



Ploioderma Needlecast: *Ploioderma lethale*

Introduction

Ploioderma needlecast is a serious disease of Austrian Pine (*Pinus nigra*). This disease may cause stunting as well as needle discoloration (**Fig. 1**) and severe premature defoliation where needles are heavily infected. A great deal of variation in susceptibility may be seen between individual Austrian pine specimens.



Figure 1: This highly susceptible tree is brown and stunted compared to more resistant trees in background (provided by Dr. George W. Hudler, Cornell University).

Symptoms and Signs

Symptoms include yellow to brown spots which begin to show up in late winter or early spring on the previous year's needles. As the weather warms up in the spring, a portion of each infected needle quickly turns a straw brown color even though the base of the needle may remain green (**Fig. 2**).



Figure 2: Close-up of branch showing discoloration of needles infected with *Ploioderma lethale* (provided by Dr. George W. Hudler, Cornell University).

Look closely at the banded areas of infected needles and you may be able to see very thin, elongate, black lines (**Fig. 3**) which are formed by fungal tissue and run lengthwise along the infected part of the needle.

These elongate lines may be easier to see when tissue is moist; these lines are a diagnostic field characteristic for a *Ploioderma* needlecast infection. Beneath the black lines is fungal tissue containing the developing fruiting bodies, called apothecia. Several apothecia may be found on a single infected needle.

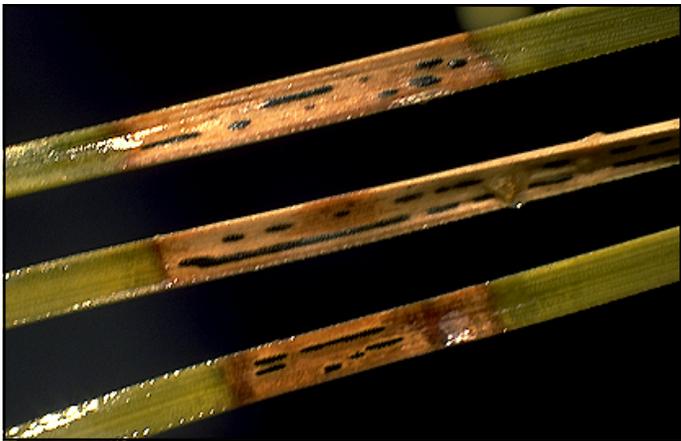


Figure 3: Characteristic dark lines on brown bands on infected needles in the spring (provided by (provided by Dr. George W. Hudler and Kent Loeffler, Cornell University)

Disease Cycle

Once the apothecia are mature, and environmental conditions are sufficiently damp, the fruiting bodies will split open and begin to expel spores that may infect the newly developing needles. Symptoms on the newly infected needles will not become apparent until later that winter and may not be cast until the following spring or summer after all spore production has ceased.

Over time, highly susceptible trees suffering repeated severe infections may lose all but the most current season's growth. As infected needles are lost in the spring and summer, only the current season's needles may be left giving the appearance as tufts of growth at the tips of branches. After consecutive years of severe infection, new growth may become stunted, and severely affected branches may become weak enough to die. Although the infection level may be worse near the bottom of the tree, if conditions are good for disease development, infections may occur high up into the crown as well. Several consecutive years with severe levels of infection occurring high in the crown may even lead to tree death.

Management Strategies

For new plantings, select nursery stock carefully, and inspect it for a few years after planting. *Ploioderma* may be missed on nursery stock, because symptoms of a new infection may not have shown up before the stock was dug. In established plantings, prune out heavily infected (lower) branches to lessen inoculum levels and control weeds to increase air circulation around trees.

There are currently no fungicides specifically registered to manage *Ploioderma* in New York. Some products containing the active ingredient copper hydroxide are registered for use in managing needlecasts, but most of these products are for use in managing needlecasts on pine in silviculture nurseries and in Christmas tree plantations.

In New York, the following products containing copper hydroxide are registered for use in silviculture nurseries and Christmas tree plantations:

(Dupont) Kocide 3000, EPA Reg # 352-662
(Dupont) Kocide 2000, EPA Reg # 352-656;
Badge SC, EPA Reg # 80289-3;
Badge X2, EPA Reg # 80289-12.

The product Cupro 5000 Fungicide/Bactericide, EPA Reg # 80289-2-67690 is labeled for the same uses, but also for needlecasts on some outdoor landscape ornamentals including pine.

Apply the first treatment when the new shoots are about 2 inches long and the needles are just emerging from the fascicles. Additional applications may be made at 7 to 30 day intervals as needed or per label directions to protect the new growth as it expands. Use shorter intervals under wetter conditions that may promote new infections.

If spring conditions are dry, the fungus may begin sporulating later in the growing season. You may monitor this by collecting infected needles weekly and placing them in a small container with a damp paper towel. Examine fruiting bodies with a hand lens after about 24 hours. If the black lines swell and split open to expose a transparent jelly-like substance,

consider the fungus to be active. Once the fungus begins to produce spores, it may continue to do so for about 6 weeks.

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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