Tree Improvement at Missouri State Nurseries

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Our first setback in forest genetics which can be recalled occurred during the winter of 1951-52. A small amount of loblolly pine had been sown in the nursery the previous spring. This was the first attempt to grow loblolly pine in our nursery. The seedlings were very impressive and by fall were taller and had larger stem caliper than our native shortleaf pine seedlings. Unfortunately, a severe weather aberration occurred during January, with the temperature dipping to 13 degrees below 0. Every loblolly pine seedling turned a sickly white color and died as a result of the low temperature.

The seed had been purchased and sown before my employment at the nursery and there was no record of the source of the seed. Upon checking with the seed dealer, we found it to be from a southern Georgia source. Since that time, seed has been purchased by specifying very strict limits regarding source and no problems have been encountered.

In addition to our rigid standards of seed selection, we have tried to advise landowners to plant trees on the most favorable sites. Loblolly pine has been recommended only in the southern half of the state.

Eastern white pine has been planted in Missouri for many years, using a seed source from the Lake States. In the southern hill sections, white pine does quite well on good soils with a northern exposure. It does well on many of the soils in the northern half of the state.

Early experience showed a distinct problem with planted seedlings. Growth would be practically nil the first 2 or 3 years and a large percentage would fail to survive the hot, dry August and September of the first year. A small percentage would fail to survive the second summer. A change in seed source, from Lake States to North Carolina, has eliminated many of the disadvantages in planting white pine. Growth of 19 inches the first year is not uncommon, although some mortality may be expected, especially during August and September of the first year.

Scotch pine has been grown in our nurseries for many years and is used primarily for Christmas tree planting stock. Seed of the Austrian hills' source had been used until the sowing of the 1964 crop. By this time it had become clear that the Austrian seedlings were presenting a problem of the discoloration of foliage just prior to harvest time.

Inquiries at the School of Forestry, University of Missouri, brought the suggestion from Professor Brooks Polk that we change to Spanish Quadarrama or French D'Auvergne seed. Due to the unavailability of the Spanish seed, the French source was used for the 1964 seeding. Early plantings of the French D'Auvergne seedlings show survival to be equal to the Austrian strain, growth rate slightly less, and excellent color retention beyond the Christmas season.

A further development in tree improvement is the selection of some superior black walnut trees. These will be propagated both vegetatively and by seed to eventually establish seed orchards. This may be slightly confounded by the necessity of trying to grow large crops of nuts along with excellent boles for timber production.

Work is progressing well on the collection and processing of seed from our shortleaf pine seed production areas. Early collections are showing the seed of general collections. Seed orchards from superior trees are in the near future.

A general interest is being shown in the production of clonal stock of exceptional eastern cottonwood. Clones of several selected trees will be planted this fall to establish cutting-wood orchards. Production of rooted cuttings will follow in nursery beds. Clonal material will be furnished by a large industrial organization now producing such material in large quantities.

In every instance, we have attempted to cooperate in the tree improvement program. We realize the many advantages to be gained, even in a relatively short time.