

Breeding for New Cultivars and Sterility

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Introduction: New and unique plants continue to fuel the growth of the nursery industry. New plants are also economically viable since they often have higher profit margins. Clearly there is a demand for new woody nursery crops and research on the development of new crops is an endless project.

Lagerstroemia subcostata, White-bark crape myrtle or Monkey slip tree, is an attractive small summer flowering tree or shrub with ornamental potential. The tree gets its common name from the peeling bark that exposes the whitish-bark underneath that is so smooth that it is difficult for monkeys to climb - thus monkey slip tree! Species of crape myrtles known to be cold hardy in zone 7 include *L. indica*, *L. fauriei*, *L. limii*, and *L. subcostata*. The first three species have been utilized in breeding programs at the National Arboretum. No information could be found on the use of *L. subcostata* (LS) in breeding or selection programs.

Flowers of LS are reported to be white, pink, and purple. In Asia, LS grows in forest margins and along streams in southern China, Taiwan, Japan and the Phillipines at low to medium elevations. The objectives of this research are 1) to collect and grow out seedlings of LS, 2) to grow out seedlings of open-pollinated LS that have been exposed to other cultivars of *L. indica* or hybrids, and 3) to develop protocols to develop tetraploid forms for selection and/or breeding. Seed was collected from a 1) a seedling tree from Taiwan growing in Tifton or 2) a tree growing in the landscape at a commercial nursery in Cairo, GA.

Prunus caroliniana, Carolina Laurelcherry or cherry laurel, is native to the coastal plain region and lower piedmont from coastal North Carolina thru eastern Texas. Cherry laurel is a good native plant for wildlife plantings as it provides excellent cover and abundant fruit in the fall. This plant also performs well on drier sites and has good drought resistance in the landscape. However, in shady garden situations the seed germinates readily and the plant is considered a nuisance in many gardens. Development of sterile forms and with compact growth habits would be a plus.

The objectives of this research was to 1) irradiate seedlings with 0, 50 Gy, 100 Gy and 150 Gy of gamma-irradiation and 2) make selections which are compact, easily propagated, and are sterile. Seeds were collected from the selection 'Compacta' and a wild seedling.

Summary: Two hundred and fourty seven open pollinated seedlings of *L. subcostata* from a container-grown tree in Tifton and 222 open pollinated seedlings from Cairo were taken to CANR in spring of 2011. Liners were shifted to #3 containers on 20 June, 2011. On 28 November, 2011, 228 seedlings from Tifton and 213 seedlings from Cairo were discarded. Plants that were kept were selected for form, flower color, or fall color. Additionally, seed from Tifton was treated with a spray application of orzalin at 150

um for one, three or seven days. Twenty one control plants, 25 one day treatment, 23 three day treatment, and 31 seven day treatment seedlings were taken to CANR and shifted to #7 containers on 22 April, 2011. On 10 December, 2012, 37 plants from all studies mentioned above growing in #7 containers were taken to the Durham Horticultural Farm in Watkinsville, GA where they were planted in the field for further evaluation. Additional seedlings treated with oryzalin for 30 days will be taken to CANR in 2013 as earlier treatments for 1-7 days did not appear to create any polyploid plants based on visual observations.

Thirty four seedlings of *P. caroliniana* 'Compacta' and 16 seedlings from a wild seedling that were irradiated in January of 2008 were taken to CANR and shifted to #7 containers on 2 June, 2010. Plants flowered and set seed in 2011, but seed was harvested too soon and did not germinate. Seed was collected again in fall of 2012 after the fruit turned purple/black. Over 1000 M2 seedlings have germinated after a 60 day cold stratification period. M2 seedlings will be grown out in containers and evaluated at CANR. Four of the original 48 M1 seedlings were taken back to UGA and planted in the field since they appear to be compact and sterile.