PHOMOPSIS CANKER OF 'ROBUSTA' POPLAR

by D.W. French and D.R. Bergdahl¹

'Robusta' poplar (Populus X Euroamericana) is used extensively in the north central part of the United States as a fast-growing shade tree. This hybrid is asexually reproduced by stem cuttings and is commonly grown in tree nurseries. A stem canker suspected to be caused by *Phomopsis macrospora* T. Kobayashi and Chiba, has caused considerable losses in nursery grown trees in Minnesota. This fungus causes a similar canker disease in cottonwood (*P. deltoides*) in Mississippi, (1, 2) and Paulownia (*Paulownia tomentosa*) in Japan (3).

In July 1974 a random sample of 103, 2-year-old nursery-grown 'Robusta' poplar trees were examined for cankers. Sixteen percent of the trees were not cankered and the remaining 84% had one or more basal (below 30cm) or aerial (above 30cm) stem cankers above ground (Fig. 1, 2). The majority of the diseased trees (44%) had basal bankers and only 13% had aerial cankers. Both types of cankers were found on 27% of the trees, and as many as 4 cankers were found on 7% of the trees. No trees had been killed by the fungus, but 10% were broken at the canker and would be rogued from the nursery.

Phomopsis macrospora was isolated from 100% of the basal and aerial stem cankers from 15 trees selected at random. Two species of Fusarium and one species of Verticillium were occasionally isolated from basal cankers. The identification of P. macrospora was confirmed by Dr. Colin Booth, Commonwealth Mycological Institute, Kew, England.

Three 2-year-old 'Robusta' poplar trees were inoculated with *P. macrospora, Fusarium* sp. (isolates 1 and 2), *Verticillium* sp., or sterile grain. The fungi were grown on sterile grain (oats) for about 30 days. Drill and knife wounds were made about 5 mm deep into xylem tissues at 15 and 45

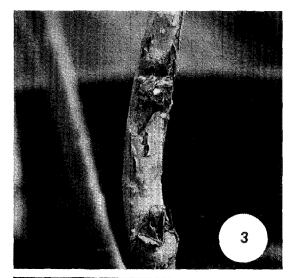




Fig. 1, 2. Main stem cankers on 'Robusta poplar' caused by *Phomopsis macrospora*.

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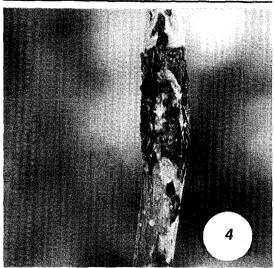


Fig. 3, 4. Cankers on the main stem of 'Robusta popular' resulting from inoculation with *Phomopsis macrospora*.

cm above the base of the stem, respectively. Inoculum was aseptically placed in the wounds and held in place with masking tape.

Cankers developed from all six inoculations with *P. macrospora* (Fig. 3, 4), but not when the other fungi or sterile grain were used. *Phomopsis macrospora* was reisolated from all resulting cankers.

Although the numbers of trees in the study were limited, these results indicated that *P. macrospora* can cause cankers on 'Robusta' poplar and that this fungus has been responsible for major losses in nurseries producing this tree species. Recently, in one nursery about 80% of the 'Robusta' poplar were cankered by *P. macrospora* and could not be sold. Unknowingly diseased trees also have been sold to customers before the lethal cankers were evident. Occasionally poplars held in bare-root storage over winter have been a complete loss due to these cankers. Every effort should be made to detect infection and only disease-free trees should be planted.

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