3. Diplodia Blight

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Hosts

Diplodia blight, caused by the fungus *Sphaeropsis sapinea* (syn. *Diplodia pinea),* affects more than 20 pine species in the United States. Most commonly affected are Austrian, red, ponderosa, Scotch, Monterey, and mugo pines.

Distribution

The fungus is found in pine plantations in 29 States, including Hawaii (fig. 3-1). Infection in nurseries has been reported only in the Central States.

Damage

The disease kills or deforms infected seedlings; losses occur in all age classes of seedlings.

Diagnosis

On infected seedlings, the current-year needles turn yellow, then brown, and finally ashen gray (fig. 3-2). Shoots often become curled (fig. 3-3).

Pycnidia may be produced on the ashen gray needles. With a 10 x hand lens, look for the small black pycnidia at the base of flu, needle (fig. 3-4). If pycnidia arc not present, place needles or shoots in a moist chamber at room temperature and examine again.

Spores, produced in the pycnidia, are brown at maturity, ellipsoid, usually one-celled, and about 30-45 x 10-15 microns in size (fig. 3-5).

The fungus can be grown in culture by using sterile techniques to remove infected plant parts and placing the infected tissues on the surface of potato dextrose agar (PDA). Incubate in light at 68 °F from 6 to 10 days; and look for

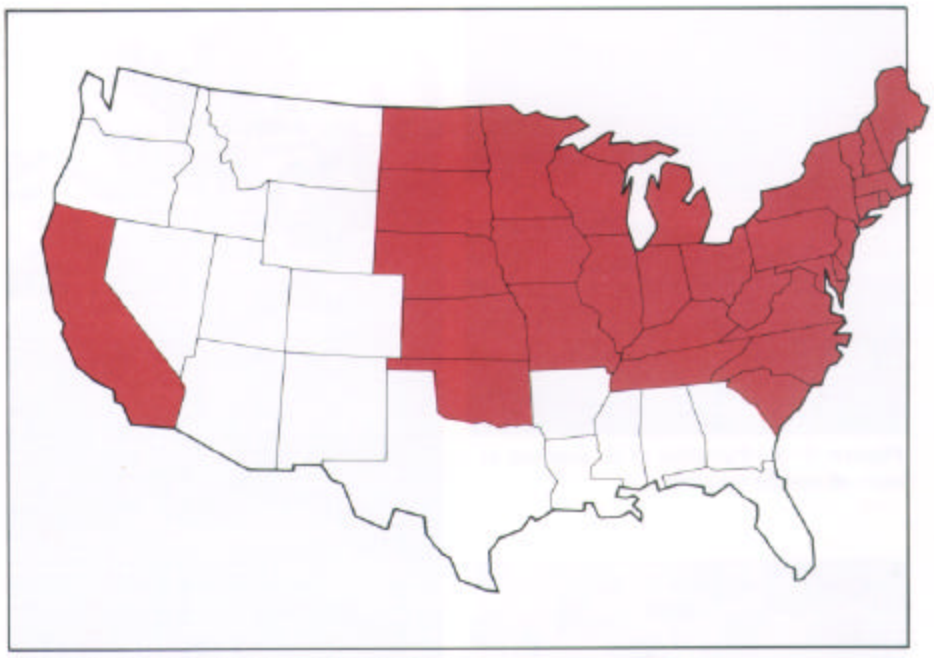

Figure 3-1—Distribution of *S. sapinea.*

Figure 3-2—1-0 seedling of red pine with symptoms of Diplodia blight.

Figure 3-3—Current-year shoots of 2-0 red pine infected with *S. sapinea.*

Figure 3-4—Pycnidia of *S. sapinea* at base of needle fascicle.

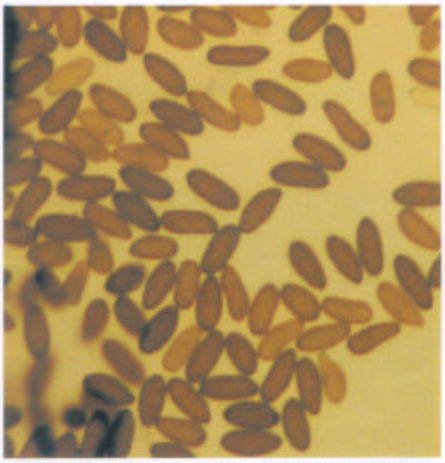

Figure 3-5—Conidia of *S. sapinea*.

Figure 3-6—Symptoms of Diplodia blight on mature tree.

Figure 3-8—Pycnidia of *S. sapinea* on cone scales.

Figure 3-7—New shoots infected by *S. sapinea*.

fast-growing, black, fluffy colonies with gray, aerial mycelium. Pycnidia with spores usually develop within 6 days if sterile needles are incorporated into the PDA.

On established pines occurring in and around the nursery, look for blighted foliage (fig. 3-6). The new shoots will look stunted and have short, brown needles (fig. 3-7). Pycnidia can usually be seen at the base of stunted needles infected the previous year and on scales of 2year-old and older seed cones (fig. 3-8).

Biology

The fungus is present throughout the year in dead needles, second-year and older seed cones, bark and wood of infected trees, or on the ground. Pycnidia may develop a few weeks after infection; however, most pycnidia sporulate in the spring following the year of infection.

Spores, which ooze out of pycnidia from March to October during wet weather or irrigation, are dispersed by splashing water. Most infection of nursery seedlings occurs on developing needles and shoots during rainy periods.

Control

Prevention—Establish seedling beds away from infected pines growing in windbreaks and landscape plantings. Avoid placing container-grown seedlings beneath older pines for the purpose of hardening-off seedlings. For windbreaks near seedling beds, select species other than pines.

Cultural—Avoid using cone scales or pine needles for mulch; this practice could introduce the fungus into nursery beds. Irrigate in the morning, when seedlings will dry most quickly. Reducing the period when plants are wet lessens the chances of infection.

Chemical—To reduce seedling infection, apply either benomyl or Bordeaux mixture at 2-week intervals throughout the spring and early summer until shoots and needles are mature.

On infected trees adjacent to nursery beds apply two properly timed applications of either benomyl or Bordeaux mixture.

Selected References

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