



Common Euonymus Pest Problems

Dawn Dailey O'Brien, Department of Plant Pathology & Plant-Microbe Biology, Cornell University

About 20 species and more than a hundred varieties of the genus *Euonymus* are cultivated for use in landscapes in North America. They have found favor among North American horticulturists because they tolerate a wide variety of sites and grow quickly to form hedges or screens. In some areas, their overuse has resulted in mono-cultures of plants highly susceptible to attack by opportunistic insects or diseases. The following are the most common euonymus pests we see during our scouting.

Euonymus Scale (186)

One of the most damaging pests is the euonymus scale (*Unaspis euonymi*). In the northeast U.S., scales are especially damaging to European euonymus (*E. europaeus*), wintercreeper euonymus (*E. fortunei*), and Japanese euonymus (*E. japonicus*). Winged euonymus (*E. alatus*), spreading euonymus (*E. kiautschovicus*), and American euonymus (*E. americanus*) are highly resistant or immune.

Many other species of plants including boxwood (*Buxus*), bittersweet (*Celastrus*), *Daphne*, Russian olive (*Elaeagnus angustifolia*), English ivy (*Hedera helix*), holly (*Ilex*), privet (*Ligustrum*), honeysuckle (*Lonicera*), *Paxistima*, Japanese spurge (*Pachysandra terminalis*), and some *Prunus* sp. are reported hosts. However, these other plants are most likely to become infested only when growing near plantings of euonymus harboring robust infestations of scales.

Leaves show the most obvious evidence of infestation by euonymus scales, and the interior or lower portions of the crown are likely to be colonized first. White to yellow spots on the upper surfaces of leaves are typical symptoms of scale feeding. The insects will be found first on the undersides of leaves and eventually on upper leaf surfaces and young twigs. Males are most conspicuous, each is covered by a waxy, scale-like covering, a "test", that is white, 2–2.5 mm long x 1.0 mm. Females are larger and are covered by gray to brown tests ranging from 2.5–3.0 mm long x 1.5–2.0 mm wide which resembles a miniature oyster shell.

Euonymus scales overwinter on their hosts and in early spring, each female scale lays hundreds of eggs. The eggs hatch two to three weeks later to coincide with the new season's first foliage. Nymphs are less than 1 mm long oval, amber-colored crawlers that first emerge from under the test and then continue to a new site on the same plant or are picked up by strong winds and carried for considerable distances. In most sites in the northeast U.S., there is one generation of euonymus scales per year. However, warmer sites, especially those in Hardiness Zone 6, may yield a second generation that matures in late July or early August.

When establishing new plantings, one can minimize damage from euonymus scales by not selecting highly susceptible species or by using them judiciously.

To preserve existing plantings, there is no alternative but to undertake an aggressive management program. Egg laying females and nymphs are particularly sensitive to pesticides, and properly timed applications should reduce populations to acceptable levels. Key growing degree day "windows" for sensitive life stages are 35–120 GDD₅₀, 533–820 GDD₅₀, and 1150–1388 GDD₅₀.



Euonymus scale has two to three generations per year and can build up until whole plants are covered by scales on both branches and leaves.



Left: Numerous small white scale covers and small yellow settled crawlers on leaf. Right: Close-up of brown female and white males on underside of leaf.

Euonymus Caterpillar (79)

Euonymus caterpillar (*Yponomeuta cagnagella*), also known as euonymus webworm is about an inch long and green or yellowish green when mature. Each one has a black head and two rows of 10 large, round black spots, interspersed with smaller ones, on either side of the mid-line of the back. The adult is a small, narrow, whitish moth with a wingspan slightly less than one inch with black spots on the wings. It appears in mid-summer. The larvae feed primarily on *Euonymus europaea* (the tree form) as well as *E. kiautschovicus*, *E. alatus* and *E. japonicus*. They feed on the leaves from the margins inward in colonies which encompass the foliage in large white webs. The entire tree or shrub may become enveloped in the web. Complete defoliation may occur although not all the foliage is necessarily consumed as the web expands.

The larvae feed from 95–600 GDD₅₀. By late June, the larvae will cluster in the webs and cocoon formation begins for pupation. Cylindrical, whitish pupal cases can be found in the webbing which discolors to a dirty gray. Adults emerge from mid-late July and lay eggs on the twig bark and in the bud axils. Larvae hatch within two to three weeks but stay under their eggshells to overwinter. The larvae remain inactive until spring when they begin feeding within a small web that expands as they, and the colony increase in size. There is one generation per year.



Euonymus webworm caterpillars feed in groups within webbing on branches. Inset: Euonymus webworm moth has a one-inch wingspan.

Several insecticides labeled for “caterpillars” could be used for this pest but manual removal seems to provide satisfactory control. If you choose to spray, it is essential to force the material into the web with pressure. A pheromone trap, used to trap females and is another potential way of managing this pest.

Crown Gall (190)

This disease is caused by a bacterium (*Agrobacterium tumefaciens*) that lives in the soil and invades host plants through minute wounds. *Euonymus* is a common host but the host range is varied and includes many woody plants including arborvitae, ash, dogwood, elm, euonymus, hawthorn, holly, maple, privet, poplar, ornamental pear, rhododendron, rose, viburnum and more.

Symptoms are exhibited as swellings which are initially soft and spongy but may turn woody as they enlarge. These galls are usually found at the soil line or crown of the plant, thus the name. Galls interrupt the transfer of water and nutrients to the plant and may lead to decay or death. It is usually more of an aesthetic problem and the plant may survive in spite of the disease, depending on the location and size of the galls.

Very young plants, however, are much more susceptible and experience a higher mortality rate. Plants that become infected during their first year suffer the most damage, most likely due to the fact



Euonymus crown gall on Euonymus fortunei, wintercreeper euonymus.

that they have a less established root system. Another factor is the soil the plants are growing in. When there is heavy soil with much moisture, the pests seem to be much more prevalent.

Once crown gall shows up in a site there is little that can be done. Crown galls should be pruned and destroyed, but for this operation, cleaning the cutting tools in diluted household bleach or some other disinfectant is a must. To minimize infestation, plant a resistant species such as narrow-leaved evergreens in the area once the disease is found. Other plants reported to be non-hosts include andromeda, barberry, boxwood, firethorn, golden-rain tree, holly, mimosa, mountain laurel, redbud, smoke tree, sweet gum, and tuliptree.

Black Bean Aphid

During the spring black bean aphids feed and cause curled leaves on the newest shoots of host plants, including euonymus. These aphids have olive-green to black bodies and their legs are light-colored, with black at the base and tip. This coloring and the fact that they like to cluster together makes them easy to spot. Additionally, look for the sticky honeydew that often coats the leaves below where they are feeding and the accompanying black sooty mold growing on the honeydew. Their feeding is especially noticeable on the tender young growth.



Black bean aphids cause curled leaves on new shoots early in the spring. Inset: close-up on black bean aphid shows their legs are light-colored, with black at the base and tip.

In the fall, winged asexual females and winged sexual males mate and the females lay their eggs on winter hosts such as the spindle tree (*Euonymus europaeus*), snowball bush (*Viburnum opulus*), burning bush (*Euonymus alatus*) or mockorange (*Philadelphus* spp.) plants. In the spring, the aphids hatch from these eggs. These are known as “stem mothers” and they are all female and asexual, meaning they do not need a mate to reproduce. During the summer months, these asexual females give live birth, which allows the population to increase quickly throughout the warmer season.

Black bean aphids have many natural enemies including ladybeetles, syrphid flies and lacewing. If these predators are not sufficiently managing the populations, you may need to treat with a registered pesticide or one of several environmentally friendly options including soaps and oils. In the coming months the aphids may disappear, but cork-like pustules on the mid-veins on the undersides of the leaves will be left behind as indicators that the aphids were once feeding there. The leaf curling symptom caused by the black bean aphid is vaguely reminiscent of herbicide injury. Don't be fooled; the symptom persists long after the aphids are gone.