



United States
Department of
Agriculture

COMPARATIVE EVALUATION
OF *POPULUS* spp.

(Plant Materials - Forestry)

MICHIGAN

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Soil
Conservation
Service

612-6

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FACT SHEET

Problem: Extensive plantings of one variety of any plant species can lead to unacceptable levels of disease and insects. This is of particular concern when an improved variety, such as 'Imperial' Carolina Poplar (*Populus x canadensis* Moench), is used for conservation applications such as field or farmstead windbreaks with limited species diversification. *Cyrtodiarporthe populeum* (Dieporthales, Valsaceae) canker of poplar (also known as Dothichiza canker), is one of the major pathogens of poplars. All species may be infected, but the degree of susceptibility varies greatly between species. A need was identified to evaluate other available *Populus* [sp. to](#) determine if any of these species were equal or superior to 'Imperial' in their resistance to plant pathogens, particularly *C. populeum*.

Action: An assembly of 15 varieties, including 7 named cultivars, of poplar clones determined to be worthy of comparative evaluations was collected in 1986 from other plant materials centers, plant introduction stations and university forestry programs. Dormant cuttings from these varieties were established in propagation beds at the Rose Lake Plant Materials Center for one year and then transplanted to a field evaluation site in the spring of 1987. The soil type of this evaluation site was a Boyer sandy loam. No irrigation was applied. Weed control was provided for the first three growing seasons. Fertilization was applied according to soil test recommendations. Evaluations began in the fall of 1987 and continued through 1994 (7 years). Included in these evaluations were survival rate, vigor, foliage production, insect and disease damage, height and crown width. Relative ranking among the 15 varieties was established from the analysis of the data collected from these evaluations.

Discussion: *Cyrtodiarporthe populeum* became established within the planting by the fifth year of evaluations (1992). The presence of the canker led to significant mortality in several of the varieties. Nine of the original fifteen varieties had greater than 50 percent mortality, with three varieties having 100 percent mortality. Only 'Imperial' had a 100 percent survival rate. This trend continued through the next 2 years of evaluations, with several varieties expressing negative annual growth rates as a result of broken leaders. Adventitious sprouts commonly developed below large cankers, but usually became diseased as well. As trees became infected and died, they were removed from the project in an attempt to limit the rate of spread of the canker.

Results: Summarization of the data following the final year of evaluations indicates that none of the evaluated species were equal or superior to 'Imperial' Carolina Poplar for any of the evaluation criteria. 'Imperial' maintained a 100 percent survival rate and exhibited the most resistance to *C. populeum*, as well as being the most vigorous with the largest annual height and width growth.

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