

Treating for Emerald Ash Borer

The **Emerald Ash Borer** (EAB) is an invasive pest introduced from Asia that attacks ash trees (*Fraxinus* spp.) This metallic wood boring beetle was found in Detroit, Michigan and Ontario, Canada in 2002, and has continued to spread into neighboring states and provinces killing tens of millions of trees. To date, [EAB has been confirmed in 25 states and 2 provinces](#), resulting in billions of dollars in damage. A [2010 study](#) forecasted that by the year 2019, Emerald Ash Borer will have caused \$10.7 billion in damage and resulted in the loss of 17 million landscape trees across 25 states—we're already well on the way to surpassing these predictions.

[Recommend inserting map from: http://www.emeraldashborer.info/files/MultiState_EABpos.pdf and sharing study from http://www.nrs.fs.fed.us/pubs/jrnl/2010/nrs_2010_kovacs_001.pdf]

Symptoms

EAB larvae live under the bark and feed on trees' vascular tissues. Larvae create meandering galleries through the phloem and vascular cambium while etching the xylem, effectively girdling the tree. The tree responds by sprouting new (epicormic) branches below the disrupted tissues. Dieback of the canopy is a symptom of EAB larval infestation: as many as one half of the branches may die back as infestation progresses. The bark will split over dead vascular tissues, and trees may die within only two years of the onset of symptoms.

Treatment Options

Treat ash if EAB is reported in your area. Do not wait for visible dieback in the canopy, as there is a significant delay between disruption to the vascular tissues and expression of symptoms in the canopy. Delaying Emerald Ash Borer treatment could result in canopy dieback or tree loss.

Many treatment options exist for treating Emerald Ash Borer. Arborists can choose from soil applications, bark sprays, or trunk injection methods for controlling EAB, and each comes with its own set of pros and cons.

Soil Applications

Soil-applied control methods for Emerald Ash Borer, either basal drench or soil injection, tend to be the lowest in labor cost but also take longest to move the active ingredient to the target area in the tree. Soil applications are usually either imidacloprid or dinotefuran-based. Imidacloprid soil treatments should be applied mid-March to late-April or mid-October to mid-November, whereas dinotefuran formulations are generally applied a few weeks later. Per-acre limitations exist that limit the amount of soil-applied products that may be used in an acre in a year—it's worth noting that other turf or ornamental applications also count against this limit, so applicators may not be able to apply as much product as is required for efficacy. Studies have shown that soil applications provide inconsistent results, particularly

when treating trees above 22" diameter at breast height. Soil applications are ideal for situations with good soil conditions, small trees, and when EAB is confirmed more than 15 miles away.

Bark Sprays

Basal bark spray methods tend to fall next in line in labor costs and uptake speed. Bark sprays of dinotefuran are generally applied late-May to mid-June. Bark sprays are noninvasive, water-soluble, and require no special equipment. It's important to set spray settings properly so that the amount of product being applied is enough to control Emerald Ash Borer. [Published data](#) has shown that bark sprays tend to work at least as well, and in some cases better than, soil applied control methods for EAB and that the active ingredient moves at a similar pace as trunk injection to the target tissue.

Trunk Injection

Lastly, trunk injection methods tend to be the most labor-intensive methods for EAB control but offer the fastest uptake speed and least impact on the environment. This option involves drilling a small hole at the base of the tree and applying a small amount of chemical directly into the tree's transport tissue, making it the most targeted and one of the fastest-uptake options for control. The recommended timing for trunk injections is mid- to late-spring after trees have leafed out and early- to mid-fall before leaves fall. Trunk injected treatments are advantageous where soil applications and bark sprays are environmentally discouraged—near water sources or in poor soil conditions. According to "[Insecticide Options for Protecting Ash Trees from Emerald Ash Borer](#)," a 2014 cooperative document from The Ohio State University, Michigan State University, Purdue Extension, and Colorado State Extension, trunk injections with very low rates of emamectin benzoate provide excellent control for EAB even under heavy pest pressure. Trunk-injected imidacloprid and azadirachtin have also shown to provide high levels of control.

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