

TRENDS IN GERMPLASM DEPLOYMENT OF LOBLOLLY PINE IN THE SOUTHERN US

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Deployment practices have changed dramatically for southern pine as breeding programs have intensified and better germplasm has become available. As part of the Pine Integrated Network: Education, Mitigation, and Adaptation project (PINEMAP) sponsored by a USDA National Institute of Food and Agriculture grant, we surveyed seedling vendors who are members of the three pine tree improvement cooperatives in the South to quantify how many seedlings of various types are being planted and determine any evidence of risks associated with planting relatively more genetically homogeneous seedlots such as specific full-sibling families or clonal varieties.

In the 2011, 2012, and 2013 planting seasons, 31 cooperative members grew an average of 843.5 million tree seedlings per year. This is 37% fewer than the 1.35 billion seedlings grown yearly during the previous survey period of 2000-2002. Of these 843.5 million seedlings, 87.1% (734.6 MM) were loblolly pine, 6.1% (51.1 MM) slash pine, 5.7% (48.5 MM) longleaf, and 1.1% other conifers and hardwoods.

In the last 10 years, the most dramatic change for loblolly pine is that 95% of plantations are now being established as genetically more homogeneous stands to capture greater gains in yield and value from improved genetics. In the previous survey, 59% of loblolly stands were planted with open-pollinated (OP) families and the rest with mixtures of seedlings from different mother trees. Today, the vast majority of stands (85%) are planted with OP families. About 8% of stands are planted with full-sib families and about 2% with clones. Landowners can now choose families that best match their management goals.

To determine risks associated with establishing plantations with relatively more homogeneous germplasm, we asked respondents if they were aware of any unexpected environmental or pest problems (e.g. diseases, insects, cold, or storm damage) encountered with family block plantings. One of the 33 respondents experienced freeze damage with one southern coastal family planted in northern environments that were colder than recommended, and one family consistently showed about 10% lower survival compared to others. No respondents were aware of any outright plantation failures due to the use of family blocks.

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