



## Elm Leaf Beetles

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**T**he elm leaf beetle, *Xanthogaleruca luteola* (Muller), was accidentally introduced into the eastern United States early in the nineteenth century. It feeds on all varieties of elm trees, especially Siberian and European elms. However, feeding damage is much less evident on varieties such as cedar elm, lacebark elm, American elm and winged elm. Damage to these varieties may be more severe if other elms the beetles prefer are unavailable. The elm leaf beetle is also known to cause some damage to Japanese zelkova.

### Identification

Adults are about  $\frac{1}{4}$  inch long and light yellow to brownish green. Several black spots decorate the head and thorax, and a broad black stripe follows the outer margin of each wing cover. Overwintering adults are darker and duller than summer adults. Eggs are laid in clusters of five to 25 on the undersides of leaves; they are yellow-orange and pointed on the outer end, resembling miniature lemons. Newly hatched larvae are black. Mature larvae are pale yellow with two black, interrupted stripes down the back; they are about  $\frac{1}{2}$  inch long. Pupae are  $\frac{1}{4}$  inch long and bright orange-yellow with scattered black bristles.

### Biology and Habits

Elm leaf beetles overwinter as adults in any sheltered, dry place that gives them protection. Overwintering adults sometimes enter homes, where they become a nuisance on warm days.

The insects do not infest food or other household materials, but simply spend the winter indoors. In spring, beetles fly to elm trees shortly after foliage emerges. They eat holes in new leaves and soon deposit eggs. A single female may produce as many as 400 to 800 eggs. Slug-like black larvae hatch in about a week. Larvae feed for about 3 weeks on the undersides of leaves; when mature, they crawl down the tree to gather in large masses at the base of the trunk (or any other nearby, sheltered place) to pupate. Adult beetles emerge from pupae about 2 weeks later. Three or more generations occur each year in Texas. In late summer and early fall, the adults begin to seek overwintering sites.



Elm leaf beetle adult.

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## Damage

Elm leaf beetles feed exclusively on foliage. Adult feeding causes small, circular holes in leaves. Larval feeding removes most of the green material from leaves, leaving them dry and brown with only the leaf veins remaining. Heavily infested trees have sparse foliage; remaining leaves are riddled with holes, have a rusty, reddish-brown tint and are likely to drop prematurely. Severe infestations for several consecutive years can cause limbs or the entire tree to die. Siberian elms are most severely attacked by elm leaf beetles and most of the damage is caused by first generation larvae. Young, developing leaves provide high quality forage for the small beetle larvae. By the time the second generation is feeding, the leaves are mature and there is less damage. Generally, the environmental conditions under which second and third generations develop are not as good as those for the first generation. Elm leaf beetles do not transmit Dutch elm disease.



Elm leaf beetle larvae, egg mass and damage.

## Control

### Natural

Natural enemies include birds, toads, diseases and predaceous and parasitic insects. A small wasp frequently kills many pupae. A fungus also kills pupae and adults late in the summer, especially if the weather is humid. Unfortunately, these natural controls are not often sufficient to hold the beetles in check, so it is necessary to use insecticide.

### Foliar Sprays

Early detection of the beetles makes it possible to spray trees before much damage occurs. Examine the undersides of leaves for yellow eggs and young larvae soon after leaves emerge in April. Apply insecticides when most of the eggs have hatched and the small larvae are just beginning to feed. Make sure insecticide thoroughly covers newly developing leaves. It may be necessary to hire a commercial applicator, someone who is properly licensed and equipped, to spray tall trees. Insecticide applications may need to be repeated to control later generations of beetles.

### Systemic Applications

Another approach is to use systemic insecticides, which can be applied as tree implants, soil injections or granules. Systemic insecticides are transported through the tree to the leaves. To control the first generation of beetles, a systemic insecticide should be applied in late March or April.

### Exclusion

Adult beetles can be excluded from homes by placing tight-fitting screens over windows and doors and closing all other openings. Spraying outside walls and the perimeter of the house with properly labeled insecticides may reduce the adult population in the fall.

## Elm Leaf Beetle Control Recommendations

Ingredient	Trade Name
acephate	Orthene® AceCap®
<i>Bacillus thuringiensis</i> var. <i>tenebrionis</i>	Novodor®
bifenthrin	Talstar® 1
carbaryl	Sevin®
chlorpyrifos	Dursban® 2
cyfluthrin	Tempo® 1 Decathlon® 1
cypermethrin	Demon® 1,3 Cynoff® 1,3
disulfoton	Di-Syston®
imidacloprid	Merit® Bayer Advanced Garden Tree & Shrub Insect Control
lambda-cyhalothrin	Scimitar® 1 Demand® 1
permethrin	Dragnet® 1,3
phosmet	Imidan® 1
spinosad	Conserve®
tralomethrin	Saga®

<sup>1</sup> For commercial use only.

<sup>2</sup> Dursban products are no longer being sold. Use existing stocks as directed on the product label or learn how to dispose of them by contacting your local or state hazardous waste disposal program.

<sup>3</sup> Use on outside surfaces and around buildings only.

Insecticide labels are subject to change and changes may have occurred since this publication was printed. The insecticide user is always responsible for the effects of insecticides on his own property, as well as problems caused by drift from his property to that of others. *Always carefully read and follow the instructions on the insecticide label.*

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