

Tree Improvement

Session I

Tree Improvement in Maine by the Maine Forest Service

The tree improvement program of the Maine Forest Service started officially with a memorandum. from Austin Wilkins, Forest Commissioner, to landowners, Service Foresters, and cooperators. This memorandum was dated 5 July 1961, and outlined a proposal to establish seed production areas for each major species grown at the State Forest Nursery. The State was divided into three climatic zones as shown on the attached map. These zones roughly paralleled zones 3, 4, and 5 of the Plant Hardiness Zone Map prepared by the U. S. Department of Agriculture. The number of pounds of seed which would be needed annually was determined by estimating the annual seedling requirements for each zone. It was planned to secure a three-year supply of seed during a good seed year and the seed production acreage requirements by species were determined for each zone on this basis.

The Statewide totals are:

<u>Species</u>	<u>Pounds</u>	<u>Area (Acres)</u>
White Pine	1,000	50
Red Pine	200	28
White Spruce	300	24
Norway Spruce	300	14

The objective of the seed production area program is simply to provide seed of known geographic origin. Hopefully, this seed will produce seedlings that will be better adapted to the environment than seed obtained on the open market.

Management of these areas will be by the local Service Foresters and will include thinnings based on phenotypic selection as well as various practices to stimulate cone production. Provenance tests will be made as seed becomes available and will include, for comparison, sources other than the seed from production areas.

In the Fall of 1963, Commissioner Wilkins spotted a potential white spruce seed production area in Wyman Township. This area was established officially in 1964 as our first seed

production area. It is an old field stand, 20-40 years old and is located in Wyman Township near the Mt. Sugarloaf Ski Area. (Growth has been about one foot in height per year.) Spacing is quite variable ranging from thickets to areas that are completely free of trees. A small portion, perhaps a quarter acre in size, was thinned to an eight-foot spacing. This will probably not be done in the remaining thickets because of the expense involved. The plan in the open areas is simply to remove poor trees and to thin clumps of trees. The trees will be topped during cone picking to keep them within easy reach.

Since the State of Maine owns very little forest land, the establishment of seed production areas must be a cooperative venture involving the landowner and the State. The Wyman area is a good example of this. It is located on the Wyman Township Public Lot which is held in trust by the State pending the incorporation of the town. However, in the 1850's the legislature sold the timber and grass rights; they are now owned by the J. M. Huber Corporation. A fifteen-year agreement was reached with the Huber Corporation for the use of seed from the area.

At this time there are four stands under consideration for designation as seed production areas. These are:

1. Two Norway spruce plantations, one in Bingham and one in Mt. Chase Plantation.
2. White pine, natural stand in the Standish area.
3. European larch plantation in the Bingham area.
(Pending the establishment of larch as a species to be grown by the State Forest Nursery.)

A greenhouse has been constructed at the State Forest Nursery partly in anticipation of an expanded program of tree improvement work. This facility will provide work space for a grafting program (probably white spruce and white pine). However, before grafting can be carried out, the individual tree selections must be made. It is this phase of the program which is critical at the present time. Active cooperation within the Maine Forest Service, with other agencies, and individuals or organizations is required in order for the program to proceed.

In the Spring of 1965, a white pine provenance test of 132 sources and a white spruce test of 30 sources were planted at the Nursery.

The white spruce provenance test is one of a series of six: four planted in Canada , one in New York State and one in Maine. It is part of an experiment being conducted by the Consolidated Paper Corporation of Canada.

The white pine test is part of a study being conducted by Dr. John Genys of the Maryland Natural Resources Institute. There are similar plantings in the eight other states and in Germany, India, and Australia. The sources are from throughout the natural range of Eastern white pine. In addition, several closely related species are represented including:

- Himalayan white pine
- Western white pine
- Sugar pine
- Korean white pine
- Mexican white pine
- Macedonian white pine
- Limber pine
- Japanese red pine

As this plantation matures, it will become a valuable source of material for the study of interspecific hybridization and phenology and taxonomy of these sources with particular reference to the possible existence of geographic rases.

The Maine Christmas Tree Growers Association expressed an interest in starting a balsam fir improvement program. The State Forest Nursery and the University of Maine School of Forestry agreed to cooperate with them in such a program provided the members select the desired type of trees, collect seed from these trees, and mark the trees for preservation. The initial enthusiasm resulted in seed from only three trees.

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