Emerald Ash Borer Management Guide for Missouri Homeowners

The emerald ash borer (EAB) is a serious threat to ash trees in Missouri. This invasive pest will eventually kill unprotected ash trees. Many trees can be saved with the careful use of systemic insecticides. However, not all ash trees should be treated, and for many locations the start of treatments should be delayed. This guide will assist you in making decisions about protecting your trees from this invasive pest. Find more information at eab.missouri.edu.

Signs & Symptoms of EAB

<table>
<thead>
<tr>
<th>EAB adults are generally seen from mid-May through July.</th>
<th>D-shaped exit holes about 1/8” wide</th>
<th>Winding, S-shaped tunnels just under the bark</th>
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</thead>
<tbody>
<tr>
<td>Howard Russell, Bugwood.org</td>
<td>MO Dept. Conservation</td>
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</table>

New sprouts on the branches and lower trunk
Pennsylvania DCNR, Bugwood.org

Increased woodpecker activity on the tree
Kenneth R. Law, Bugwood.org

Sparse leaves and/or branches dying in the upper part of the tree
David Cappaert, Michigan State University

Use Care When Applying Insecticides

Water Quality
When using insecticides applied to the soil or sprayed on bark, take the following precautions:

- Follow all label directions.
- Avoid applications when heavy rainfall is expected within 48 hours.
- Do not apply when soil is frozen or waterlogged.
- Avoid using within 25 feet of bodies of water or conduits to water such as street curbs and storm drains.
- Sweep up granular products off of sidewalks and driveways.

Imidacloprid and Dinotefuran are toxic to some aquatic invertebrates, but have a low probability of impacting aquatic organisms if applied as directed to clay or loam soils. Water quality concerns are less with trunk-injected insecticides compared to products applied to the soil or sprayed on bark.

Pollinators
Recent evidence shows that some systemic insecticides may be present in pollen, if plants are treated prior to blooming. **Caution is required when applying insecticides to limit possible impacts on pollinators.**

Ash trees are primarily wind-pollinated, but honey bees occasionally collect ash pollen. Applying insecticides near or after the times indicated in the treatment options tables on page 4 will avoid or limit pollinator exposure to the chemicals.

Avoid planting flowering plants adjacent to trees where systemic insecticides will be applied to the soil and may be absorbed by flowering plants. If flowering plants are adjacent, do not apply systemic insecticides to the soil before or during blooming.

Begin with an inventory of your ash trees.
- How many?
- Where are they?

Do you want to protect your ash trees from EAB?

Yes!

Are your ash trees worth protecting?
Healthy trees can be treated!

Consider treating with insecticides if ash trees are:
- Healthy and vigorously growing with less than 50% dieback (dead branches and missing leaves)
- Showing few outward signs of EAB or other borer infestations
- Valuable to the owner by providing shade, energy savings or aesthetics
- Historically significant

Remove and replace low-value ash trees.
- Unhealthy trees with more than 50% dieback, severe injuries, or many borer attacks are unlikely to recover—even if treated.
- Small trees or trees located in poor sites (too close to utility lines, buildings, or sidewalks) are often not worth the cost of ongoing treatments.
- If you decide to remove your ash tree, dispose of it locally to prevent the accidental spread of EAB.

Visit eab.missouri.edu for more information.

Ash leaves are compound with 5-11 leaflets.
The buds on ash twigs are opposite one another.

Save money.
Have unwanted ash trees removed before they die. For professional removals, ask for references and insurance.

Unprotected ash trees will die.

No.

Yes!

Yes! Contact a certified arborist to evaluate the health of your trees.

Maybe? Contact a certified arborist to evaluate the health of your trees.
Contact a certified arborist!
Find a list of arborists in your area at treesaregood.com
Visit eab.missouri.edu for current news on EAB in Missouri.

Is EAB nearby?
Visit eab.missouri.edu for a map of counties with EAB. Insecticide treatment should be considered when EAB has been found within 15 miles or within your county.

Plant new trees!
Select a diversity of species to reduce risks of future new pests. For information on tree selection, planting and care, visit mdc.mo.gov/node/3321

You can treat your trees yourself using a soil drench containing imidacloprid or granules containing dinotefuran.
Treat trees in early spring. Ensure that drenches or granules are applied to bare soil within 18 inches of the trunk. Always follow all insecticide label directions. See page 4 for a list of options.

Measure your trees.
To determine the diameter at breast height (DBH), measure the distance around the trunk at 4.5 feet above the ground. Divide this number by 3.

Insecticide treatments are not recommended at this time.
Keep alert for EAB arrival.

Insecticides available to homeowners are not effective on trees 20 inches DBH and larger. Call a certified arborist to discuss treatment options.

Yes!
Yes!
No.
No.

Adapted with permission from "Managing Emerald Ash Borer: Decision Guide," Annemarie M. Nagle & Cliff Sadof, Purdue University.
**Insecticide Treatment Options**

Insecticides used for EAB management are systemic products that are applied either to the soil or lower trunk and then transported throughout the tree by its vascular system. Drought conditions limit systemic insecticide uptake into and throughout the tree. Irrigating around the base of the tree before an insecticide application will improve uptake.

For trees near public streets and sidewalks, check with your city to determine what actions are allowed, or if treatment or replacement plans already exist.

Following are some commonly used insecticides listed by active ingredients. Multiple brands are available for some active ingredients. The recommended treatment timing is applicable in Missouri.

<table>
<thead>
<tr>
<th>Products Available to Homeowners</th>
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<tbody>
<tr>
<td>For trees less than 20 inches in diameter, but most effective for trees less than 15 inches in diameter.</td>
</tr>
<tr>
<td>Active Ingredient</td>
</tr>
<tr>
<td>Imidacloprid</td>
</tr>
<tr>
<td>Dinofuran</td>
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</table>

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<tr>
<th>Products Available to Tree Care Professionals</th>
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</thead>
<tbody>
<tr>
<td>Be aware of label restrictions on maximum amount of insecticide that can be applied per acre per year.</td>
</tr>
<tr>
<td>Active Ingredient</td>
</tr>
<tr>
<td>Emamectin benzoate</td>
</tr>
<tr>
<td>Azadirachtin</td>
</tr>
<tr>
<td>Imidacloprid</td>
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