35. Poplar Cankers

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Hosts

Species that cause cankers on various native and hybrid poplars include *Septoria musiva*, *Cytospora chrysosperma*, *Phomopsis macrospora*, Fusarium solani, and *Lasiodiplodia theobromae*. Some hybrids are more susceptible than native poplars to cankers caused by *S. musiva*.

Distribution

These canker-causing fungi are native to most regions in the United States, but certain fungi are more common in certain areas. *Cytospora chrysosperma*, for example, is more common in the northern half of the United States but occurs throughout the ranges of poplars. *Phomopsis macrospora* and *Lasiodiplodia theobromae* are commonly found in the southern half of the United States. Septoria musiva is common in the South, North, and Midwest. *Fusarium solani* is found in all parts of the country.

Damage

Nurseries usually produce unrooted poplar cuttings for outplanting. Many cuttings may have to be culled annually due to the presence of cankers. Canker diseases introduced from the nursery may kill cuttings in first-year plantations.

Diagnosis

Similar symptoms are produced by the various fungi that cause cankers on poplar seedlings. In the spring, look for small necrotic areas on the stem (fig. 35-1). They are inconspicuous at first, but as the cankers develop, a distinct depressed area is noted in the affected bark (fig. 35-2). Some of the cankers may girdle the stem, and the portion distal to the canker dies and turns brown.

Figure 35-1—Small necrotic areas on stem typical of poplar canker caused by *S. musiva*.

Figure 35-2—Older canker with sunken center on stem of poplar seedling.

With the exception of *F. solani*, all the fungi causing poplar cankers produce pycnidia. These appear as small, dark, flask-shaped structures, visible with a 10 x hand lens, protruding through the bark epidermis on the surface of the canker (fig. 35-3). Under moist conditions, spores are exuded in long, slender spore horns. These masses of spores are visible without magnification and may be orangish (*C. chrysosperma*) (fig. 35-3), whitish (*S. musiva* and *P. macrospora*) (fig. 35-4), or dark *(L. theobromae*). These four genera also can be easily separated on the basis of spore characteristics: spores of *S. musiva* are hyaline and multicelled; those of *C. chrysosperma* are hyaline, one-celled, and curved; those of *P. macrospora* are of two kinds—alpha- and beta-spores; and those of *L. theobromae*, two-celled and black. Spores of *F. solani* are seldom seen. Diagnosis of cankers caused by this fungus must be made on the basis of culturing in the laboratory. Sometimes more than one of

Figure 35-3—Small black pycnidia of *C. chrysosperma* in bark. Note orange spore horns.

Figure 35-4—Whitish spore horns of *P. macrospora* exuding from pycnidia under bark (bark removed).

the above fungi may be found in the same canker.

Biology

These fungi can overwinter in cankers on infected stems of standing trees or on dead plant material on the ground. In the spring, most produce spores that are spread by wind and cause new infections during periods of high humidity after irrigation or rainfall.

Control

Prevention—Use resistant and improved poplar clones to minimize disease losses. Remove all native poplar trees near the nursery.

Cultural—The following practices will reduce incidence of poplar canker:

- Use canker-free cuttings to establish nursery beds.
- Destroy or disc under all leaves and debris after harvest.
- Replant nursery beds after 3 to 4 years, and destroy old poplar sprout material to remove sources of inoculum.
- Store cuttings at 35 to 40 °F, and do not allow them to dry out.
- Place cuttings in water for 24 to 72 hours prior to planting, to achieve maximum moisture content.
- Reduce weed competition for moisture and nutrition through first-year cultivation.

Chemical—Use copper fungicides, such as copper hydroxide, to minimize disease losses.

Selected References

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