The University of Wisconsin

Forest Tree Improvement Research Plots

Starks, Wisconsin

Tour Guide: Robert G. Hitt 1/

The plots at Starks are one of several tree improvement outplanting areas established by the University of Wisconsin. Represented here are seed source plantings of Scotch pine, pine field grafting trials, and unusual forms of red pine.

Scotch Pine Seed Source Study

The University of Wisconsin in cooperation with the Wisconsin Conservation Department has undertaken a number of small-scale provenience trials with Scotch pine. The seed used in these trials was obtained by personal contact from forest genetics research centers, was collected from normal and plus stands in Europe, and is all open-pollinated. The sources do not sample the species' range completely, but they represent a north-south transect through the western part of the range from southern Spain to northern Scandinavia (table 1).

The trial at Starks was established in the spring of 1957 with 2-2 stock. A 5x6 rectangular lattice design was used. Trees were planted on a 6x6-foot spacing in 6x6-tree plots. Each source is represented in each replication once and there are three replications on this trial site. Thus, 36 x 3 or 108 trees of each seed source were planted here. The entire trial is replicated in northwestern Wisconsin near Gordon and portions of the trial are combined with other lots in a trial in central Wisconsin south of Wisconsin Rapids. After only 5 years in the field a number of striking differences between seed lots can be observed.

1/ Assistant Professor, Department of Genetics, University of Wisconsin, Madison 6, Wisconsin.

Table 1.--Origins of Scotch pine used in University of Wisconsin trials at Starks Wis.

Lot number	Seed source
SY-2	Filphus, S. Finnskoga, Sweden; plus stand
SY-4	Fredrika, Västerbotten, Sweden; 64° 15' North Lat.; standard population seed
SY-5	Torsås, Ådalsliden, Ång., Sweden
SY-12	Malilla, Kalmar län, stand collection after open pollination, Sweden
SY-13	Kujdalen, Värmland, Sweden
SY-14	Malselv (N. Norway, inland) (above Arctic Circle)
SY-22	Boden, Lappland, Sweden (near Arctic Circle)
SY-31	Vreten, Västergotland, Sweden
SY-32	Runnsjön, Värmland, Sweden
SY-33	Sjöryd, Västergotland, Sweden
SY-34	Thuna, Gotland, Sweden
SY-35	Horeda, Småland, Sweden
SY-38	Sjöarp, Blekinge, Sweden
SY-39	Everlöf, Skåne, Sweden
SY-40	Sundmo, Ångermanland, Sweden
SY-46	Gräfe, Bleuburgsches Revier Tambach, Germany
SY-47	AF, Lüneburg Pr. D. Suderburg, Germany
SY-48	AF : Dm (V1/3-6) Germany
SY-49	AF : Ndb. Opf. (V/4-7) Stadtforst Tirschenreuth, Germany
SY-50	AF : Lnoaben 100 (V1/Bay. 3-6) F. A. Unterhauser, Germany
SY-51	Wiesbaden 3, Germany
SY-52	Norbaden 66, Germany
SY-53	Wiesbaden 10, Germany
SY-54	Forstamt Falkenberg, Germany
SY-58	Teruel, Spain
SY-59	Granada, Cirro Trebenque, Spain
SY-60	Burgos, Spain
CSY-1	Plantation in Spruce Woods Reserve, Manitoba, Canada

Field Grafting of Pine

Another phase of tree improvement research is that concerned with vegetative propagation. Field grafting is one means of vegetative propagation which has proved to be very satisfactory and relatively inexpensive when compared to greenhouse grafting. The field grafts here on the University Potato Research Farm were made during the spring of 1956. Although they have been managed for other purposes, one can still assess their growth and development reasonable well.

Unusual Forms of Red Pine

Occasionally there occur in forest trees (as in other kinds of plants) unusual or aberrant growth types. These are called mutations. Differing from the normal or wild type, they often provide the plant breeder with material suitable for more detailed genetic studies. A number of mutant types have been found for red pine, one of which is seen here as a compact, bushy growth type. Other mutant types that have been found include a "snake type" and a number of acutely branch-angled or fastigiate individuals. Several suspected color phase mutations are also under observation.