PROGRESS REPORT ON FOREST TREE IMPROVEMENT STUDIES AT THE UNIVERSITY OF MINNESOTA

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In view of the fact that I have become an official and functional member of the School of Forestry staff at the University of Minnesota only very recently, you might well question my qualifications for reporting on the University's forest tree improvement activities during the past 2 years. Fortunately, I have found the records up to date, and a group of colleagues who have been happy and willing to provide me expert briefing.

JACK PINE SEED SOURCE STUDIES

The jack pine seed source study initiated by Dr. Schantz-Hansen at the Cloquet Experimental Forest during the period 1939-43 was summarized at the first Lake States Forest Tree Improvement Conference (4).2/ (For further reference to this work see also Schantz-Hansen and Jensen (5, 6, 7).) The primary objective of this study is to assess the degree of genetic diversity that exists within the species throughout its natural range. Although apparent intersource differences in survival, growth rate, and crown form have been recorded during the first 12 years, final assessments of the degree and persistence of such diversity cannot be made for several years,

In cooperation with the Lake States Forest Experiment Station, the Minnesota Conservation Department, the Wisconsin Conservation Department, and other interested agencies, a new study of jack pine seed source was initiated in 1954. Whereas the original tests were designed to study variation of jack pine throughout its natural range, the new study has been restricted to an assessment of variation on the regional level. The more than 30 seed sources concerned in this study are all of Lake States' origin and are under test in 17 plantations scattered throughout Minnesota, Wisconsin, and Michigan,

A proposed logical extension of the jack pine seed source investigations might well involve a further refinement in the sampling and testing method such that variation on the local stand and individual tree level may be determined. In association with such work, the feasibility of establishing seed orchards should be investigated.

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2/ Underlined numbers in parentheses refer to the list of numbered references at the end of this paper.

POPLAR, ELM, AND BLUE SPRUCE SELECTION AND TESTING

A progress report on studies concerned with the selection and testing of poplar, elm, and blue spruce during the period 1947-53 was presented by Dr, Duncan at the first Lake States Forest Tree Improvement Conference (1). The primary objective of this work is to isolate hardy, disease-resistant, and vigorous materials adapted for windbreak or ornamental planting and, in the case of poplar, veneer, sawlog, and pulp production as well, (See also Duncan and Kaufert (2))

The poplar tests, involving some 120 clonal lines of cottonwood and balsam poplar selected wildings, and species hybrids within and between these sections, have been carried on in cooperation with the Mayo.Institute of Experimental Medicine at Rochester, Minnesota, on a good bottomland site, Other test plantings at the University of Minnesota's Rosemount Agricultural Experiment Station, a few miles south of St, Paul, are on less favorable sites, Based primarily on canker resistance and growth vigor over the initial 6-year period of the tests at Rochester, 10 clonal lines have been selected as promising for use in southeastern Minnesota (3)0

The elm studies, concerned essentially with the isolation of disease-resistant and otherwise suitable forms adapted for shelterbelt and ornamental planting in Minnesota, are continuing. Of special interest is a 4-year-old planting of a Siberian elm (Ulmus pumila) progeny grown from the open pollinated seed of a street tree growing in the City of Minneapolis, The plants show wide variation in leaf and branching characteristics and crown form, Since a number of the plants appear to be intermediate between Siberian and American elm, they are presumed to be F1 hybrids. Such an interesting situation suggests that similar trials of seed collected from ornamentals in other genera growing in close association with related species may prove a fruitful field for investigation.

Studies of variation in Colorado blue spruce continue in cooperation with the Hormel Institute at Austin, Minnesota, Special interest is directed to the identification of races or individuals better adapted to Minnesota's prairie sites, where the plant is in much demand for ornamental and windbreak plantings. Although this species, among all the conifers, shows the best survival on heavy soils, the sources now grown are not fully hardy and suffer from attack by Cytospora canker.

GRADUATE TRAINING AND RESEARCH IN FOREST GENETICS

One of the tree improvement projects that has received primary attention at the University of Minnesota's School of Forestry during the past 2 years has only recently emerged from the formative stage. Through the efforts of Dr, F. H. Kaufert the development of a graduate training program in forest genetics has recently been completed, Although a "progress" report is somewhat premature at this early date, I can at least assure you that we are now open for business.

CHARLES K. BLANDIN FOUNDATION GRANT

In association with the graduate training program, research in forest genetics and tree improvement fields will be materially expanded. Under terms of a grant by the Charles K. Blandin Foundation, major field research activities in forest genetics will be centered at Grand Rapids, Minnesota, in cooperation with the University's North Central School and Experiment Station.

CABOT FOUNDATION COOPERATION

Through a cooperative arrangement with the Cabot Foundation of Harvard University, studies on mode of inheritance and ecotypic variation in cottonwood, balsam poplar, aspen, red oak, white pine, and red pine will be continued at the University of Minnesota. A major portion of the Populus materials involved in these studies was propagated and lined out in nursery beds at the North Central School and Experiment Station this past spring,

With the expanding tree improvement research efforts of the Lake States Forest Experiment Station, and the increasing interest of Minnesota's forest industries, the outlook for forest genetics and tree improvement research in Minnesota at this time is in all respects most promising.

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