Florida Department of Transportation
Summary of Final Report, BC-354-5
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FLORIDA NATIVE TURFGRASS INVESTIGATION II

PROBLEM STATEMENT

The Florida Department of Transportation (FDOT) has committed to the use of native plant species along rights-of-way (FDOT 1983). Non-native turfgrasses are commonly planted along highways, as well as in retention ponds and lawns, for soil stabilization and landscaping purposes. Native species, however, would be more desirable in natural areas and less costly than non-native, invasive sod species that often need to be controlled.

OBJECTIVES

The primary objectives of this study were to (1) examine the potential for use of native salt intolerant turfgrasses, and (2) to develop recommendations for the use of native turfgrasses in roadside revegetation and for future research needs.

Since vegetative communities in inland and coastal areas of the state vary in their salt exposure and salt-tolerance (Johnson et al., 1990), the research was conducted both at inland and at coastal test sites. Disney Wilderness Preserve (inland) is comprised of wetland, flatwoods, and scrub communities, and is neutral to acidic soils. Blowing Rocks Preserve (coastal) has halophytic vegetation, alkaline soils, and frequent saltwater spray from the adjacent Atlantic Ocean.

FINDINGS AND CONCLUSIONS

This project continues work begun in 1998 (*Contract BB-533*, WPI# 0510826), at which time minimal research and implementation on the potential for developing native turfgrasses existed in Florida. Two native Florida grass species within the same genus as bahiagrass, seashore paspalum *(Paspalum vaginatum)* and knotgrass *(Paspalum distichum),* are cultivated and planted in other states and countries (Malcolm and Lang 1969, Wong et al. 1983, Duncan 1996), but neither are utilized by FDOT. Currently, two native Florida grasses, *P. vaginatum* and *Sporobolus virginicus,* are commercially available as sod and planted in a few locations around the state.

The following are among the conclusions researchers reached regarding the potential for using native grasses in situations where turfgrass is desired:

- *Paspalum vaginatum* and *S. virginicus* are coastal species that have potential for use as native turfgrass. Both are promising when planted as sod. *S. virginicus* may not require mowing, but *P. vaginatum* would need regular mowing to maintain dense growth and be within FDOT standards for roadside grass heights. Both species have acceptable green color during the growing season. *P. vaginatum* tends to turn brown in the dry, winter season.

  Retention of color during the dry, winter months and a low-growth form suggests that S. *virginicus* is the more promising of the two species for use on saline rights-of-way. Both species also developed well when planted as sprigs or plugs. Vegetative cover from plugs was initially higher; however, over time the cover converged despite differences in mortality.

- For inland flatwoods and prairie conditions, *P. distichum* has promising potential as a turfgrass. Irrigated sprigs were successful in two experiments and did not suffer from the effects of being planted on a roadside. *Paspalum distichum* should also be explored for sod development.

- *Eustachys petraea* is another inland species with turfgrass potential and is among several other species that should be further investigated. *Eustachys petraea* and *Eragrostis refracta* established well when directly seeded into plots in the pasture experiment. In the roadside experiment, *E. petraea* produced very high cover when directly seeded and was not negatively impacted by roadside conditions. However, *E. petraea* started turning brown in September 2000. It has not been determined whether this premature initiation of winter dormancy was due to the drought or a shorter green period, linked to species, than would be desirable for aesthetic reasons.

  Eragrostis refracta did not establish as well on the roadside, perhaps because of the timing of sowing. Although *Panicum anceps* and *Paspalum setaceum* did not germinate sufficiently in the pasture plots to produce good cover, they had the highest germination of the seeded species in the shadehouse and could still have good potential as turfgrasses if better methods of direct seeding were researched. Because of the low germination rates of most species, researchers recommend the relatively high sowing rates of 20-30 lbs seed/acre unless methods for enhancing germination are developed.

- Planting sod appears to be the most successful method for establishing native species as turf, particularly where other aggressive species are already present. *Paspalum vaginatum* and *Sporobolus virginicus* are salt-tolerant species currently grown commercially as sod. However, no salt-intolerant species are being grown commercially as sod. *Paspalum distichum,* already available as plugs, may be the easiest new species to develop for commercial sod production.

- Site preparation is an essential step in revegetating roadsides and establishing native turfgrasses when a seedbank may be present. Frequent and lengthy site preparation can reduce the seedbank of undesirable, non-planted species from competing with planted species. In the two experiments where site preparation was conducted for longer periods of time and with more frequent disking and herbicide application, the success of non-planted species decreased while the success of planted species increased. However, leaving bare soil exposed adjacent to road edges may not be feasible because of erosion concerns. More effective pre-emergent herbicide applications may be necessary in those situations.

- Extensive seed preparation efforts appear unnecessary for most of the native species. In the seed germination trials, *Panicum anceps* and *Paspalum setaceum* had high germination percentages. Most species did not show increased germination after pre-germination treatment, except for *P. setaceum,* which showed increased seed germination when treated with sulfuric acid.

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NOTICE:
Since we completed this research and report, we have learned that some researchers suspect that *Paspalum vaginatum* is not native to Florida. The genetic research needed to evaluate this hypothesis has not yet been conducted. However, we wish to caution readers that we do not know whether the coarse-leaved *P. vaginatum* ecotype is indeed a native substitute for non-native turfgrasses. We suggest that this species be used only experimentally until the origin can be identified. We apologize for the confusion that this clarification causes.

Doria Gordon, Amy Miller, and Michael Renda, The Nature Conservancy 2002