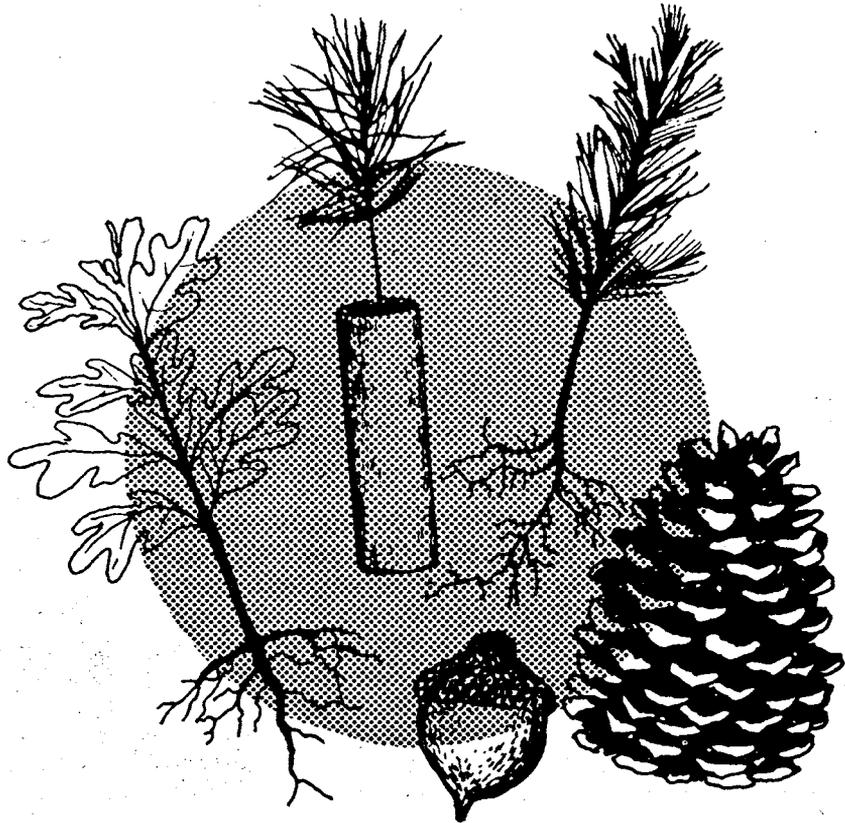


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PROCEEDINGS

1978 Southern Nursery Conferences



WESTERN SESSION - Hot Springs, Ark.
July 24-27, 1978

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HARDWOOD DISEASES IN PLANTATIONS AND NURSERIES^{1/}

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Root disease is the most important problem of hardwoods in nurseries with most mortality from damping-off occurring during the first 6 weeks of seedling emergence. The root rots can persist throughout the growing season and cause stunting that makes seedlings unsaleable. Chemical fumigation of nursery beds is the best control method available for root disease. Methyl Bromide, Vorlex, Dowfume MC-33, Telone C, or Chlor-o-pic will reduce production cost by controlling root diseases and weeds.

In 1978, Cylindrocladium scoparium, a fungus that kills seedlings or reduces their growth, was isolated for the first time from walnut roots at the Arkansas State Nursery at Little Rock. The fungus also infected yellow-poplar, cherrybark oak and sweetgum in the Winona, Mississippi, nursery. Soil fumigation was used to control the disease. Since walnut and yellow-poplar are particularly susceptible to the disease, bed rotation with loblolly or slash pines or with less susceptible hardwoods such as green ash or sycamore should be used to control it.

Leaf diseases occasionally cause problems in hardwood nurseries. In 1978 walnut anthracnose (Gnomonia leptostyla) caused defoliation and some mortality in the Oklahoma nursery at Washington, Oklahoma. The disease was controlled by spraying with Benomyl and Dodine.

During the past two growing seasons, anthracnose (Gloeosporium) caused severe defoliation and mortality of yellow-poplar at the Mississippi Forestry Commission nursery at Winona. The disease was controlled by applying Benomyl and Copper Oxide. Also, proper fertilization and water regimes help minimize the disease.

^{1/} This paper reports research involving pesticides. It does not contain recommendations for their use, nor does it imply that all the uses discussed here have been registered. All uses of pesticides must be registered by appropriate State or Federal agencies before they can be recommended.

Mention of trade names is solely to identify materials used and does not imply endorsement by the U. S. Department of Agriculture.

In hardwood plantations, canker diseases are of most concern to growers. In sycamore plantations, canker stain fungus (Ceratocystis fimbriata) is one of the most serious diseases. Losses are usually low, but in some areas a 30-percent stand loss has been observed. To keep trees free of the disease, care should be taken to avoid wounding stems. Where the disease is present, sanitation cuts of diseased sycamore trees should be made.

Canker diseases in cottonwood plantations contribute to the approximate 20-percent loss during the first and second years. Septoria canker (Septoria musiva) is the pioneer organism. Other fungi such as Fusarium solani (Fusarium canker), Cytospora chrysosperma (Cytospora canker), Phomopsis macrospora (Phomopsis canker), and Botryodiplodia sp. (Botryodiplodia canker) usually invade through wounds made by Septoria. Singly or collectively, these fungi cause mortality.

The fungi I have mentioned infect nursery stock and overwinter as mycelia or spores on cuttings stored for spring planting. When infected cuttings are planted, they may leaf out but approximately 20 percent are girdled before developing a root system. Mortality is increased by climatic factors that limit plant growth or cause plant stress. Survival can be increased by dipping cuttings in Benomyl (1 lb./100 gal. H₂O) before planting.

Leaf diseases are becoming increasingly important in cottonwood plantations. Three important leaf diseases are Melampsora rust, Septoria leaf spot and Marssonina leaf spots. In various geographic locations, each may be the prime cause of defoliation. In the lower Mississippi valley, Septoria leaf spot causes the most defoliation. In the upper Mississippi valley and in the Midwest, Marssonina and Melampsora rust cause most of the defoliation.

Septoria leaf spot caused 90 percent defoliation in several plantations during the summers of 1977 and 1978. Most damage appears to be associated with certain clones, so resistant clones are being developed at Stoneville. Several Stoneville clones released in 1970 resist the fungus. Additional clones should be released in 1979. At present, fungicides are available to control Septoria in cottonwood plantations. One or two chemical sprays annually may be necessary to break the disease cycle.