Utilizing Bioengineering Techniques to Restore Woody Vegetation on Florida Phosphate Minelands

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Bioengineering is a restoration technique that consists of planting whips or live stakes to stabilize the banks of streams and ditches with low to moderate flow velocities. Whips are long stems of easily rooted trees or shrubs, between ¾ to 1 ½ inches in diameter. Bioengineering has the potential to provide a cost effective way of incorporating important wildlife habitat on mined land, but has not been tested under Florida conditions. The USDA, Natural Resources Conservation Service, Brooksville Plant Materials Center was asked by the Florida Department of Environmental Protection, Bureau of Mining and Mineral Regulation and Mosaic, LLC to test the effectiveness of bioengineering at three Mosaic restoration sites. Two planting dates, January (dry season) and July (wet season) were tested for two years (2008 and 2009). Single whips of seventeen species (varied between planting dates) were planted at three elevations, starting at the water's edge and 10 feet and 20 feet upslope from the water. Carolina willow (*Salix caroliniana*) and elderberry (*Sambucus nigra* ssp. *canadensis*) established at all sites and elevations. Coralbean (*Erythrina herbacea*), buttonbush (*Cephalanthus occidentalis*), and swamp dogwood (*Cornus foemina*) are also promising and success may be improved with more consistent cutting material.