

Report on Research at the Forest Products Laboratory
of Interest to Forest Geneticists

by Harold L. Mitchell 1/

Since the question usually arises, I might begin by explaining why it is that we do not do more work on Lake States species. It is largely a matter of economics. The Lake States combined have only 4.8 percent of the Nation's total growing stock and only 2.4 percent of the total sawtimber. When you start breaking these figures down by species or even species groups, the contribution of any one to the national woodpile becomes infinitesimal. Thus, an organization with national and international interests and responsibilities, we can't logically justify much more than we are now doing on local species--and certainly not on the basis of the fact that our physical plant happens to be located in Wisconsin.

On the other hand, we have by no means neglected Lake States species, as this brief report will show. Moreover, practically all of our research on the improvement of both methods and equipment for determining wood-quality factors is as applicable to Lake States species as to any others.

As I indicated in my previous talk, a good part of our work during the past year or so was in connection with making laboratory determinations on increment cores from the Mississippi Forest Survey. Next year this work will be extended to Arkansas, again in cooperation with the Southern Forest Experiment Station and, we hope, into Missouri in cooperation with the Lake States and Central States Stations. The new work, together with the Mississippi data, will provide good information on the wood

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quality of shortleaf pine and also loblolly, all the way from the Gulf to the northern limits of their respective natural ranges.

Another major activity was our cooperation with the California Station on a study of racial variation of ponderosa pine over its entire natural range. The sampling in this case was less intensive than in the Mississippi Survey but covered a much greater area, extending from Mexico to British Columbia and east to the Black Hills and Nebraska sandhills. Wood-quality determinations were made of increment cores taken from selected trees on many of the sample plots.

In cooperation with various Universities and Forest Experiment Stations, we continued long-range basic studies of the influence of various environmental factors and silvicultural practices on wood quality, and of the heritability of fibril angle, specific gravity, and other quality indicators. The species studied included, southern pines, various pine hybrids, Douglas-fir, ponderosa pine, red pine, aspen, hybrid poplars, cottonwood, and red oak

Substantial progress was also made in the development of new methods and equipment. Important contributions in this field include: (1) A taper gage for calibrating standard increment borers; (2) Smith's maximum moisture technique for making precise specific gravity determinations on increment cores, including separated springwood and summerwood specimens from single annual rings; (3) Mart's fluorescence microscopy technique for making direct measurements of fibril angle; and (4) a new design traversing microscope for making fast accurate measurements of summerwood.