

## HARDWOOD DISEASES

T. H. Filer, Jr.

Principal Plant Pathologist and Project Leader  
Southern Hardwoods Laboratory  
Southern Forest Experiment Station  
Stoneville, Miss.

Damping-off and root-rot continue to cause the most losses of young hardwood seedlings. We know how to control these losses but we gamble by not taking preventative methods. The most effective control is to use soil fumigation or solar soil sterilization.

Recent research data indicates that solar energy can be harnessed to sterilize soils and reduce root-rot diseases, nematodes and damping-off organisms. This simple technique requires the use of black plastic placed over soil and sealed to keep heat trapped in soil.

Chemical fumigants such as methyl bromide or methyl bromide-chloropicrin mixtures will give good results if applied properly. However, some soil moisture and temperature above 55°F is necessary to do a good job.

Graminae cover crops such as maize, sudex, and corn will help increase the endo-mycorrhizal population of fumigated nursery beds. These crops will increase endo-mycorrhizae on sweetgum, sycamore, ash, dogwood, redbud, cherry, yellow-poplar, and black walnut. For hardwood nursery beds we should consider soil fumigation as a tool to reduce the population of harmful fungi and not for weed control. Herbicides should be used for controlling weeds.

Cylindrocladium root-rot fungi can cause serious root diseases on yellow poplar, black walnut, cherrybark oak, black cherry, dogwood, redbud, and sweetgum. The only control consists of rotation of hardwood seedling crops and soil fumigation. The methyl bromide fumigant formulation MC-33 (methyl bromide - 67%, chloropicrin - 33%) remains as the most effective control for soil borne diseases such as cylindrocladium root rot.

Other root problems occur under certain conditions such as *Fusarium* root rot of sycamore and other hardwoods; *Rhizoctonia* root rot on several hardwood species; *Pythium* root rot of black locust and other hardwoods; and nematodes on several hardwood including black cherry. These root rot disease problems can all be controlled by effective soil fumigation.

Hardwood foliage diseases can be serious disease problems if defoliation occurs. Anthracnose of yellow-poplar and *Marssonina* leaf spot of black walnut are good examples of foliage diseases that may cause mortality.

When defoliation occurs, a protective fungicide must be used to protect the remaining foliage. Young seedlings, in particular, will die if the foliage is killed. The limited amount of root reserves in these young seedlings will prevent refoliation. For additional disease control, plow under all infected plant material to minimize disease spread to next year's crop.