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Research and Extension

Elm Leaf Beetle

Insect Pest of Elm Trees

The elm leaf beetle, *Pyrrhalta luteola*, is an insect pest of elm (*Ulmus* spp.) trees in landscapes. Elm species susceptible to elm leaf beetle feeding include Siberian (*Ulmus pumila*), English (*Ulmus minor*), Scotch (*Ulmus glabra*), and American (*Ulmus americana*). The larvae and adults feed on leaves and may be present simultaneously. This publication provides information on the biology, damage, and management strategies that can be implemented to mitigate problems with elm leaf beetles.

Biology

The elm leaf beetle has four life stages: egg, larva, pupa, and adult. Elm leaf beetle adults are approximately 1/5 to ¼ inches (5 to 7 mm) in length, yellow to dull-green, with a black stripe on each side of the wing cover and one in the middle that extends the length of the body. In addition, there are two black spots on both sides of the thorax (middle portion), and two distinct short black lines just behind the thorax (Figures 1 and 2). Females lay clusters of five to 25 eggs on the underside of leaves along the veins. Eggs are yellow-orange and pointed at the tip (Figure 3). Each female can lay up to 800 eggs during her lifetime.

Larvae hatch (eclose) from eggs and are ⅓ to ½ inches (8.5 to 12.7 mm) long when mature. The larvae are dull-yellow with two rows of tubercles extending down the side of the body that look like two black stripes (Figure 4). There are three larval instars (stages between each molt). Larvae are the most damaging life stage, feeding for approximately three weeks. Eventually, the larvae crawl down the trunk of a tree and pupate on the soil surface

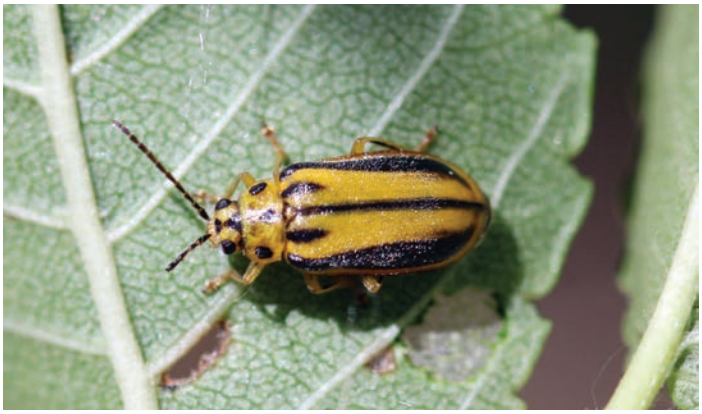

Figure 1. Elm leaf beetle adult. (Photo: Whitney Cranshaw, Colorado State University)

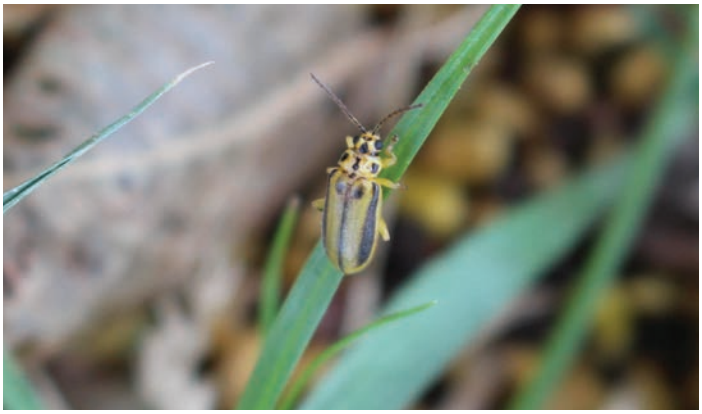

Figure 2. Elm leaf beetle adult. (Photo: Raymond Cloyd)

Figure 3. Elm leaf beetle eggs and larva. (Photo: Raymond Cloyd)

Figure 4. Elm leaf beetle larvae. (Photo: Raymond Cloyd)

(Figure 5) or underneath soil debris. Larvae may also remain on the tree and pupate in the cracks and crevices of the bark (Figure 6) or large branches. Pupae are initially bright-yellow and turn yellow-brown during development (Figure 7).

Adults emerge (eclose) from the puparium after seven to 15 days and migrate upward on the tree trunk or fly to elm trees and feed on leaves. In late summer through fall adults depart trees and seek suitable sites to overwinter. Adults will overwinter in buildings, homes, and in protected places outdoors such as the bark of trees. Adults can be a nuisance pest inside homes when they enter in the fall or depart in the spring. There are two generations per year in Kansas.

Damage

Elm leaf beetle adults feed on new leaves in the spring, creating small, circular holes between the major leaf veins (Figure 8). Larvae feed on the leaf undersides causing the leaves to appear skeletonized (Figures 9-10). Extensive feeding by elm leaf beetle causes the leaves to turn brown (Figure 11) and fall off trees. Trees that have been fed upon by adults and larvae for several consecutive years may experience branch dieback. In addition, heavy infestations of elm leaf beetle adults and larvae can defoliate large elm trees, which reduces their aesthetic value.

Management

The management of elm leaf beetle involves implementing proper cultural practices, trunk banding using sticky material, trunk banding using insecticides, and/or insecticide applications.

Cultural practices

Minimize stress by placing mulch around the base of elm trees to prevent damage from mowers and weed-eaters. Routinely prune out dead or dying branches. Water trees as needed to avoid stress associated with dry soil conditions. Large trees can tolerate minor infestations of elm leaf beetles without suffering any long-term damage if provided with sufficient water.

Trunk banding using sticky material

Trunk banding using sticky material involves applying a 1-foot wide band of a sticky substance (Tree Tanglefoot Insect Barrier) (Figure 12) around the tree trunk and three to four feet above the soil. The sticky band captures elm leaf beetle larvae that crawl down the tree trunk to pupate on the soil surface or in soil debris at the base of the tree. Trunk banding using a sticky material can reduce damage from subsequent adult generations by decreasing the number of elm leaf beetles that pupate and emerge as

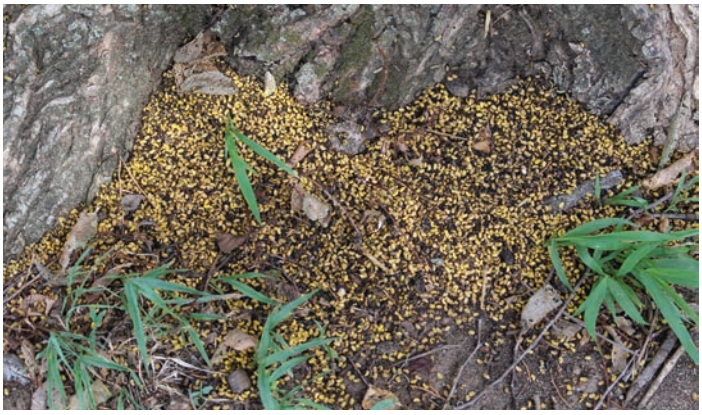

Figure 5. Elm leaf beetle larvae and pupae at the base of a tree. (Photo: Raymond Cloyd)

Figure 7. Close-up of elm leaf beetle larvae and pupae on the soil surface at the base of a tree. (Photo: Raymond Cloyd)

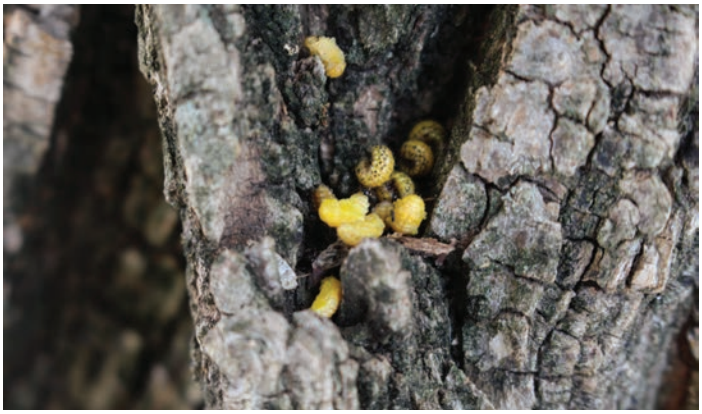

Figure 6. Elm leaf beetle pupae in the crevice of the tree trunk. (Photo: Raymond Cloyd)

Figure 8. Elm leaf beetle adult feeding damage on elm leaves. (Photo: Raymond Cloyd)

adults. The sticky material needs to be applied every year. Elm leaf beetle larvae may escape capture on the sticky band by dropping on the ground or pupating in the cracks or crevices of the tree bark.

Trunk banding using insecticides

Trunk banding using insecticides entails applying a residual, contact insecticide 1 to 2 feet wide around the tree trunk and 4 to 5 feet above the soil line. The insecticide will kill third instar larvae of elm leaf beetles when they migrate down the tree to pupate. Trunk banding using insecticides can reduce damage from later adult generations by decreasing the number of elm leaf beetles that pupate and emerge (eclose) as adults. For a trunk application to be effective, all elm trees in the area must be treated. Untreated elm trees may harbor elm leaf beetle adults. Read product labels to determine those insecticides that can be applied to the trunk of elm trees.

Insecticide applications

A contact insecticide should be applied as a spray when adults and larvae start feeding on leaves in the spring. Thorough coverage of leaf undersides is important because this is where adults and larvae feed. Multiple applications will be required during the growing season to suppress elm leaf beetle populations and reduce damage to elm trees.

Systemic insecticides can be applied to the soil where they are absorbed by the roots and translocated to the leaves that will be fed upon by elm leaf beetle larvae and adults. Applications should be made in early spring before new growth emerges. Keep soil moist to increase absorption of the systemic insecticide by the root system, and promote translocation throughout the tree. Always read product labels carefully to determine those insecticides that can be used against elm leaf beetles.

Figure 9. Elm leaf beetle larvae starting to feed on leaf underside. (Photo: Raymond Cloyd)

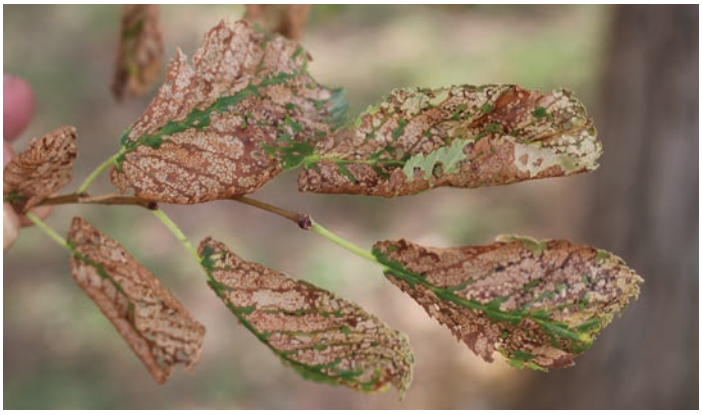

Figure 11. Extensive feeding damage to elm leaves caused by elm leaf beetle larvae. (Photo: Raymond Cloyd)

Figure 10. Elm leaf beetle larvae feeding damage on elm leaves. (Photo: Raymond Cloyd)

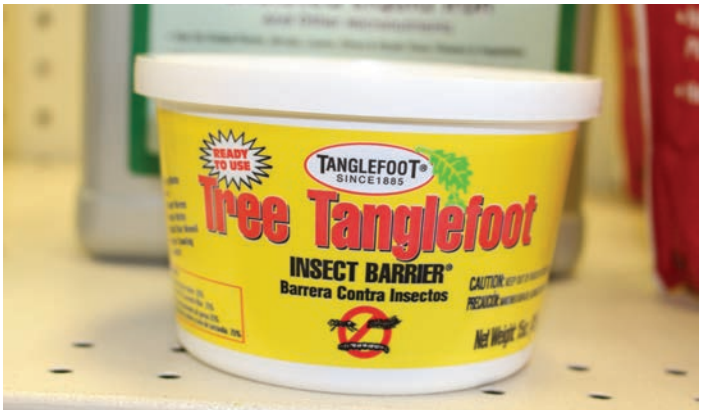

Figure 12. Tree Tanglefoot. (Photo: Raymond Cloyd)

Raymond A. Cloyd
Horticultural Entomology and Plant Protection Specialist

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