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Euonymus Scale
European Fruit Lecanium Scale
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Euonymus Scale

We are receiving inquiries regarding euonymus scale (*Unaspis euonymi*) crawlers on landscape plants such as evergreen euonymus (*Euonymus japonica*) and Japanese pachysandra (*Pachysandra terminalis*). Euonymus scale overwinters as a mated female on plant stems. Eggs develop and mature underneath the scale, and then hatch over a two- to three-week period. The newly hatched crawlers, noticeable migrating along the stem, start feeding near the base of host plants. Crawlers can also infect adjacent plants by being blown around on air currents, resulting in infestations not being detected until populations are extensive and damage is noticeable later on in the season. Leaves eventually become spotted with yellow or white areas. Plants located near foundations, walls or parking areas are more susceptible to euonymus scale than plants growing in open areas that receive sunlight and air movement. Moreover, the variegated forms of euonymus are more susceptible to euonymus scale than the green forms.

Heavy infestations of euonymus scale can ruin the aesthetic appearance of plants (Figure 1) resulting in complete defoliation or even plant death. Females are dark brown, flattened, and resemble an oyster shell whereas males are elongated, ridged, and white in color (Figures 2 and 3).

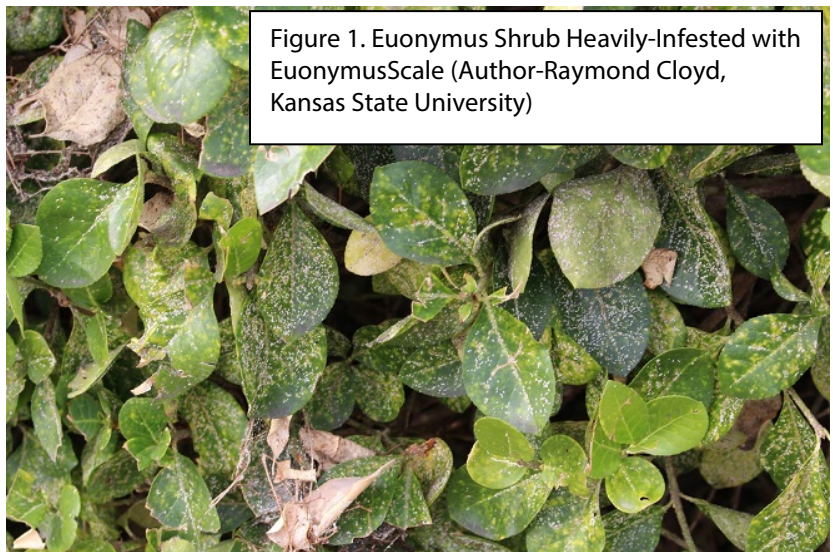
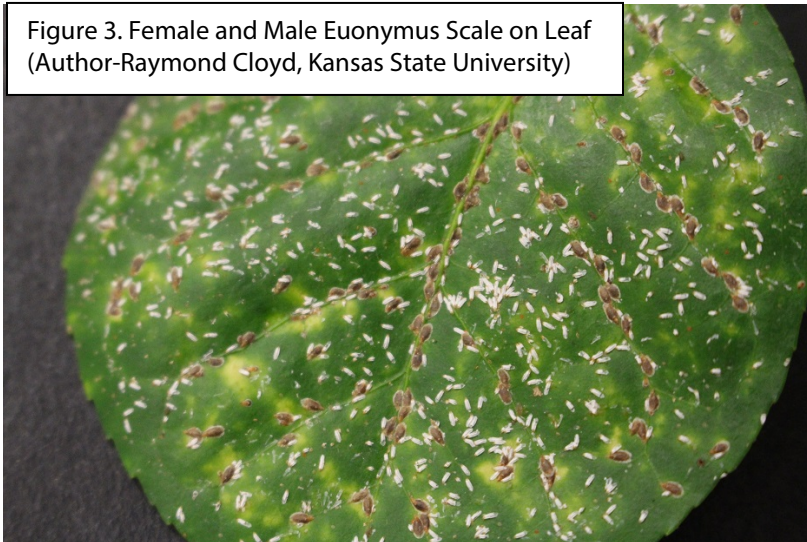


Figure 1. Euonymus Shrub Heavily-Infested with Euonymus Scale (Author-Raymond Cloyd, Kansas State University)

Figure 2. Female and Male Euonymus Scale on Leaf (Author-Raymond Cloyd, Kansas State University)



Figure 3. Female and Male Euonymus Scale on Leaf (Author-Raymond Cloyd, Kansas State University)



Males are typically located on leaves along leaf veins and females reside on the stems. There may be up to three generations per year in Kansas.

Cultural practices such as pruning-out heavily infested branches—without ruining the aesthetic quality of the plant—is effective in quickly reducing euonymus scale populations. Be sure to immediately discard pruned branches away from the area. If feasible, avoid planting *Euonymus japonica* in landscapes since this species is very susceptible to euonymus scale. Winged euonymus (*Euonymus alata*) is less susceptible to euonymus scale, even when adjacent plants are infested. Insecticide applications conducted from May through June, when the crawlers are most active, will help alleviate problems with euonymus scale later on in the season. Insecticides recommended for suppression of euonymus scale populations include: acephate (Orthene); pyrethroid-based insecticides [bifenthrin (Talstar®), cyfluthrin (Tempo®), and lambda-cyhalothrin (Scimitar®)]; potassium salts of fatty acids (insecticidal soap); and horticultural (petroleum or mineral-based) and neem (clarified hydrophobic extract of neem oil) oil. Check plants routinely for the

presence of crawlers, which will help time insecticide applications. Three to four applications, in general, should be performed at seven to 10-day intervals although this is contingent on the level of an infestation. Euonymus scale is a hard or armored scale, so, in most cases, soil or drench applications of systemic insecticides such as imidacloprid (Merit®) are not effective in suppressing euonymus scale populations. However, the systemic insecticide, dinotefuran (Safari® or Zylam®) may provide suppression of euonymus scale populations when applied as a drench to the soil due to the high water solubility (39,000 ppm) of this systemic insecticide.

Euonymus scale is susceptible to many natural enemies (e.g. parasitoids and predators) including: braconid and ichneumonid wasps, ladybird beetles, green lacewings, and minute pirate bugs. However, natural enemies may not provide enough mortality ("killing power") to substantially impact "high" populations of euonymus scale. Furthermore, insecticides such as acephate (Orthene®), and many of the pyrethroid-based insecticides, such as; bifenthrin (Talstar®), cyfluthrin (Tempo®), and lambda-cyhalothrin

(Scimitar®) are directly harmful to natural enemies, so applications of these pesticides may disrupt any natural regulation.

I need to acknowledge Jeff Otto of Wichita, KS for informing me that euonymus scale was active in South-Central KS.

Raymond Cloyd

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European Fruit Lecanium Scale

European fruit lecanium scale (*Parthenolecanium cornii*) is noticeable on the twigs and branches of certain trees and shrubs in landscapes. Damage associated with this scale, which depends on the extent of the infestation, includes: plant stunting and wilting. The European fruit lecanium scale is a soft scale so honeydew (a sticky, clear liquid) will be produced during feeding. Honeydew attracts ants and serves as a substrate for black sooty mold. Moreover, honeydew can drip onto vehicles parked underneath infested trees leaving unsightly residues.

European fruit lecanium scales are dark brown and 1/8 to 1/4 inches in diameter when mature (Figures 1 and 2). Some scales may have white or dark markings on the body. European fruit lecanium scale overwinters as an immature on twigs and branches with maturation occurring in spring. Females lay eggs underneath her body from May



Figure 1. Close-Up of European Fruit Lecanium Scale (Author-Dan Potter, University of Kentucky).



Figure 2. European Fruit Lecanium Scale on Branch (Author-Dan Potter, University of Kentucky).

through June. Eggs hatch into small tan-colored crawlers. The duration of egg hatch can last several days depending on temperature. Crawlers migrate to leaf undersides and feed on plant fluids until late summer. At that point, the crawlers migrate back onto twigs and branches to complete their development the following spring. There is one

generation per year in Kansas.

European fruit lecanium scale management involves timely applications of insecticides. Applications need to be made when crawlers are present because the crawlers are the most vulnerable life stage to insecticide sprays. Mature scales possess a shell-like covering, which protects them from exposure to insecticides. Repeat applications will be required because the eggs do not all hatch simultaneously with eggs hatching over a three to four-week period. The best time to apply insecticides is late June through early July when crawlers are feeding on leaves, which enhances their exposure to any spray residues. There are a number of insecticides, with contact activity, that may suppress populations of the European fruit lecanium scale. However, many have broad-spectrum activity and consequently will kill many natural enemies (parasitoids and predators). In general, most out-breaks of scale insects are caused by the indiscriminate use of pesticides (insecticides and miticides). Therefore, always read the label and exercise caution when applying any pesticide. In the winter, dormant oils can be applied to kill overwintering scales by means of suffocation.

I need to acknowledge Jeff Otto and Matthew McKernan of Wichita, KS for bringing to my attention that European fruit lecanium scale was active.

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Rose Sawflies

There have been numerous inquiries regarding insects feeding, and completely devouring rose plants. These are sawflies, and there are at least two species that attack roses this time of year: the rose slug (*Endelomyia aethiops*) and bristly rose slug (*Cladius difformis*). Rose slugs are the immature or larval stage of sawflies, which are black to yellow-colored wasps.



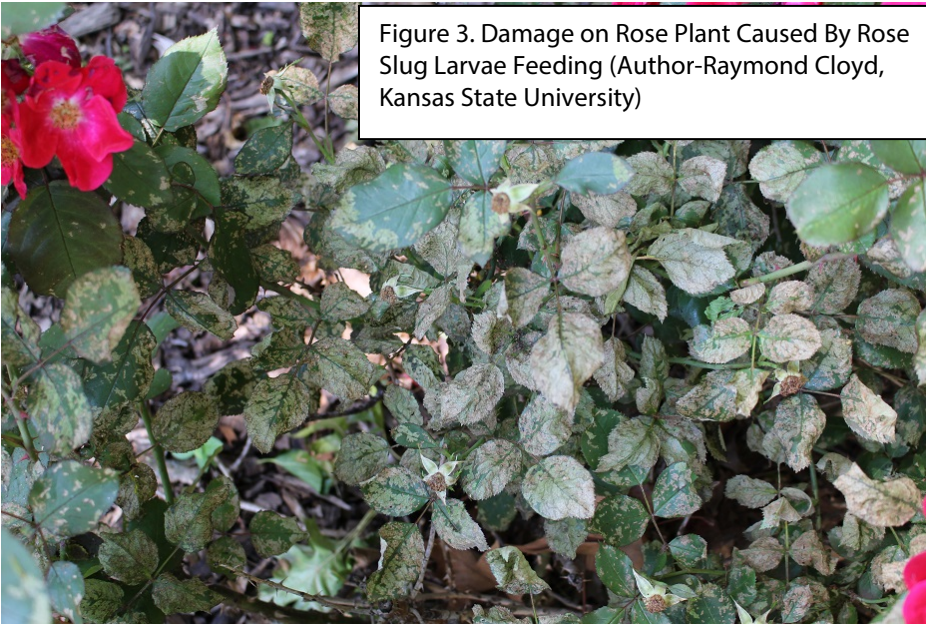
Figure 1. Rose Sawfly Larvae Feeding on Rose Leaf
(Author-Raymond Cloyd, Kansas State University)

Rose sawfly females create pockets or slits along the edges of rose leaves with their saw-like ovipositor (egg-laying device), and insert eggs. Larvae hatch from eggs and resemble small slugs. Larvae are 1.2 cm long when full-grown and yellow-green, with an orange head (Figure 1). Larvae eventually fall onto the soil surface and pupate. Rose slugs overwinter as pupae in earthen cells created by the larvae. Bristly rose slug larvae are pale-green and 1.5 to 2.0 cm in length. The body is covered with numerous bristle-like hairs (Figure 2). There is generally one generation per year in Kansas for both species.

Figure 2. Bristly Rose Slug Larva Feeding On Leaf Underside of Rose (Author-Raymond Cloyd, Kansas State University)



Figure 3. Damage on Rose Plant Caused By Rose Slug Larvae Feeding (Author-Raymond Cloyd, Kansas State University)



Rose slug larvae feed on the underside of rose leaves; resulting in the leaves appearing skeletonized (Figures 3 and 4). The larvae eventually they create notches or holes on the leaf margins. Bristly rose slug larvae feed on the underside of rose leaves and also cause leaves to appear skeletonized. However, the larvae may chew larger holes than the rose slug.

Small infestations of either the rose sawfly or bristly rose slug can be removed by hand and placed into a container of soapy water. A forceful water spray will quickly dislodge sawfly larvae from rose plants, and they will not crawl back onto rose plants. There are a number of contact insecticides containing various active ingredients that may be effective in suppressing populations of both sawflies. However, the bacterium, *Bacillus thuringiensis* subsp. *kurstaki* (Dipel® or Thuricide®) will have no activity on sawflies as this compound only works on caterpillars.

Figure 4. Damage on Rose Leaf Caused By Rose Slug Larvae Feeding (Author-Raymond Cloyd, Kansas State University)



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