

ELM LEAF BEETLE

Life Cycle and Identification

Adult beetles hibernate in winter in sheltered places. As temperatures rise in spring and reach certain levels, the beetles emerge and begin feeding on Elm leaves. This feeding is indicated by shot hole damage and it generally begins in late October. The early damage is often found on the warmer sections of the canopy such as the top, northern and eastern sides.

In early November the beetles begin to lay small clusters of eggs, generally on the underside of the leaves. This can continue into January but with a peak in early December. Within 7 – 10 days the eggs hatch into small black larvae. The larvae begin feeding immediately. Heavy skeletonisation causes the leaves to turn brown and drop prematurely from the tree. This damages the tree both physically and visually.

The larvae go through three stages called 'instars'. Each instar eats progressively more than the instar before. It has been estimated that the third instar can eat up to 18 times the amount as the first instar. Larvae may be found from early November until early March. When the larvae have completed their development, they crawl down the trunk of the tree to pupate (form a small yellow 'cocoon') at the base of the tree or in bark crevices. This process starts in mid December and can continue until early March. Some larvae fall off the tree without crawling down.

Adult beetles emerge about 10 days after pupation and begin feeding for a few weeks prior to commencing hibernation from late March. Adults hibernate in dry areas such as sheds, houses, wood piles and cars.

In Victoria there is generally only one life cycle per year although studies have found that sometimes there is a second life cycle. At times the second life cycles may not go beyond the larval stage, however this can cause considerable damage to trees late in the season.

If Elm Leaf Beetle populations are high and trees become severely defoliated over summer, the trees may produce new leaves late in the season. Beetles can also quickly eat these new leaves. This level of damage will put considerable stress on trees as hot dry conditions are often prevailing late in summer. Repeated defoliation over a number of years will weaken trees and make them susceptible to other pests, disease and wind damage.

Control of Elm Leaf Beetle

There are a number of ways to control Elm Leaf Beetle. Different treatments give varying periods of control. Ideally, protection from all stages of the beetle's life cycle will avoid any damage to trees. Protection can be achieved for 2 – 3 years using either a soil injection or a stem injection. Treatments such as these can be carried out by Arbor Co Pty Ltd's qualified and experienced technicians.

Arbor Co maintains a record of all treatments applied on our customised computer database. We are able to track each individual tree and advise when repeat treatments may be necessary.

Soil Injection

Soil injections utilise a specialised soil injector to inject ArborGuard® into the soil under the drip line of the tree. ArborGuard® contains the active ingredient imidacloprid as well as a microbial soil activator to stimulate the production of new feeder roots.

Imidacloprid is taken up by the feeder roots and translocated through the tree's vascular system to the shoots and leaves where it will kill the adult beetles and also the larvae when they start to feed. As the movement of imidacloprid within the tree is relatively slow, soil

injections need to be carried out at least 6 – 8 weeks prior to the emergence of the beetles from hibernation.

Arbor Co has found that the ideal timing for soil injections is from late autumn until early spring. It is essential to have good soil moisture at the time of and following the injection to allow for good uptake.

Imidacloprid has relatively low toxicity to humans so it ensures a safe method of control and it will not adversely affect any other plants in the treated area. Soil injections are cost effective, safe and provide long term control.

Stem Injection

The process involves the use of injectors that are introduced to the vascular system of the tree by means of a small drill hole. The number of injections per tree is determined by the size of the tree and once the injectors have drained they are removed from the tree.

Arbor Co's consultant arborists have examined this treatment over several years and have determined that the chance of damage occurring to the tree is extremely low.

Stem injections can be applied at any time of the year and are particularly useful in the following situations.

- Where access to the root zone is limited due to paving, earthworks, buildings and adjoining properties.
- Where good soil moisture can not be guaranteed.
- Where the trees are already in leaf as it only takes about 5 days for the treatment to start killing the beetles and larvae.

As the insecticide is applied directly to the sap stream there is very little risk to the environment. Stem injections are a very reliable, cost effective, means of providing long term control.

Calendar of Activity

Timing of applications is essential in Elm Leaf Beetle management. A quick guide to all of the aspects of Elm health and appropriate timing/s are outlined below.

