Two-Lined Chestnut Borer
Oak and Chestnut Trees

What is Two-Lined Chestnut Borer?
Two-lined chestnut borer, *Agrilus bilineatus*, is an insect pest that attacks oaks, beech, hornbeam, and chestnuts that are stressed by drought, compaction, or other insects or diseases. Trees can be killed in the first year of attack; however, death usually occurs after 2 to 3 successive years of infestation. Typically, the crown is attacked during the first year, while the remaining live portions of the branches and trunk are infested during the second and third years.

Biology
Just like most wood boring beetles, it is the larval stage of two-lined chestnut borer that causes injury to the tree. The larvae feed on the sapwood, disrupting the flow of water, nutrients, and sugar. Eggs are laid in the late spring, hatching, and beginning to feed throughout the summer.

Susceptible Trees
Two-lined chestnut borer is a primary pest of oak and chestnut trees. Evidence suggests that it will also attack beech and hornbeam as well. The most commonly affected oaks include chestnut, white, black, red, scarlet, and bur.

Signs and Symptoms
- Sparse, small, and discolored foliage, which is followed by the dieback of branches.
- Leaves of infested branches turn uniformly redbrown and remain attached to the tree. The leaves on non-infested branches remain green. Infested oaks have a distinct pattern of dead and live leaves on them.
- D-shaped exit holes.
- Meandering feeding galleries underneath the bark.

Photo, top right: Two-lined chestnut borer affected trees show predictable symptoms: dead branches at the top of the tree, brown leaves still hanging onto the tree, and at the bottom leaves are still green and healthy. Above: Two-lined chestnut borer is a flat headed borer, leaving a D-shaped exit hole when it emerges as an adult. Below, top: Two-lined chestnut borer larvae are white segmented grubs that feed on the conductive tissues of oak trees. Below, bottom: Two-lined chestnut borer adults are most recognizable by the two thin lines down its brown wings, although adults are rarely seen.
Two-Lined Chestnut Borer Treatment Strategies

Treatment Strategies

Understanding that two-lined chestnut borer primarily attacks stressed trees helps us design an effective treatment program. While alleviating the stress on infested trees through watering and mulching will support the trees natural defense system, the use of insecticides is recommended to get an infestation under control. Preventative and therapeutic treatments with insecticides need to target this pest where it feeds, the conductive tissues of the tree. Soil applied systemic insecticides, such as Xytect™ and Transect™, offer protection from two-lined chestnut borer by being distributed in this area.

Using Insecticides

Preventative Treatments

Important trees that are not yet showing symptoms or those that are beginning to die back should be treated annually to prevent further symptoms or to keep insects out. Xytect™ is applied each year, preferably in the spring or fall, and lasts one full year in the tree. Mid-summer applications can be done but are not optimal.

Therapeutic Treatments

Trees that are showing symptoms in less than one third of their canopy are still good candidates for treatment. Once an infestation progresses beyond this point, the conductive tissues are too compromised to get insecticides into the tree. Dead branches will not grow back and should be pruned out. In order to effectively control a heavy infestation, two treatments are required in the first year. The first needs to be fast acting to kill the larvae that are in the tree. Transect™ is a quick absorption insecticide that effectively controls borers and will move into your tree in about a week. Following up with a Xytect™ application will provide one full year of protection. Annual Xytect™ applications will maintain this protection with no need for additional Transect™.

Other Treatment Options

Protecting the trunk of an oak with sprayed insecticides multiple times in a season was the standard treatment in the 1990’s and before. With the advent of soil applied systemic insecticides, this method is no longer necessary. If you prefer this method of treatment, please contact The Tree Geek for more information.

DIY Shopping List

Option 1:

Application Type – Soil drench, Soil injection

DIY Product/Equipment Needed

- Xytect™ or Transect™
- Measuring or diameter tape
- Gloves
- Soil Drench: Bucket or watering can
- Soil Injection: HTI Soil Injection Kit

Cultural Practices

- Watering Adequate water is a key factor in maintaining healthy trees. A slow, deep watering event once every few weeks during dry conditions will help maintain soil moisture levels and minimize the stress that invites two-lined chestnut borer.

- Mulching Mulch is very beneficial for all trees because it reduces competition with turf and moderates soil temperature and moisture levels. The addition of 3 inches of wood chips or shredded bark under the drip line can have a very beneficial effect by holding in moisture and promoting healthy fibrous roots.

- Fertilizing Proper fertilization can be beneficial for any tree. However, it is important to know that too much nitrogen will increase your trees susceptibility to two-lined chestnut borer by increasing succulent growth. Do not fertilize oak trees that are showing symptoms of two-lined chestnut borer.

Photo, above: Applying Xytect™ is easy. Simply pour the product mixed with water around the base of your tree.