## International Union Seed Source Studies

## of Scotch Pine and Norway Spruce

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For many years racial variation of forest trees has been a challenge to foresters in Europe where trees have been planted extensively for a couple of centuries. Studies dating back more than 100 years have enabled European foresters to improve management practices in several respects:

1. Decreased yields resulting from the planting of races poorly adapted to particular environmental conditions are now avoided.

2. Yields can in some instances be increased through the planting of races better adapted than local races.

3. By selecting and crossbreeding the right races, it has been possible to increase yields over and above what any naturally occurring races could produce.

4. Studies have furnished information essential for the production of high-yielding species hybrids.

This is the type of data that well-designed seed source studies will supply.

These plots on the Pike Bay Experimental Forest are one of the two plantings in the Lake States of seed source studies sponsored by the International Union of Forest Research Organizations and initiated just before World War II. The same material has been planted in New England and throughout Europe. The trees are now 25 years from seed, the original spacing was 2 x 2 feet, the first thinning was completed 1951, and thinning has been repeated since then.

Formal measurements have not been made in the Pike Bay plots. However, local observations on winter injury of Scotch pine indicate seed source differences--Northern European and Russian collections are not damaged, while Southwestern and low-elevation Central European seed sources are. Height measurements--15-year results--on the same seed sources grown at Wellston, Mich., indicate that both spruce and pine seed collected in certain locations in Poland may give the best results in this region.

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One of the current important uses of Scotch pine is for Christmas trees--large areas are being planted in the Lake States annually. For this purpose winter discoloration is of major concern. It is a factor greatly affected by seed source. Southwestern and low-elevation Central European seed sources usually retain the best green color during the winter months.

Hybrids of western white pine and the native species are also being tested at Pike Bay. The hybrids were made in an attempt to develop a new blister rust-resistant strain. It has been a failure because the seed source of the western pine was poorly adapted to the test environment.