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Should ash trees still be protected from emerald ash borer?

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The emerald ash borer (EAB), *Agrilus planennis,* is still one of the most damaging insect pests ever to invade North American forests. Unlike most native boring insects, this beetle can attack and kill relatively healthy ash trees. In Indiana cities we found this insect capable of killing most of the unprotected ash trees within 6 to 10 years. Nearly 20 years after its first detection in Indiana (2004), trees still need to be protected to keep them alive. The benefits of these living ash trees easily justify the cost of monitoring them. We provide answers to common questions people have about the need for continued treatment.

- *I have had a tree care specialist treat my ash trees for the last 10 years. What will happen to these trees if I stop this service?* If your trees are still healthy, they were probably treated with injections of emamectin benzoate. Initially we recommended treating trees once every 2 years. This was especially helpful during the initial invasion when each newly infested tree was producing hundreds of beetles per year. Now that most of the untreated ash trees are dead in Indiana, there are fewer emerald ash borers to attack the surviving ash trees. Research clearly shows that treating trees once every 3 years is enough to keep ash trees alive. Increasing the time between treatments beyond 3 years will increase the risk of losing your trees.

We recently completed a 10-year study in Indianapolis, where large ash trees were treated at 3-year intervals (2013 and 2016), Although they were well-protected through 2019, we saw a slight increase in damage 4 and 5 years after the last injection (2020 and 2021). By the 6th year trees after the last treatment (2022), trees declined to the point that they were a safety hazard. Overall, spring treatments were more effective than fall treatments.

- *Is it worthwhile to continue treating my trees?* The simple answer is YES, especially if you think about the costs of the alternatives over time. Consider the following choices:
    - *Homeowner tree removal vs treatment.* Suppose you had ash tree that was whose trunk diameter was 30 inches. If you were to have that tree and its stump removed, the cost could easily be $1800. If an ash tree is near your house or other valuable structure special precautions need to be taken to keep limbs from causing damage. These protective measures add greatly to the labor costs and could easily double the removal costs ($3600). In contrast, to keep that tree alive, you would have to inject that tree once every three years at a cost of $300 (assuming the fee is $10/ diameter inch). In other words, the $1800 -3600 you pay to remove the trees would provide 18-36 years of enjoying your tree!
    - *Homeowner tree replacement vs treatment.* Trees grow slowly. Most add a bit less than a half an inch per year of diameter to the trunk. So, if you add $500 on top of the removal costs to plant a new tree ($2300- $4100), the same money would provide 23 to 42 years of tree enjoyment. Moreover, the tree you planted would only be half the size of the original ash tree in 30 years.

- *Does it make sense for my city to still pay for protecting ash trees on streets and in parks?* When a similar approach is used to compare the costs of tree removal and replacement over time, it is more expensive to remove and replace city ash trees than to protect them. This is especially true for cities that focused protection on the larger ash trees (trunk diameter 12" at chest height) and removed and replaced smaller trees. Our free web based tool, Purdue's Emerald Ash Borer Cost Calculator helps forest managers use their street tree inventories and local estimates for removal, replanting and treatment costs to various approaches to managing trees over a 25 year period.

- *How can EAB still be in Indiana if all the ash trees are dead? Shouldn't they have starved to death?* Not all the ash trees in Indiana are dead. Although EAB kills most of the ash trees after it arrives, ash saplings are not attacked until stems are about ½- 1 inch in diameter. Annual production of saplings in the ash forest provides a steady supply of ash trees that eventually grow big enough to keep EAB populations alive even after most of the larger trees have been killed. In cities, suburban towns and rural areas, these ash saplings will thrive near ditches and streams. Some of these trees can grow large enough to produce seeds before the borers find and attack them. A very small percentage of white and a substantial number of blue ash trees are also able to survive this initial invasion of EAB. So, unfortunately, EAB is here to stay and will never become extinct.

Additional Resources

North Central Regional Guide to Managing EAB with Insecticides (3rd ed)

Emerald Ash Borer in Indiana

Emerald Ash Borer Cost Calculator