24. Dothichiza Canker of *Populus* species

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Hosts and Distribution

Canker of poplars caused by *Dothichiza populea* has been known in the United States since 1915. The disease is most common in nurseries and plantations in the eastern and central States. *D. populea* infects a wide range of *Populus* species and hybrids, especially those in the Tacamahaca and Aegieros groups; Lombardy poplar is particularly susceptible. It has also been reported on quaking aspen and bigtooth aspen. The range of *D. populea* extends from Maine to Virginia and westward to Minnesota, Nebraska, and New Mexico. It occurs on young trees in nurseries and plantations, but is rare or of little significance in native stands.

Symptoms and Signs

Early symptoms are a premature yellowing of the leaves, followed by defoliation. Girdling cankers cause dieback of small stems and shoots. The development of cankers varies greatly with host age and species. Young trees may be girdled rapidly, which causes topkill. Poplar with large spreading branches and those resistant to the fungus may only develop small branch cankers.

In general, cankers first appear as slightly sunken areas with the diseased bark slightly darker than healthy bark (fig. 24–1). After the bark is killed to the cambium, the sapwood is invaded and turns brown. Cankers develop during the dormant season. As the canker develops, the bark cracks and extensive callus is produced (fig. 24–2).

Figure 24-1. Young Dothichiza canker with discolored bark.

Figure 24-2. Extensive callus development associated with Dothichiza stem cankers.

Sprouts may develop below dead limbs and cankers. These sprouts may be killed in following years.

Cushion-like fruiting bodies called pycnidia are formed on the dead or wilting twigs (fig. 24–3). In time the diseased bark turns brown and cracks, and the underlying dark brown, diseased wood is exposed.

Disease Cycle

D. populea overwinters as spores in unopened pycnidia and as mycelium within the bark tissue. In the spring new pycnidia, when mature and moisture conditions are favorable, rupture the bark and extrude spores in olive-buff tendrils or in masses. Conidia are unicellular, hyaline, and ovate pyriform to spherical (fig. 24–4). They are washed about by rain or carried by insects or birds. Possibly, after the spore tendrils dry, some are windborne. New pycnidia may be formed as the dieback and canker enlarges, so that mature spores may be present throughout the summer and fall.

The fungus may infect through bud scales, leaf scars, or bark at the base of small lateral twigs into a stem or branch. Cankers develop around the base of twigs or injured buds. The fungus also infects leaf scars following early defoliation by Melampsora rust or Marssonina leaf blotch.

The perfect stage, *Cryptodiaporthe populea*, is reported from Europe but is not known in the United States.

Damage

In Europe the fungus has been recognized as an important pathogen of poplars since 1903, particularly on young or newly planted trees, or on trees that have been weakened by low spring temperatures, poor drainage, drought, pruning wounds, or infertile soil.

Figure 24–3. Pycnidia develop on dying bark of affected twigs.

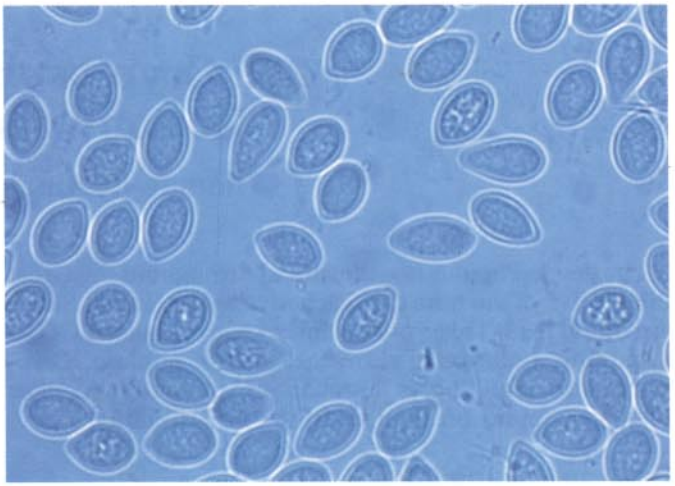

Figure 24–4. Conidia of *D. populea* are hyaline, unicellular, and ovate pyriform to spherical.

Although the disease is endemic in the United States, it has not been as damaging as in Europe; however, its potential for damage in plantations is a concern.

Control

The disease has not been sufficiently severe in the United States to warrant a detailed study of control measures. Because of the possibility of infection in plantations, care should be taken to use disease-free stock for planting and to maintain good growing conditions. Infected stock should be destroyed. Applications of excess nitrogen and dense nursery beds should be avoided. Leaf diseases caused by *Melampsora* and *Marssonina* should be controlled in the nursery with fungicides. Choice of planting site is important so that the trees are adapted to the site. Pruning should be avoided if possible, and care exercised to prevent other wounding. Older stands should be thinned. Highly susceptible cultivars such as Lombardy should not be planted.

Selected References

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