

Elm leaf beetle

Xanthogaleruca luteola

Elm Leaf Beetle (*Xanthogaleruca luteola*) is an important pest of elm trees. It exists in Europe and was introduced into the United States around 1834. ELB was first discovered in Victoria in 1989. It was detected in Launceston in late 2002 and in Hobart in 2008. It is now well established in these cities. ELB is no longer a notifiable pest, but local councils are still endeavouring to control ELB and are encouraging households to do the same.

Description and lifecycle

Elm leaf beetles are around 6mm long and yellowish to olive green with black stripes. The beetles hibernate in sheltered places during winter and emerge in spring to feed on the young leaves. The beetles lay tiny lemon-coloured eggs in clumps on the underside of leaves in spring, which hatch in 7-10 days.



At first the larvae (grubs) are very small and almost black. The larvae increase in size through summer reaching a length of 12 mm, when they are black and yellow and 'caterpillar-like'.



Around Dec-Jan, the larvae migrate down the trunk of the tree to pupate in the soil or in crevices on the lower trunk. After 1-2 weeks, new beetles emerge and, in warm summers, the new generation carries on breeding. The new generation of beetles continues to feed on the leaves for several weeks but, with the onset of cooler autumn weather, seek shelter for winter in various places, including wood-heaps, sheds, houses and cars.

Damage

ELB adults leave holes in the leaves called 'shot-holes'.



ELB larvae cause a different type of damage called 'skeletonisation', where everything is eaten except for the leaf veins. Skeletonised leaves turn brown and drop prematurely.



Adults and larvae together can cause severe defoliation of elms, which can weaken mature trees and reduce their aesthetic and amenity value. Elms suffering from repeated elm leaf beetle attack are also more susceptible to other pests and disease.

Spread

ELB spreads easily along major traffic routes because they often end up on cars that are parked near infected elm trees.

Will ELB kill my elm tree?

Although a single, heavy infestation of ELB can completely defoliate an elm, the tree will send out new leaves in the next season. However, the growth of the tree will be affected and, if ELB is not controlled, the tree may eventually die after a few years. If ELB is controlled early then elm trees will recover.

Control options

Several options are available.

Professionally applied treatments

Important: Only an arborist or pest control operator who is licensed to apply pesticides and has obtained the required permits should apply the following methods.

1. Trunk Injection

Trunk injection with Imidacloprid* is considered to be the most effective and environmentally sound option. The insecticide is injected directly into the trunk of the tree. The tree transports the chemical to the leaves where it kills the beetles. Tree trunks must be >200mm diameter.

2. Soil injection

Soil injection with Imidacloprid* can be applied to trees of any diameter. Soil injection requires up to 100 L of water per tree and is not recommended when soil moisture is low. Soil injection is highly detrimental to soil flora and fauna, including earthworms and mycorrhiza. Applications near creeks and rivers or near food gardens pose particular risks for invertebrates and human health. Soil injection can be used on trees of any trunk diameter.

Soil and trunk injections typically remain effective for 2-3 years.

Canopy spraying

Foliar sprays are usually impractical due to the size of large elm trees, but might be achievable with young trees. Foliar sprays need to be applied annually.

Non-chemical control

A safe non-chemical control is to trap larvae that migrate down the trunk between December and early February. Adhesive tape can be wrapped around the trunk in a strip about 20cm wide, with the sticky side facing out. This breaks the beetle lifecycle. Horticultural glue can also be used. Timing is very important with banding methods. The bands need to be applied before the larvae start to crawl down the trunk, which can vary depending on the weather each season, so close

monitoring is essential. Banding treatments may need to be reapplied several times each season if beetle numbers are high. These methods will not reduce damage in the initial year of application, but should reduce beetle numbers and damage in subsequent years. This method, while environmentally safe, may not be effective against heavy infestations.

A similar chemical banding method consists of banding the trunk with Carbaryl* insecticide. It is essential that the application is high on the trunk away from children and pets.

Biological control

Natural enemies that parasitise ELB are still being tested and evaluated. These include *Oomyzusgallerucae* (a small wasp) and *Erynniopsisantennata* (a small fly). A spray made of the naturally occurring bacterium *Bacillus thuringiensis* subsp. *tenebrionis* has been trialled and found to be effective against elm leaf beetle larvae. This spray could become available in the near future.

A healthy elm is more likely to survive

Keep elm trees watered in dry periods. Fertilise in late winter with slow release fertiliser. Avoid compaction of soil over root zone. Encourage good soil conditions by covering the root zone with mulch rather than lawn.

Help From local councils

Some local councils in Tasmania have been controlling ELB for several years. They may keep lists of local pest control operators who are licensed to use soil- and trunk-injection control methods.

Note: Dutch elm disease, which has killed millions of elms in the Northern Hemisphere, is spread by the Elm bark beetle, **NOT** the Elm leaf beetle.

Dutch elm disease is not present in Australia.

***Important note on chemical use:** Agricultural chemicals, including insecticides, are not to be used for any purpose or in any manner contrary to the label unless authorised under appropriate legislation. Before using a chemical, read and adhere to the instructions for use on the label. For information on registered chemicals and current off-label permits, visit the APVMA website (www.apvma.gov.au).

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