

WHAT'S NEW IN FOREST TREE IMPROVEMENT PROGRAMS
IN THE EASTERN REGION

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It's a pleasure to be with you and discuss Forest Tree Improvement as conducted in the Eastern Region of the U. S. Forest Service. After working closely with our Forest Service Nurserymen since 1965, I am convinced that Nurserymen play an extremely important role in introducing genetically improved planting stock to the forest land manager.

The objective of our forest genetics program is to develop a reliable source of improved seed that 'will produce fast-growing, high-quality, disease-resistant forest trees. We also hope to develop reliable seed sources for wildlife,

First we delineated 14 seed collection zones for the Region based mainly on climatic data. Within each seed zone superior stands of native conifers were selected as Seed Production Areas . Seed has been collected in many of these stands. Most of the white spruce seed and some of the red pine seed used in our Federal Nurseries now originate from the SPA's. Our Nurserymen keep our seed separated by seed zones and by source within a zone, Seedlings produced from seed collected in a particular zone are planted back in that same zone. If our progeny tests , or results from the Institute of Forest Genetics, and Universities indicate that seeds collected in one zone will grow better when planted in one or several other zones, the seedlings will be distributed accordingly.

A review of our forest tree improvement program work on the National Forests I'll begin in the Eastern United States, follow with the Southern area of our Region, and end up with the progress here in the Lake States. You can see the size of our program and of our accomplishments from the four summary tables.

The major tree improvement effort on the Green and White Mountain National Forests is with yellow birch. Superior birch selections from the Eastern United States, the Lake States and the Eastern Provinces of Canada have been included in four progeny tests and two progeny test/seed orchards on these two Forests, Additional selected material will be added to these tests next spring. All these seedlings were grown by Ingersoll Arnold at the New Hampshire State Nursery. We also cooperate with the Northern New England Spruce-Fir Improvement Committee's effort to improve white spruce and balsam fir,

The program emphasis for the Allegheny and Monongahela National Forests is toward improved black cherry, yellow birch and to a lesser extent tulip poplar

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and white ash Twenty-five seed orchards and progeny tests have been established on these two Forests. 1/

Black walnut, tulip poplar and shortleaf pine are the key species for improvement on the Wayne, Hoosier, Shawnee, and National Forests in Missouri . The black walnut and tulip poplar programs are conducted in cooperation with the North Central Forest Experiment Station at Carbondale , Illinois. 2/ The shortleaf pine program has the cooperation of Region 8 The shortleaf selections made on the National Forests in Missouri were grafted by Region 8 personnel and established in a seed orchard on the Ouachita National Forest in West Central Arkansas. Now we are collecting seed from all of our shortleaf selections for a progeny test ,

Tree improvement on National Forests in the Lake States focuses mainly on eastern white pine (for blister-rust-resistance and growth) white and black spruce and yellow birch. We also are working with red and jack pine, black cherry, paper birch, sugar maple and red oak Individual superior tree selections are made throughout the Lake States. However, all of the seed orchard work is concentrated at the Oconto River Seed Orchard located about 30 miles east of Antigo, Wisconsin. In contrast to the Eastern programs where the seed orchards are of the seedling type, **all** the species seed orchards in the Lake States are clonal. These grafts were produced at Eveleth and J, W Tournay Nurseries 0 Individual seed orchards are established for each major seed zone . The seed produced for a given zone will be outplanted in that zone.

Seed has been collected from many of the superior tree selections . These will be incorporated into progeny tests. Several of the white pine and white spruce grafts in the seed orchard are already flowering Controlled pollinations are made and this seed will be incorporated into the progeny tests , These progeny tests will reinforce or modify the existing seed zones, as well as provide material for second generation seed orchards .

In addition to the above, a white spruce seed orchard and a jack pine full-sib progeny test have been established with cooperation from the Institute of Forest Genetics at Rhinelander, Wisconsin. A hybrid aspen planting is planned for next spring with the help of the Institute of Paper Chemistry and the Institute of Forest Genetics . All of these plantings will be at the Oconto River site.

1/The black cherry seedlings were grown in cooperation with the State of Pennsylvania by Charles Cooper at the Clearfield Nursery.

2/Seedlings for the progeny tests have been grown at Vallonia Nursery by Stu Pequignot .

The largest cooperative project is the eastern white pine blister-rust-resistant development program. 3/ The State Departments of Agriculture and Natural Resources in Michigan, Minnesota and Wisconsin are all involved as is Forest Service Research and the University of Wisconsin. Over 800 rust-free selections have been made in the three states. These selections are grafted and growing at the Oconto River Seed Orchard. The first controlled inoculations are being evaluated this summer,

Tree improvement program in the Eastern Region involves most of the commercially important species growing in numerous forest types over a large geographic range. The seed orchards should produce large quantities of seed within the next few years. Initial progeny test results should also be available within the next decade. As the seed and progeny test information becomes available, our efforts will be to insure the improved plant materials become available to the Nurserymen and the state organizations for use by the forest land managers



Miller, R. G. 1972. The eastern white pine cooperative blister-rust resistance development program. Northeast Forest Tree Improvement Conference Proceedings Vol, 20 p, 115.