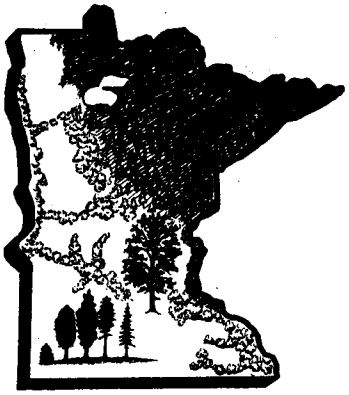

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MINNESOTA FORESTRY NOTES

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SELECTED POPLARS FOR MINNESOTA PLANTINGS (1)

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For windbreaks and shelterbelts, as well as for veneer and sawlog plantings on bottomland subject to periodic flooding, Minnesota farm owners and operators would benefit from a disease-free, hardy, fast-growing, straight grained poplar. Such a poplar, if it could be found, might also have value for pulp production plantings on some sites in Minnesota. With the objective of finding such a tree, about 120 Populus clones were planted on the grounds of the Mayo Institute of Experimental Medicine at Rochester, Minnesota in 1947 and 1948.

Of the clones planted, approximately 75 are hybrids. The remaining 45 are selections from outstanding individual specimens of native cottonwood (P. deltoides) from Minnesota, Wisconsin, and elsewhere in Eastern United States, of black cottonwood (P. trichocarpa) from Montana, Idaho, and Washington or of a few other species which are less well represented. They were planted in 1948 and 1949 as rooted cuttings with a ten by ten foot spacing on fertile bottomland soil subject to occasional spring flooding. Records of growth, disease development and insect attack have been made each year since establishment of the plantings.

The majority of the losses in these plantings have been due to winter injury and cankers. Only about ten per cent of the initial collection appear to be sufficiently hardy or canker resistant to merit further testing. The most promising selections from the standpoint of growth rate and resistance to disease and insect attack are shown in the table.

All clones listed as female have produced seed. Estimates of rooting capacity are based upon rather limited evidence but are at least indicative. Both height and diameter growth are based on eight to twelve specimens grown on a favorable site during the six growing seasons preceding 1955 or 1954. Younger plantings, now four years of age, on a less favorable site at the Rosemount Agricultural Experiment Station have grown somewhat less rapidly.

The exact cause or causes of many of the cankers that developed are not known. Isolation studies have been made each year and the evidence to date indicates that some cankers are caused by a species of Septoria, others are initiated by attack by the poplar and willow borer (Cryptorhynchus lapathi), and still others probably are the result of bacterial wetwood. Once formed these cankers are either calloused-over by the rapid growth of the host or are kept open by secondary fungi and other micro-organisms.

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Populus robusta in the Rochester plantation has attained a height of 53 feet at seven years of age.

Often new cankers are produced on the borders of old. In many clones the stem is distorted or girdled in areas of heavy cankering. Striking differences in resistance to leaf rust also exist in these clones.

P. tristis is included in this table only because it has excellent qualities as an ornamental. It appears to be highly resistant to canker, it holds its lower branches extremely well, and its leaves appear early, forming a heavy rich, dark green foliage.

The short trial period these plantings have undergone is insufficient to thoroughly test their value even for such favorable sites as that at Rochester. However, susceptibility to canker, lack of hardiness, slow growth rate, and other undesirable characteristics have resulted in over 90 per cent of the clones being eliminated from further consideration. The selections described in the table show excellent prospects for use on the heavy soils of southeastern Minnesota, particularly where water tables are near the surface. Additional tesing under a range of site conditions as well as a longer test period will be required before unqualified recommendations are possible.

Clone number	Species or parentage	Source	Sex[1]	Total height six years after planting rooted cuttings (feet)	Average DBH at 6 years (inches)	Degree of cankering	Rooting Capacity
21	*P. deltoides*	Consolidated Pulp and Paper, Univ. of Wisc. #5	M	40	6	Light	Fair
30	*P. tristis*	Kew Gardens, England	F	23	4	Very light	
38	*P. deltoides*	Soil Conservation Service	F	33	5	None	
51	*P. angulata* x *P. berolinensis*	Oxford Paper #32	F	39	5	Very light	Poor
56	*P. charkowiensis* x *P. caudina*	Dow Chemical Co.	M?	44	5	Light	Fair
58	x *P. robusta*	Soil Conservation Service	M	45	6	Light	Good
93	*P. nigra*	Cabot Foundation #18	M?	33	6	Very light	Good
109	x *P. berolinensis*	Cabot Foundation #48	M?	26	6	Very light	
113	*P. generosa* x *P. jackii*	Cabot Foundation #219	M?	26	5	Very light	Good
123	*P. deltoides*	Wakesha, Wisconsin	M	36	5	Light	Good
165	Urban poplar	Minnesota plantation of unknown origin	M?	39	5	Light	Good

[1] M = Male, F = Female

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