

# Ink Spot

Dark, raised blotches or shotholes in aspen leaves

**Pathogen**—Ink spot is caused by the fungus *Ciborinia whetzeli*.

**Hosts**—Aspen is the predominant host, although other poplars are also susceptible.

**Signs and Symptoms**—Ink spot is characterized by brown to black spots on blighted leaves (figs. 1-3). Early summer symptoms of ink spot can look like leafminer insect damage with concentric zones that are light and dark. Reddish brown blotches become visible on infected leaves within a few weeks, and ink spots (sclerotia) develop several weeks later. Infected leaves quickly turn brown, and sclerotia begin to drop out, leaving shotholes in the dead leaves. *Ciborinia whetzeli* forms well-defined, circular, stalked fruiting structures called apothecia that produce and release spores.

**Disease Cycle**—*Ciborinia whetzeli* overwinters as sclerotia (hardened masses of fungal hyphae) in forest litter. In the spring, sclerotia produce fruiting bodies (apothecia) that release wind- and rain-disseminated ascospores that infect developing leaves. Infected leaves develop sclerotia (ink spots) that eventually drop out. Infected leaves begin to die midsummer, but defoliation may not take place until autumn. Cool, moist weather in the spring is conducive to disease spread.



Figure 1. Early season ink spot on aspen leaf. Photo: William Jacobi, Colorado State University, Bugwood.org.



Figure 2. Brown, immature sclerotia on blighted leaves. Photo: Jim Worrall, USDA Forest Service.

**Impact**—Ink spot is more severe on small trees and in the lower crowns of larger trees. The incidence of the disease is greatest in dense stands. Occasionally, this disease is responsible for 25-100% defoliation in localized areas. This disease rarely causes long-term damage or mortality. As with many aspen diseases, some clones appear to be more susceptible than others.

**Management**—Spring infections may be reduced if infected leaves are raked up and removed the previous fall. Increasing the spacing between trees may create a less favorable microclimate for disease spread and infection. Fungicides can be used to prevent infection, but they must be applied before infection occurs.



Figure 3. Black ink spots (sclerotia) on aspen leaf. Photo: Jim Worrall, USDA Forest Service.

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1. Hinds, T.E. 1985. Diseases. In: DeByle, N.V.; Winokur, R.P., eds. Aspen: ecology and management in the western United States. Gen. Tech. Rep. RM-119. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 283 p.
2. Sinclair, W.A.; Lyon, H.H.; Johnson, W.T. 1987. Diseases of trees and shrubs. Ithaca, NY: Cornell University Press. 574 p.

