Title
Developing Sterility in Genetically Dwarf Lagerstroemia Selections to Foster Perpetual Flowering

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Nature of Work
The development of sterility in dwarf *Lagerstroemia* selections from the Dirr breeding program at the University of Georgia has several potential advantages. Sterile selections may flower longer, increasing ornamental value. Concern about the ability of non-native plants to self-perpetuate in the landscape and out-compete native vegetation is an important issue for the horticulture industry. Research to develop sterile ornamentals will show the public that the industry is proactive in addressing invasiveness issues.

Results
This project received initial CANR funding in 2005 that was continued in 2006. We began by irradiating seed of a white-flowered dwarf *Lagerstroemia* selection from the Dirr breeding program (DWF-07-00). A total of 851 plants were evaluated in 2005 for length of time from seeding to first flower, date of first flower, flower color, plant height, plant width, winter hardiness, seed production, pest resistance, and overall horticultural merit. 443 plants (52%) flowered the first year. From this group, we identified an initial group of 93 plants (21%) in 2005 that flowered with no seed production. In 2006 an additional 146 plants flowered. From the initial group of non-seeding plants, only 10 had no seed production in 2006. Several other plants from this group, while not completely sterile, produced very few seed. From the group that flowered for the first time in 2006, 9 had no seed production.

We have created 8 accessions from this overall population and will be evaluating these in 2007 for potential release. None are completely sterile, although several produce a very small amount of seed.

A further group of plants were selected that produced flower buds on May 11, 2006 and were still flowering on September 28, 2006. While these plants are lacking one or more attribute that would be necessary to release them as cultivars, we plan to intercross these plants in 2007, as well as collect seed and evaluate these open-pollinated plants in 2007.

In addition to the evaluation of the DWF-07-00 population, in 2006 we added a second population of plants from irradiated seed of “White Chocolate’ with the goal of expanding the palette of floral and vegetative traits in a sterile *Lagerstroemia* cultivar. We grew a total of 778 plants. From this population, 503 (65%) flowered this first year, and we identified 8 that did not set seed. We self-pollinated flowers from a number of promising plants and will be evaluating these offspring next year for sterility.

We have identified 44 accessions that we are testing further for potential cultivar release. These accessions have a range of flower colors and plant sizes, many with a desirable red/dark green foliage similar to ‘White Chocolate.’

Discussion
We anticipated we would need to create second-generation plants to uncover more sterility, but have been pleased to find plants with few or no seed in these initial populations. Unfortunately the number of plants is

small, and none have outstanding horticultural value. We will grow out second-generation plants next year, and we expect the proportion of sterile plants will be greater. These populations also gave us a number of promising accessions that we will evaluate further next year for possible cultivar release, although all produce at least some seed.

Significance to industry

This breeding and genetic research is long-term. We have a plan in place to create sterility and are already seeing some positive results. We also have created the genetic basis to select plant types with extended flower period. In the short term, we have created 52 accessions from these populations that we are testing for potential cultivar release.