

Invited Papers

Southern Pine Tree Improvement – A Living Success Story

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The U.S. South can boast of the productivity, quality, and value gains realized from plantation forestry that silviculturists and tree breeders have developed the past 50+ years. From the beginning of tree improvement programs in the region, the focus has been on selecting, breeding, testing, and planting trees that provide landowners with the greatest return on their investments. The agrarian culture, available land, favorable political and social attitudes towards production forestry, productive soils, and a moderate climate all favor the growth of plantation forestry in the South. The trend in recent years has been for increasing intensity of forest management of these acres. With global demand for timber products increasing at the same time as the area of the world's forests is decreasing, increased productivity of southern plantations has local, regional, national, and global implications. These plantations help provide timber to meet increasing demands while simultaneously reducing the environmental footprint of industrial forestry by growing more wood on less area.

Foresters in the southern United States are responsible for over 75% of the nation's tree planting, and over 95% of these seedlings are genetically improved loblolly and slash pines. Deployment practices such as planting only the best open-pollinated (OP) families to the best sites are resulting in dramatic increases in productivity. Increased resistance to fusiform rust disease, especially in slash pine, has also had major impacts on plantation yields. Annually, 59% of the loblolly and 43% of the slash are being deployed as OP families by companies and small landowners. Over the last 10 years, seed orchard managers have had great success in developing methods to mass produce full-sib families for operational planting. The gains from improved quality and yield are very impressive when both the female and male parents are selected. Our estimate is that approximately 40 million full-sib seedlings have been planted each of the last 3 to 5 planting seasons. Propagation of selected clones has become a reality via somatic embryogenesis (SE), and the gains to be realized from planting these outstanding genotypes are tremendous. To date, almost 10 million seedling of somatic embryogenic clones have been planted, and the numbers are increasing annually.

Even with the changes in land ownership and the loss of the integrated forest products companies, we are optimistic that tree improvement and intensive silviculture will continue to be mainstays of forest management in the South. The challenges to the large tree improvement cooperatives are numerous, but support is still strong, and gains continue to be made.

The similarities and differences between breeding and plantation programs in the southern region and the Pacific Northwest of the United States will be discussed.