18. Pitch Canker of Southern Pines

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Hosts

Pitch canker, caused by the fungus *Fusarium subglutinans* (syn. *F. moniliforme* var. *subglutinans),* has been reported on older trees of at least 10 pine species. However, slash and loblolly pines are the only known seedling hosts, and slash pine the principal species affected.

Distribution

This disease was first detected in slash pine nurseries in Florida. It is now known to occur in pine nurseries throughout the South.

Damage

This disease has been recognized only recently in nurseries but may cause significant seedling mortality. Mortality of nursery-infected seedlings following outplanting may result in additional losses.

Diagnosis

This disease is readily diagnosed late in the growing season. By then, single dead seedlings or small groups of seedlings are found scattered throughout nursery beds (fig. 18-1). Look for discolored, yellow-green to brown foliage. On seedlings with succulent tissues, look for wilt of the foliage and of the upper stem. These symptoms result from the development of resin-soaked lesions on the stem at or near the groundline or on the upper portion of the taproot. Removing the bark exposes the resin-soaked wood (fig. 18-2).

The disease is difficult to diagnose earlier in the season because of the smallness of the seedlings and the diversity of symptoms that may be present. On young seedlings, lesions on the stem at the groundline or on the upper taproot result in foliage discoloration and seedling death. Seedlings may either remain erect or collapse. On slightly older seedlings, lesions on the stem result in a purplish discoloration of the stem tissues, followed by top dieback. Lesions on the stem at the groundline or on the upper taproot usually cause discoloration and wilt of the foliage and of the upper stem. Infected seedlings are often scattered throughout the beds, and single-seedling infections predominate.

The fungus can be cultured from infected tissues on acidified potato-dextrose agar. The pathogen is characterized microscopically by curved, multiseptate macroconidia, 32-53 x 3-4.5 microns (fig. 18-3) and abundant oval to oblong microconidia, 8-12 x 2-3 microns, produced on polyphialides (fig. 18-4); chlamydospores are absent.

Figure 18-1—Slash pine seedlings affected by pitch canker.

Figure 18-2—Resin-soaked lesion at root collar of slash pine seedling (right) caused by *F. subglutinans*; uninfected, healthy seedling (left) for comparison.

Figure 18-3—Macroconidia of *F. subglutinans*.

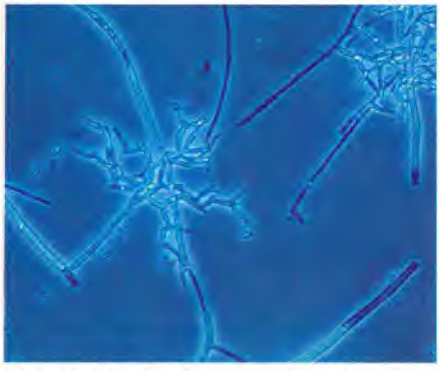

Figure 18-4—Microconidia and conidiophores (polyphialides) of *F. subglutinans*.

Biology

The fungus probably enters a nursery either as airborne inoculum from nearby infected trees or, more commonly, on infected seed. Once a nursery becomes infested, further spread of the disease during the growing season probably results from inoculum produced on previously infected seedlings.

Control

Prevention—Use disease-free seed to prevent the fungus from being introduced into the nursery. Screen the seed to identify fungal contamination. Employ proper cone- and seed-handling procedures to minimize contamination of seed.

Cultural—Remove pitch canker-infected trees in windbreaks, in border plantings, or in adjacent stands, thereby reducing nearby sources of inoculum.

Partial sanitation of nursery beds during the growing season may be achieved by removing infected seedlings.

During lifting and packing, cull symptomatic seedlings to reduce disperal of the fungus to outplantings and to minimize exposure of healthy seedlings to diseased ones.

Chemical—Fumigation with standard formulations and dosage rates of methyl bromide-chloropicrin is effective in eradicating the pathogen from the soil.

No fungicides are currently available to treat seeds or seedlings.

Selected References

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