as the focal research facility for the development of food processing methods, analytical methods for the determination of contaminants, chemical/drug residues both naturally occurring and biotechnologically, including food components and waste management and environmental quality.

Unique Plant Responses

- Replenishment with a refill nutrition solution containing 4.5 mM N/K with remaining nutrients at half-Hoagland concentration was effective in increasing sweetpotato storage root yield and maintaining standard levels of N and K within the plant.
- Plant model work has shown that the quantity of N remobilized from senesced sweetpotato leaves appears to be sufficient to support more than 70% of required storage root N at harvest. It seems that the remaining storage root N is remobilized from other senesced plant parts, particularly flowers and /or from the nutrient solution.
- Peanut plants exposed to low Mars ambient PPF ($100\text{-}200 \mu\text{mol m}^{-2} \text{s}^{-1}$) reduced pod and seed yield, harvest index, and delayed flowering.

Cooperative/Interdisciplinary Projects

- Collaborated with the solid waste recovery team of NASA's Environmental Systems Commercial Space Technology Center at the University of Florida in recycling inedible sweetpotato and peanut plant biomass.
- Cooperative work with USDA/CSREES sweetpotato, biotechnology, and breeding, and food processing and human nutrition programs.
- Student interns working with scientists at JSC and KSC in engineering, food safety and product development, and biomass production projects.
- Collaborated with the New Jersey-NSCORT, and majority native American serving Dine and South Mountain Colleges on the 2000 Spaceflight and Life Science Training Program at KSC.

Workshops/Colloquia/Symposia

- Participated in NASA's Training and Development of Small Businesses in Advanced Technologies (TADSBAT II) targeted towards helping NASA to increase contracts to small, disadvantaged, minority or women-owned businesses.

Committees and Sub-committees Served

- Dean and Research Director serves on NASA's Biological and Physical Sciences Research Advisory Committee; CAST Advisory Council for the Kellogg-funded CAST/ICL leadership development initiative for Professional Societies; Advisory Committee for the ESCOP/ACOP Leadership Development of the Experiment Station Committee on Organization and Policy (ESCOP) / Academic Committee on Organization and Policy (ACOP); National Research Initiative Competitive Research Grants review panel.

Publications

- Abdel-kader, R., M. Calhoun, H. Aglan, and A. Trotman. 2000. Management of the physical/chemical parameters of solid biomass degradation using a data acquisition system. SAE Technical Paper Series No. 2000-01-2470 Warrendale PA.
- Gordon, SE, Almazan, AM, Adeye, SO, Pace, RD. Zinc bioavailability in young rats fed sweetpotato greens containing phytic acid. *Life Support & Biosphere* 6:107 – 114, 1999
- Mortley, D.G., C.K. Bonsi, P.A. Loretan, W.A. Hill, and C.E. Morris. 2000. High relative humidity increases yield, harvest index, flowering, and gynophore growth of hydroponically grown peanut plants. *HortScience*. 35:46-48.
- Mortley, D.G., H.A. Aglan. C.K. Bonsi, and W.A. Hill. 2000. Growth of sweetpotato in lunar and mars simulants. SAE Technical Paper Series No. 2000-01-2289 Warrendale PA.
- Stanciel, K., D.G. Mortley, D.R. Hileman, P.A. Loretan, C.K. Bonsi, and W.A. Hill. 2000. Growth, pod, and seed yield, and gas exchange of hydroponically grown peanut in response to CO₂ enrichment. *HortScience* 35:49-52.