



2014 CANR Grants

The Center for Applied Nursery Research (CANR) is a non-profit 501(c)(3), founded in 1997, to provide a managed facility and funding for ornamental horticulture research based on grower needs and conducted under commercial growing conditions. The goal of CANR is to generate information to keep growers in Georgia and the Southeast on the forefront of new ornamental plant breeding, evaluation and introduction, as well as, new nursery production techniques.

The grant process at CANR is industry-driven and directly tied to industry input. Members of the Green Industry are invited to visit this work in progress and present questions and needs for research projects every year during our annual needs meeting. The results of our needs meeting are sent out to researchers at universities around the southeast to solicit proposals. An Advisory Council of industry and university representatives review and rank submitted proposals for new research projects and present their findings to the CANR Board of Directors. The Board of Directors then decides on funding for the upcoming year's projects based on available funds. 250 projects from across the Southeast have been funded by CANR since 1997.

The Center For Applied Nursery Research is proud to announce the 2014 grant awardees.

Collection and seedling evaluation of *Kalmia latifolia* and *Hosta* spp. Adapted to the deep south (Zone 9) – Dr. Matthew Chappell – University of Georgia

The genera of *Kalmia* and *Hosta* are both popular landscape plants in USDA zone 7 north, However, little screening has been reported in zone 8 south for heat tolerance of these species, despite anecdotal reports indicating the possibility is likely that improved heat tolerance exists. For example, there have been documented populations of and major *Kalmia latifolia* as far south as Biloxi, MS and northern Mobile Bay, AL Additionally, reports indicate some of genotypes of *Hosta* (e.g. 'Patriot', 'Sum and Substance', 'Krossa Regal', 'Guacamole') are more tolerant of warmer locations, This project will serve to collect seed of *Kalmia latifolia* from deep south populations, germinate this seed, and begin seedling evaluations. Additionally, this project will screen existing *Hosta* cultivars for heat tolerance, allow the selected cultivars to set open pollinated seed, germinate the seed, and begin seedling evaluations

Preliminary Screening for Susceptibility of Crapemyrtle Taxa to the emerging pest, Crapemyrtle bark Scale – Dr. Gary W. Knox – University of Florida, Quincy

Crapemyrtle species and cultivars are popular small flowering landscape trees in the Southeast US, exceeding \$46M in total sales in 2007. Crapemyrtles feature colorful flowers over a long season, drought tolerance, and, until recently, have been considered relatively free from pests and diseases. Crapemyrtle bark scale (CBS), believed to be *Eriococcus lagerstroemia*, is emerging as a major threat to crapemyrtles throughout the Southeast US. First discovered in the Dallas, Texas, area in 2010, it has since been observed in Shreveport, LA, and Memphis, TN The expanding distribution of CBS and personal observations of CBS on crapemyrtle throughout China suggest it could have a widespread and severe impact on crapemyrtle production, use and marketability
Objectives of this proposed research is preliminary screening of species and cultivars for susceptibility to crapemyrtle bark scale:

- a) Collect plants of species and cultivars for evaluation in a region where CBS already is present;
- b) Establish replicated plantings;
- c) Inoculate plants with CBS (quarterly, if possible, to determine if time of year of inoculation affects infestation) and evaluate monthly for level of infestation

Modeling soilless substrate to maximize plant available water for containerized nursery crop production – Dr. James S. Owen, Jr – Virginia Tech

What is the relationship between the substrate and plant in your greenhouse or nursery? How does it impact irrigation scheduling and subsequent crop growth? Researchers and growers have made great strides in using low-tech (i.e. leaching fraction) and high-tech (i.e. substrate moisture sensors) methods to assist in better scheduling irrigation. However, the question still remains; how dry can you go between irrigation events and what is the subsequent impact on crop growth? Dr. Atland (USDA-ARS) dug deeper and asked; "now that we are good at measuring substrate physical properties and moisture content, how do the numbers equate to crop growth?" (paraphrased) Dr. van Iersel at UGA has begun to explore this question of plant water use in relation to substrate moisture; indicating it is not the water measured using static means that is of interest, but instead the ability of water in the substrate to be transient or move to the root as water becomes limited. This ability for water to move is termed hydraulic conductance of the substrate and has been hypothesized by Dr. van Iersel as the key to water availability. Research proposed herein will build on current findings from Dr. van Iersel to better answer the question of how crop growth relates to the hydro-physical properties of soilless substrates utilized to produce containerized crops. This will be accomplished by measuring substrate hydro-physical properties, modeling water flow in variably saturated porous media and evaluating response of containerized crops. In a nursery setting using engineered soilless substrates with different physical properties based on model results.

Further Evaluation of Ornamental Germplasm – Dr. John M. Ruter – University of Georgia

New plants are the life-blood of the nursery industry. As such, ornamental breeders must evaluate large numbers of seedlings to make future selections. The objectives for this research project are as follows:

- 1) continuation of mutation breeding work with *Prunus caroliniana*. Select for sterility, form, and disease resistance
- 2) continuation of breeding work with *Lagerstroemia subcostata* -selection of plants for size, fall color, flower color, and color of the bark
- 3) continuation of breeding work with *Ilex*. Select plants for form (upright and/or compact), foliage color (new red growth) and foliage sheen
- 4) continue selection work with *Mahonia* - select compact plants with purplish-red fall/winter color
- 5) continue selection work with *Calocedrus macrolepis* -looking for plants which remain evergreen
- 6) initiate evaluation of seven new *Hibiscus moscheutos* selections
- 7) initiate evaluation of four new *Agapanthus* selections

Pre-Conditioning Stock Plants of *Kalmia latifolia* 'Starburst' for Cutting Propagation – Dr. Donglin Zhang – University of Georgia

Evaluation and selection of new cultivar for our Georgia and southeastern nurseries is one of the highest priority from a panel of nursery growers. While conducting the breeding and selection of heat tolerant cultivar of *Kalmia latifolia*, the first hurdle is the vegetative propagation difficulty. During the past IPPS question box section, stem cutting propagation of *Kalmia* was addressed again and no solution had been reached. Although tissue culture is the way to regenerate *Kalmia*, it requires to produce significant number of plants for overcoming the higher initial cost. For the newly bred and selected cultivars, it is imperative to regenerate through stem cuttings for further evaluation and small scale commercial production. Rooting of *Kalmia* stem cuttings had been investigated by many growers and researchers with little success. Since rooting hormones could be translocated from growing tips or foliage downward, the objective of this research is to pre-conditioning *Kalmia* stock plants by spraying rooting hormones, then take stem cuttings with additional rooting hormone treatments at least one month later.