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Management Guide for

Fir Broom Rust

Melampsorella caryophyllacearum Schroet.

This fungus causes conspicuous yellow witches brooms on fir.

Primary Host:
- Grand fir and subalpine fir
- All firs (*Abies sp.)* are susceptible

Alternate host:
Chickweeds, *Stellaria* spp., and *Cerastium* spp.

Topics

Damage

Although mortality is rare, this disease may cause some growth loss and localized volume loss as well as reduced value of infected ornamental trees. Amount of damage depends on the number and size of brooms and their position within the crown.

Life History

Broom rust alternates between true firs and chickweeds. Spores from chickweed infect young fir needles. The fungus then spreads into the woody tissues of branches and stems where witches brooms form. The yellow color of these brooms is due to yellow-orange fungal structures and spores produced on infected foliage. These spores complete the life cycle by spreading to chickweed.

Figure 1. Fir broom rust produces witches broom displaying yellow fungal structures on firs. Photo by Johns Schwandt

Figure 2. Photo Fir broom Rust from Forest Service Archives

Key Points

- Principal damage from this disease is volume and growth loss.
- Amount of damage depends on the number and size of brooms and their position within the crown.
- Diseased trees should be eliminated through selective thinning.

Identification

Presence of witches'-brooms and production of yellow rust pustules on needles. Infected needles are dwarfed, and chlorotic, and twigs in the brooms are shorter and thicker than normal. At the base of the broom, infected branches and stems are swollen, forming an elongate canker or gall. Brooms and stem swellings may be observed after brooms have been shaded out.

Figure 3. Spores produced on needles within the broom during the summer. Photo by John Schwandt.

Management Considerations

Diseased trees should be eliminated through selective thinning, and infected branches can be pruned from high value trees.

Other Reading

Allen, E.A., D.J. Morrison, and G.W. Wallis. 1996. Common Tree Diseases of British Columbia. Natural Resources Canada, Canadian Forest Service.

Peterson, R.S. 1963. Effects of broom rusts on spruce and fir. USDA For. Serv., Int. For. Range Exp. Stn., Ogden, UT. Res. Pap. INT-7. 10 p.

Ziller, W. G.1974. The tree rusts of western Canada. Canadian Forestry Service, Dept. of the Environment, Victoria, B.C. Publication No. 1329.

Forest Health Protection and State Forestry Organizations

Assistance on State And Private Lands

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