

61. *Antrodia* Stem Decay of Eastern Redcedar

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Eastern redcedar has a wide distribution in the Great Plains, and is found on many soil types. Its hardiness and excellent survival on arid sites has made it a major component of field windbreaks in the Great Plains. *Antrodia juniperina* (referred to as *Daedalea juniperina* in older literature) causes stem decay in living eastern redcedar.

Hosts and Distribution

A. juniperina occurs on living or dead eastern redcedar in eight eastern States, plus Missouri, Oklahoma, Kansas, Nebraska, North Dakota, Colorado, Arizona, and Oregon. It also has been found on alligator, Utah, and one-seeded juniper in western United States. Its distribution is erratic in the Great Plains, and its occurrence is not correlated with the distribution or prevalence of its host.



Symptoms and Signs

A. juniperina can be detected by the corky, sessile, sporocarps with daedaloid pore surfaces that form under dead branch stubs or along the callus margin of a wound (figs. 61-1, 61-2). The pores are large and angular, 12 to 18 per inch. The sporocarps are annual or perennial. The pileus of new sporocarps varies from light buff to cinnamon buff. It turns gray to black with weathering, and is indistinctly zonate. In the absence of sporocarps, check the ends of poorly healed branch stubs and stumps; thick, buff-colored mycelial felts develop in shrinkage cracks of decayed wood.

A. juniperina, a brown-rot fungus, utilize cellulose and other polysaccharides in wood, and primarily causes heart rot of affected stems. The residue left after decay is a brown crumbly mass. The brown-rot fungi do not produce extracellular phenol oxidases, and generally give negative oxidase tests on gallic and tannic acid medium or with gum guaiac solution.

Figure 61-1. Sporocarps of *Antrodia juniperina* on stem of eastern redcedar, Woodward County, Oklahoma.

Disease Cycle

Little information is available on the disease cycle of *A. juniperina*. Dead branches and wounds provide entry for the fungus. The fungus slowly invades and kills stem tissues, and a brown cubical rot develops.

The fungus can be cultured on malt agar and potato dextrose agar. Growth at 75°F is slow, reaching 14–15 mm in 7 days on malt agar. *Antrodia* and *Daedalea* appear similar in culture, but the lack of chlamydospores places *A. juniperina* in the genus *Antrodia* rather than in the genus *Daedalea*.

The basidiospores of *A. juniperina* are 6–7 μm long by 2–3 μm wide, narrowly ellipsoid, somewhat arcuate toward the apiculus, smooth, hyaline, and thin-walled.

Damage

Young trees are usually free from decay. A windbreak may begin to deteriorate, however, if infected eastern redcedars are a major component. Stems of infected trees may become hollow and break during windstorms because of extensive decay of wood.

Control

Tree losses caused by stem decay fungi can be reduced by the following measures:

1. Prevent wounds. In windbreaks and woodlots, limit the activities of animals, especially cattle, by fencing. Little can be done about the weather; however, after a storm prune broken limbs and remove jagged edges from limb and bole wounds to enhance callus formation.
2. Sanitize. Prune trees to remove dead, dying, or diseased portions of the tree.
3. Plan and implement improvement cuts. Cut and remove infected trees, and replant immediately to maintain effectiveness of windbreaks.

Selected References

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Figure 61-2. Enlarged view of daedaloid pore surface.