



Pine-Pine Gall Rust: *Endocronartium barknessii*

Introduction

Pine-pine gall rust is a disease that occurs on 2- and 3-needle pine trees. The disease is caused by the fungus *Endocronartium barknessii*. Other names for this disease include western gall rust and Woodgate gall rust. The name “pine-pine” gall rust indicates that the fungus spreads directly from one pine to another pine and does not require an alternate host as do other rust diseases on pine. As a result, this disease can quickly become severe on individual infected trees and can also spread readily in hedges and closely spaced plantings such as in Christmas tree plantations or nurseries.

In New York, Scots pine (*Pinus sylvestris*) is the most common host for pine-pine gall rust. Jack pine (*Pinus banksiana*), native to northeastern New York, is also highly susceptible. Many native western pines and introduced species, such as Austrian (*Pinus nigra*) and mugo pine (*Pinus mugo*) are also reported to be hosts, although we rarely see this disease on Austrian pine in New York.

Many seed sources of Scots pine also show apparent



Figure 1: A hip canker caused by a gall that did not girdle the stem.

resistance to the fungus, so in any given area, the disease may not be an issue. However, where susceptible strains are grown as Christmas trees the disease may cause economic loss. The disease also occasionally infects landscape specimens and may kill trees or severely disfigure trees if galls develop on the trunk (Fig. 1).



Figure 2: Two galls developing close together on a Scots pine branch, prior to spore release.

Symptoms and Signs

Pine-pine gall rust causes the formation of mostly spherical woody galls on branches and stems of pine. New infections occur on actively growing shoots and are practically undetectable for the first six months. About a year after infection, small swellings develop on infected branches. When numerous, these young galls impart a distorted, beaded appearance to the branch. On heavily infected branches, needles may then turn yellow then brown and the branch may die before spores are produced. More often however, only one or a few galls develop on a branch (Fig. 2) and the branches are not killed the first year. Galls

continue to enlarge becoming spherical or round. Smalls galls may continue to enlarge for several years until they girdle and kill the branch, or they may produce spores and then die. Galls may get to be as large as softballs, but most are about the size of a golf ball when they mature.



Figure 3: Mature galls on a branch of Scots pine releasing masses of powdery yellow-orange spores (provided by Dr. George W. Hudler, Cornell University).

Disease Cycle

The galls form in response to the presence of the fungus in the vascular cambium. Galls may grow for 2-4 years after the initial infection before they develop the fruiting bodies (aecia) that produce the spores that will cause new infections. At maturity the epidermis of the gall splits open, and powdery yellow-orange spores burst out of blister-like structures on the gall surface (**Fig. 3**). Spores may be readily wind-born to nearby trees to cause new infections.

In New York, spore release may begin from mid-April to early May with production of infectious spores for about 6-8 weeks. At the same time, healthy young shoots are elongating and are susceptible to

infection. Some spores inevitably land on the young shoots and cause new infections. Following infection, small swellings may begin to develop on branches where the new galls are forming. As these small swellings will not produce spores until after they develop into galls, they may easily be overlooked.

Management Strategies

The fungus needs living tissue to survive and will quickly die when the tissue it is growing on is cut. When galls are discovered on a landscape tree, cut out the diseased branches. In nurseries or plantations, rogue heavily infected trees or small trees with one or more galls on the main stem. Where a large percentage of trees (more than 5%) in a given plantation are found to be susceptible, a fungicide may be used to try to prevent new infections from getting started. Pesticide applications are not recommended for residential sites.

Prune branches exhibiting galls before they have a chance to produce spores. This may be done in late winter or early spring. It may also be desirable to prune dead branches already killed by numerous infections even though the fungus will not survive in branches after they have died. Remove or destroy pruned tissues or rogued trees as they may be attractive to other potential pests.

References

Sinclair, Wayne A. and Howard H. Lyon. 2005. *Diseases of Trees and Shrubs*, 2nd ed. 660 pages Comstock Pub. Associates.

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READ THE LABEL BEFORE APPLYING ANY PESTICIDE! Changes in pesticide regulations occur constantly. All pesticides distributed, sold, and/or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional DEC office.

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