

THE PURDUE LANDSCAPE REPORT

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How to Fix Problems with Scale Insects

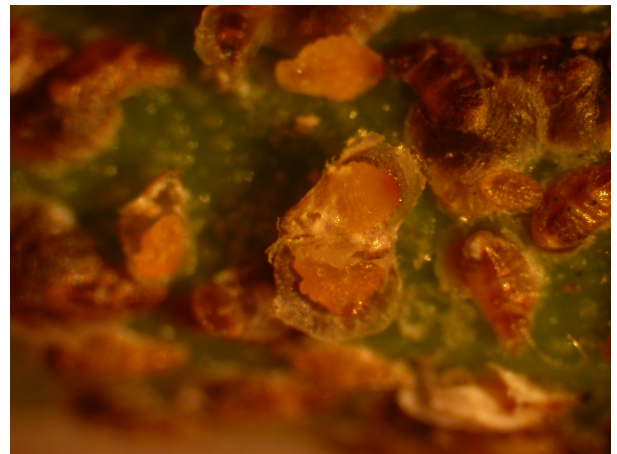
(Cliff Sadof, csadof@purdue.edu)

Scale insects are sucking insects that can encrust the limbs of trees and shrubs like barnacles on a boat. The higher temperatures and abundance of paved surfaces in cities can starve trees of water and help scales thrive and even escape from the natural enemies that keep them under control. Heavy populations can kill plants.

Applying horticultural oil in the dormant season can be one of the most effective tools for getting rid of scales with a minimal impact on natural enemies. Unfortunately, only 7 of the 22 kinds of scale insects listed on the soon to be released updates of the Purdue Shrub Doctor and Tree Doctor apps can be killed by dormant season applications of oil. These include some important scales, like Japanese maple scale, and euonymus scales, but not other important scales like oystershell scale and calico scale. Only armored scale insects that winter as adults or immatures beneath the waxy cover can be killed by oil in the dormant season.

What to use when dormant oil is not an option.

Armored scales. These insects spend most of their lives covered with a waxy shell that cannot be penetrated by many insecticides. The only times they are not under their shells are when they hatch from eggs and when the males fly to mate with females. Newly hatched scales are easily killed by insecticides. Products that can kill scales with a minimal impact on the natural enemies include a summer rate of horticultural oil, or an insect growth regulator, like pyriproxifen or buprofizen. Timing of crawler hatch will vary with each species of armored scale.



Euonymus scales can be killed by oil in the dormant season because they winter under scale covers. If you see a fleshy body beneath a waxy scale cover, the scale will probably be controlled with an application of oil (Photo by E. Rebek).



Oystershell scales cannot be killed by oil in the dormant season because they winter as eggs. If you flip over a scale and find eggs, it will not be controlled by oil.



Both Japanese maple scale (left) and oystershell scale (right) have a teardrop shape, but JMS (left) is much smaller and more narrow

Oystershell scales that winter as eggs and are not controlled by oil, are much larger than Japanese maple scale that winters as an immature.



Calico scales and other soft scales that produce liquid excrement called honeydew cannot be killed by oil in the dormant season. If a scale infested branch is black from sooty mold and honeydew, it probably contains soft scales that cannot be controlled with oil in the dormant season.

Soft scales, like calico and tuliptree scale, and **felted scales** like European elm scales are not covered with a waxy shell and insert their wire like mouths directly in the plant's vascular tissue to sip from its circulatory system. As such, they produce copious amounts of liquid excrement called honeydew that can attract stinging insects. This sticky liquid becomes contaminated with black sooty mold that turns plants black and crusty. Heavy infestations can ruin the finish on a parked car, and make the turf below a sticky crinkly mess. Oil does NOT kill these scale insects after they have settled down to feed and coat themselves with honeydew. Insecticidal soap does a better job of controlling these scales and insect growth regulators like pyriproxifen and buprofizen work even better. The trick is to apply these products soon after the crawlers settle. Many of these scales like calico and European Elm scale hatch from eggs in late May and spend the summer on leaves and return to the trunks in the fall. Other species like tuliptree scale will be more susceptible to insecticides when eggs hatch into the crawling stage during late summer.

How to know when crawlers are active and insecticides can be applied?

Monitor for periods of crawler activity by wrapping scale infested twigs or branches with a single band of black electrical tape so the sticky side faces out. Crawlers that emerge from scales are easy to see when they get stuck in the glue.

Links:

Using Dormant Oils

<https://www.purduelandscapereport.org/article/dormant-applications-horticultural-oil-can-help-control-troublesome-pests/>

Managing Scale Insects

<https://extension.entm.purdue.edu/publications/E-29/E-29.html>

Purdue Plant Doctor Apps <https://www.purdueplantdoctor.com/>

Volutella leaf blight and stem canker of pachysandra

(Gail E. Ruhl, ruhlg@purdue.edu)



Fig 1. Large areas of Pachysandra ground cover killed by Volutella (PPDL)

Volutella stem and leaf blight caused by the fungal pathogen *Volutella pachysandricola* can cause major damage to Pachysandra, destroying large areas in a bed. (Fig 1) Infected leaves first develop tan or brown blotches with dark brown margins, which expand, often with concentric lighter and darker target-like zones. (Figs 2a,b) Stem and stolon cankers appear as water-soaked diseased areas, turn brown, shrivel and often girdle the stem, causing stem dieback. (Figs 3a,b) Orangish spore masses develop in the cankered areas and the underside of infected leaves. (Fig 4)

Volutella blight of pachysandra is often associated with plant stresses such as recent transplanting, exposure to bright sunlight, scale insects, and winter damage. Normally this disease does little damage to vigorous plants, thus providing good growing conditions is the most important control measure.

Unfortunately, a dense planting bed of pachysandra is the desired horticultural outcome, thus thinning the planting to allow better air circulation and leaf drying is not an aesthetically pleasing option.



Fig 2a. Initial dark blotches on leaves (PPDL)



Fig 2b. Target-like zones on more mature leaf lesions (J. Chatfield)



Fig 3a. Stem dieback due to girdling by the fungus (PPDL)



Fig 3b. Fungal canker girdles stem, contributing to dieback (J. Chatfield)

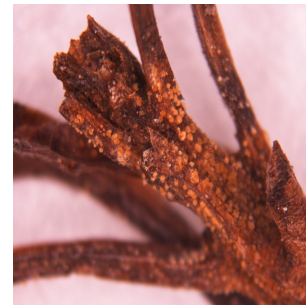


Fig 4. Orange spore masses of *Volutella* on *Pachysandra* during moist conditions (PPDL)

It has been reported that one approach that has worked over the years in severely infected beds involves mowing infected plantings to 1-2" (with a bagger attached to catch the diseased tissue). Mowing improves air movement in dense plantings and reduces extended periods of moisture conducive to fungal infection. This simple cultural practice followed by the use of labeled fungicides, applied according to label directions, and applied several times at two week intervals is reported to protect newly emerging growth and reduce the amount of disease present. It is also wise to avoid overhead irrigation in the evenings and to dig out and destroy severely diseased plants with basal stem cankers.

Note: label specifications change over the years thus be sure to check labels of products containing mancozeb, chlorothalonil, thiophanate-methyl, etc., to be sure they may be applied. **THE LABEL IS THE LAW!!!**

Early Spring in the Woods

(Dan Childs, dan.childs@bayer.com)



Snow trillium

As I type this article, the outside thermometer is showing 10 degrees F. Ouch! And the calendar reads March 4. Double ouch! Winter is stubbornly hanging around for a few more days, maybe weeks. Eventually, the dreary cold weather will surrender to spring and life will return to the woods. However, subtle changes are occurring now if one looks closely. Through a process called *plant thermogenesis*, heat is generated in the spadix of skunk cabbage. This allows the spadix, a flowering structure, to emerge from the cold ground, even through a blanket of snow, to claim the title as the first native plant to flower in the woods. Days later as the ground soaks up the sun's warmth a plethora of spring ephemerals will blossom and convert a brown landscape into a colorful bouquet of floral delight. This is the time of year I most enjoy taking a walk through the woods.



Virginia bluebells

If you would like to learn more about woodland wildflowers, a guide is now available to help nature lovers identify these beautiful plants. The book, called *Into the Woods*, is a color photo guide of woodland wildflowers and other unique plants. It contains a glossary of botanical terms, flower color index, alternate plant names, flowering dates, pollinator information, plant status (native, non-native or invasive) and detailed plant descriptions. You can search for the book online through [Amazon.com](https://www.amazon.com) (search: Into the Woods Dan Childs).

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