SALT TOLERANCE OF BARRIER ISLAND SLASH PINE

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Hurricane storm surges in coastal areas often flood barrier islands and mainland beaches with salt water causing extensive mortality of forest trees. Hurricane Katrina in 2005 was especially lethal to slash pine (*Pinus elliottii* var *elliottii*) on the barrier islands in the northern Gulf of Mexico. Recently, restoration of slash pine on some of the islands has been proposed. The question was raised about planting stock. Would nursery-run seedlings from the mainland survive the next storm? Little is known about salt tolerance of slash pine from the islands compared to mainland populations. We collected seed from individual slash pine trees from three populations: 1. Mainland, mostly Harrison County in south Mississippi, 2. Deer Island, just offshore from Biloxi MS, and 3. Cat Island, a barrier island 10 miles offshore from Long Beach, Mississippi. We also included two families of loblolly pine (*P. taeda*) as it is common in south Mississippi but does not occur on the islands. Seed from the half-sib families were germinated and grown for 9 weeks in containers prior to treatments in this experiment. There were four treatments:

1) 3.5% salt water concentration (approximating sea water), 15 minutes total submersion
2) 3.5% salt water concentration, 15 minutes root submersion only
3) 1.75% salt water concentration, 15 minutes total submersion
4) 1.75% salt water concentration, 15 minutes root submersion only

Treatments 1, 2, and 3 caused total mortality by 10 weeks. Treatment 4 caused around 60% mortality by 13 weeks, but showed differentiation among seed sources and half-sib families. The order of survival of sources after 13 weeks was: 1.Cat Island, 2. Deer Island, 3. Mainland, and 4. Loblolly pine. This preliminary trial showed the existence of differences in salt tolerance among and within seed sources of slash pine.

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