Controlling the Spread of the Emerald Ash Borer

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Management Approaches

1. Preventing Additional Infestations
2. Removal and Replacement
3. Host Plant Resistance
4. Chemical Insecticide Treatments
5. Biological Control

Prevent Additional Infestations

- Prevent Movement
  - Firewood regulations
- Early Detection
  - Biosurveillance
  - WI First Detector Program

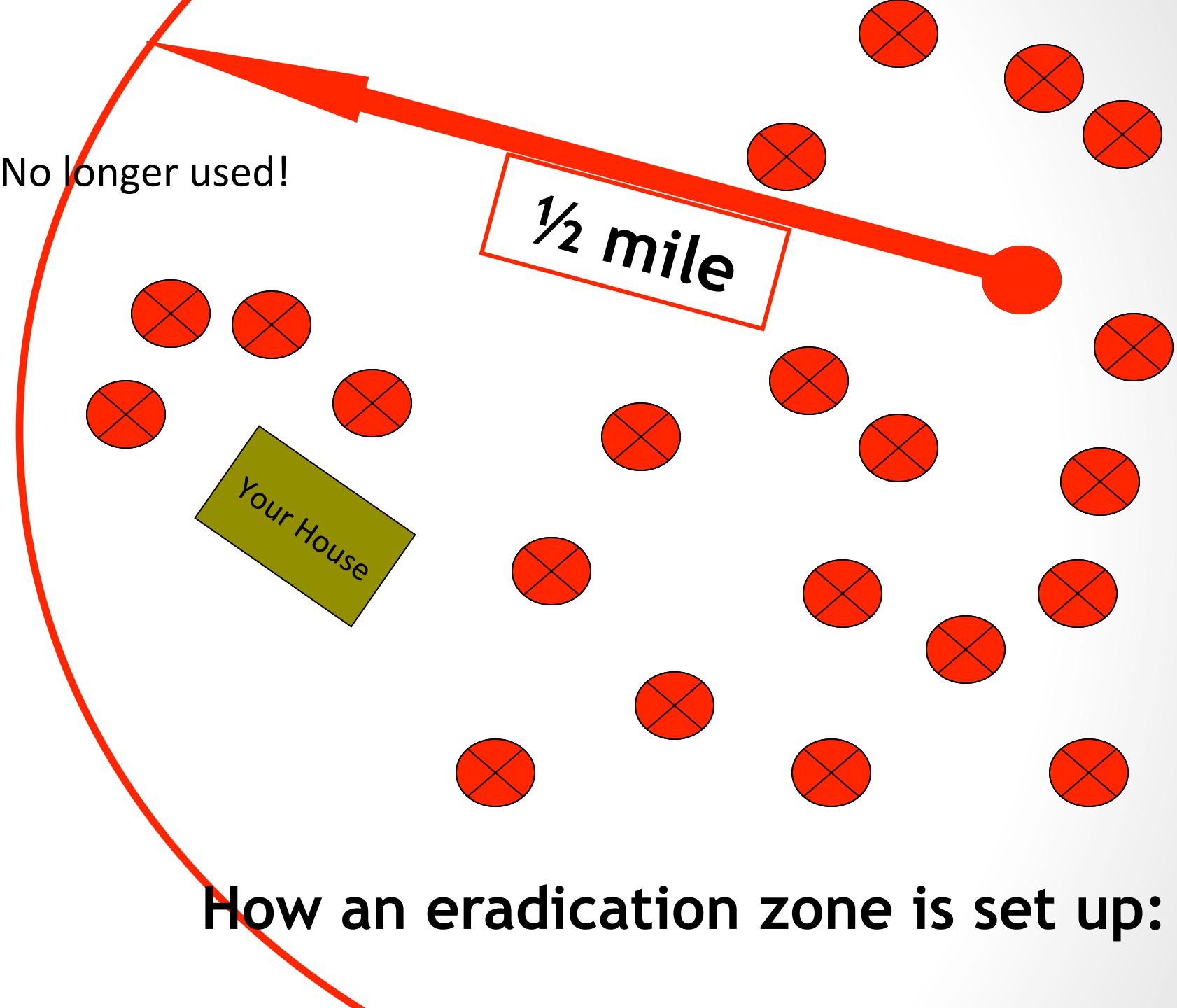
Tree Removal: Eradication vs. Management

- Eradication-
  - Theoretically only 100% effective method: remove infested ash trees
  - No achievable, no longer used

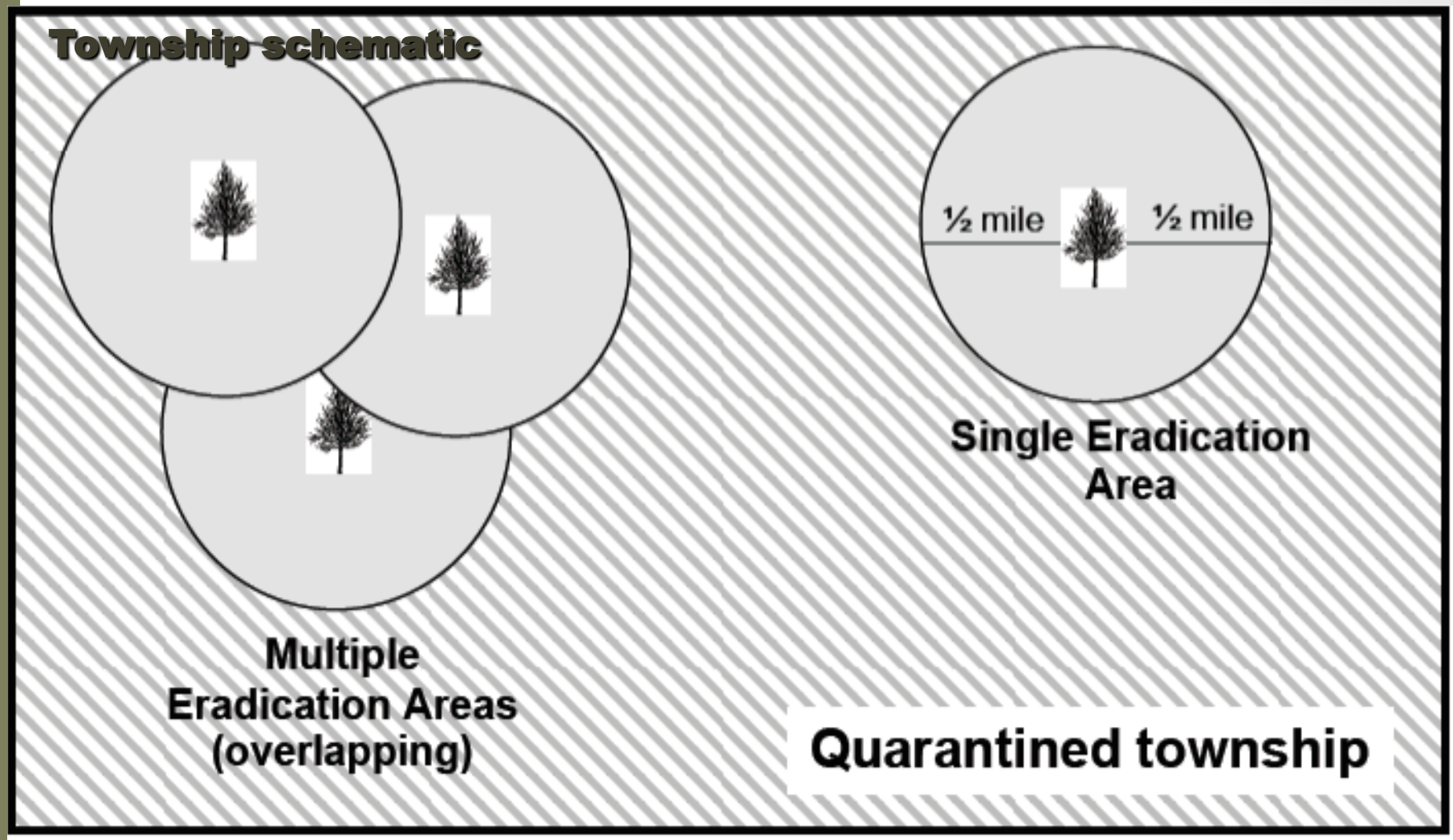
- Management-
  - Selected tree removal & replacement, and chemical controls are currently parts of management plans

- As funding dried up, efforts shifted from eradication to management
  - Decisions have become responsibility of local municipalities and homeowners

No longer used!



How an eradication zone is set up:

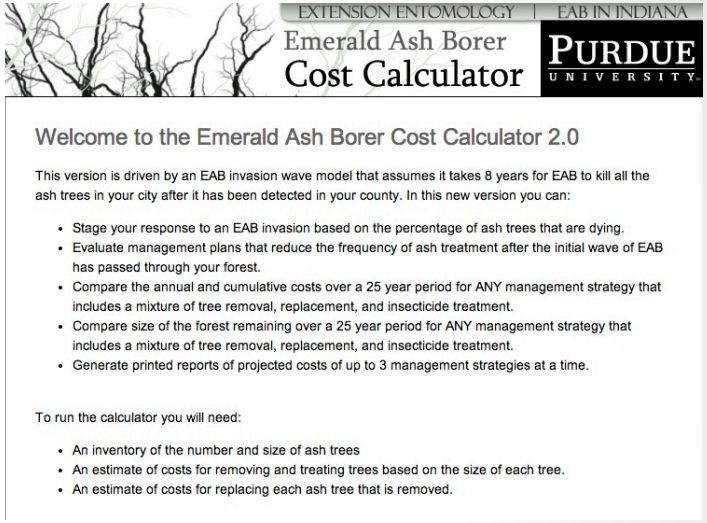


Eradication area(s): *the sections of a quarantined township from which ash trees are actually removed. Although an entire township is usually quarantined for EAB, only the areas in the township within ½ mile of an infested ash tree will be subject to ash tree removal.*

Removal and Replacement

- Can be costly, especially for large trees
- EAB Cost calculator (Dr. Cliff Sadof, Purdue)

http://extension.entm.purdue.edu/treecomputer/



EXTENSION ENTOMOLOGY | EAB IN INDIANA

Emerald Ash Borer Cost Calculator

PURDUE UNIVERSITY

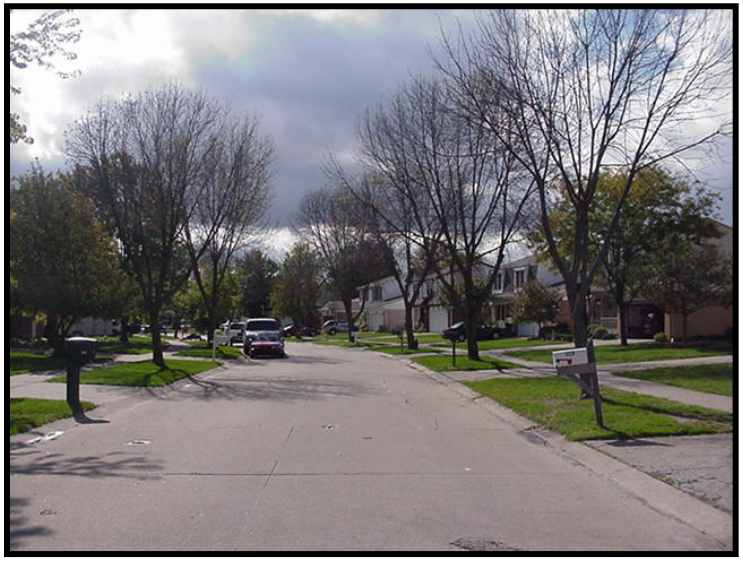
Welcome to the Emerald Ash Borer Cost Calculator 2.0

This version is driven by an EAB invasion wave model that assumes it takes 8 years for EAB to kill all the ash trees in your city after it has been detected in your county. In this new version you can:

- Stage your response to an EAB invasion based on the percentage of ash trees that are dying.
- Evaluate management plans that reduce the frequency of ash treatment after the initial wave of EAB has passed through your forest.
- Compare the annual and cumulative costs over a 25 year period for ANY management strategy that includes a mixture of tree removal, replacement, and insecticide treatment.
- Compare size of the forest remaining over a 25 year period for ANY management strategy that includes a mixture of tree removal, replacement, and insecticide treatment.
- Generate printed reports of projected costs of up to 3 management strategies at a time.

To run the calculator you will need:

- An inventory of the number and size of ash trees
- An estimate of costs for removing and treating trees based on the size of each tree.
- An estimate of costs for replacing each ash tree that is removed.



Host Plant Resistance

- Manchurian ash appears to only be tolerant (<u>not</u> resistant)
- No evidence of true resistance in any native ash species

Common Misconceptions Regarding the Management of EAB

- ALL ash trees are doomed
- Ash Trees can NOT be saved or protected
- Insecticide Treatments are NOT Effective
- Insecticide Treatments are cost prohibitive
- Only ONE insecticide product is effective

Two-Tiered Insecticide Approach:

- <u>Inside Quarantined Zone</u>
  - Annual insecticide treatments are a potentially effective management option
- <u>Outside Quarantined Zone</u>
  - Insecticide treatments NOT suggested unless within <15-20 miles from an infested area

Chemical Treatment Availability

- Professional Use Products (arborists)
  - Several chemicals available
  - Several application methods available
  - Require specialized training and equipment

- Homeowner products
  - Imidacloprid and Acephate available
  - Soil drenches and trunk implants available
  - Can be purchased at local gardening centers

Professional EAB Insecticide Treatment Options

- Imidacloprid
  - Merit (Soil drench or injection)
  - Xytect (Soil drench or injection), 2X label rate!
  - Pointer (Trunk Injection, Wedgle)
  - IMA-Jet (Trunk Injection, ArborJet)
  - Imicide (Trunk Injection, Mauget)
- Dinoterfuan
  - Transtect (Basal Bark Spray or Soil Drench)
  - Safari (Basal Bark Spray or Soil Drench)
- Emamectin Benzoate
  - Treeäge (Trunk Injection, ArborJet), RUP*
- Azadirachtin
  - Treeazin (Trunk Injection), Only organic option available

See UW-Extension Factsheet:

XHT1185 "Professional Guide to Emerald Ash Borer Insecticide Treatments"

Insecticide Application Techniques

Soil Drench Method

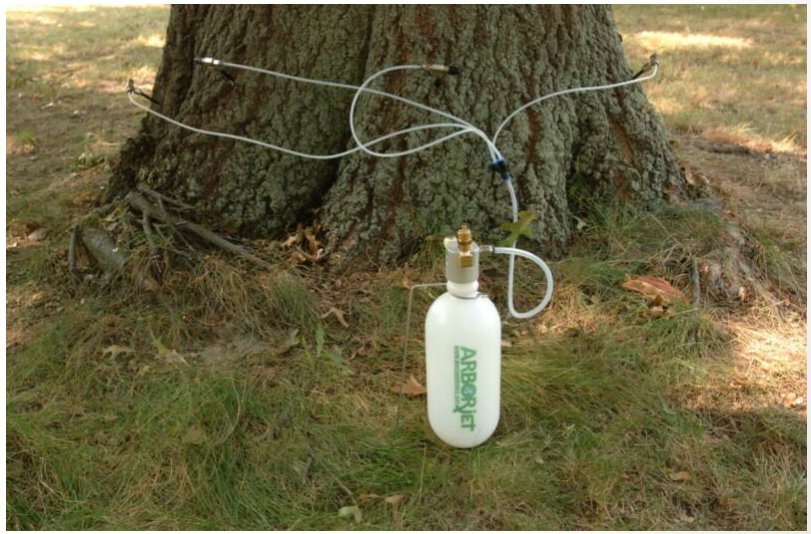
Basal Bark Spray

Professional Tree Injections

Arborsystems
Wedgle

Mauget

Arborjet Tree IV



Soil Application vs. Trunk Injection:

<u>Soil Application</u>

Pros: Noninvasive, can be easy to apply

Cons: Slower uptake (3-6 weeks)

<u>Trunk injection</u>

Pros: Rapid uptake (under good conditions); apply where soil treatments not possible

Cons: Specialized equipment, trunk wounding

Homeowner EAB Insecticide Treatment Options

- Acecap Systemic Tree Implants
- AmdroTree and Shrub Care Concentrate
- Bayer Advanced Tree and Shrub Insect Control
- Compare N Save Systemic Tree and Shrub Insect Drench
- Ferti-loam Systemic Tree and Shrub Drench
- Monterey Once A Year Insect Control
- Ortho Bug B Gone Year Long Tree and Shrub Insect Control
- Optrol (same 2X rate as Xytect)

Other products may exist, market changes regularly!

See UW-Extension Factsheet XHT1181:

"Homeowner Guide to Emerald Ash Borer Insecticide Treatments"

Homeowner Insecticide Options

Soil Drench Method

For a video demonstration of how to apply a soil drench insecticide, visit the UW-Madison Emerald Ash Borer website:

http://labs.russell.wisc.edu/eab/

Acecap Systemic Tree Implants

Optimal Timing of EAB Treatments

- EAB Adults emerge around 450-500 GDD
  - Around the time that black locust is in bloom
  - Systemic products need to be applied before this to allow for uptake
- <u>Soil Treatments</u>
  - In Spring allowing time for uptake before adults begin to feeding and eggs begin to hatch
  - Typically early May for small trees, April for larger trees
- <u>Trunk Injections</u>
  - In Spring just after the canopy has fully developed

Are Insecticides Effective?

- Eradication: NO
- Tree Protection: YES (in some cases)
  - Protection of individual or high-value ash tree(s)
  - NOT cost effective for woodlots or forested areas

Final Remarks About Insecticides:

- Insecticides have potential, <u>but</u> success not assured
  - Best results on healthy trees; low insect density
  - Spring treatments may be more effective than fall applications

- Annual treatments <u>may be</u> required for life of tree
  - Long-term effectiveness of insecticides is not known!
  - Some products (Treeage) may only need to be applied every 2 years (every 3, 4, 5 years?)

- Start early to be most effective:
  - April for larger trees [> 8" DBH]
  - May for smaller trees [< 8" DBH]

- Insecticides not economical for <u>large areas</u>

Should you treat your tree for EAB?

- Several factors to consider before to treating you ash trees:
  - Tree health
  - Tree location
  - Tree value
  - Costs to treat
  - Costs to remove

See UW-Extension Factsheet XHT1215:

"Is My Ash Tree Worth Treating for Emerald Ash Borer"

XHT1215

University of Wisconsin Pest Alert

UW Extension
University of Wisconsin–Extension

Provided to you by:

Is My Ash Tree Worth Treating for Emerald Ash Borer?

PJ Liesch, UW Entomology, Patti Nagai, UW-Extension Racine County and R. Chris Williamson, UW Entomology

This factsheet addresses some of the most frequently asked questions regarding the treatment of ash trees for emerald ash borer (EAB), and the removal and disposal of infested trees.

When should I consider treating my ash tree for EAB? Based on current research, EAB treatments are suggested only for ash trees located within 15 miles of a confirmed EAB site, or for trees located within a quarantined area. Insecticide treatments are **not** necessary for ash trees located outside of these areas. Even within the 15-mile radius, not all trees should be treated. Due to the expense of insecticide treatments for EAB, consider the value of a particular ash tree in relation to insecticide treatment costs before making any treatments. Proper use of EAB insecticides can help maintain the health of high value ash trees over time. Lower value ash trees are not ideal candidates for EAB insecticide treatments.

High value ash trees are candidates for treatment for emerald ash borer.

How do I know if my ash tree has value? Ash trees can be a valuable part of the landscape. A properly cared for ash tree can increase property value, provide environmental benefits such as runoff and erosion mitigation, and reduce electricity costs by shading a home. Determining tree value can be subjective. Qualities to consider when assessing value include (but are not limited to) a tree's overall health, shape, location with respect to landscape design, and appearance through the seasons, as well as whether or not a tree provides shade. A healthy ash that is properly located in the landscape, has a nice shape and good fall color, and provides shade has value. An ash tree that is not healthy due to disease or insects, has poor shape or structural damage, is otherwise unattractive, or is in a bad location (e.g., near a power line) is of lower value.

How do I know if there are ash trees in my area that are infested with EAB? The Wisconsin Department of Agriculture Trade and Consumer Protection (DATCP) keeps track of EAB infestations in the state. Visit the Wisconsin DATCP Emerald Ash Borer Resource Guide website (http://datcpservices.wisconsin.gov/eab/) and follow the "Where has EAB been found?" link to access an up-to-date list and map of EAB infested counties and municipalities. You can also contact your local county UW-Extension office to see if EAB has been found in your area.

How do I know if my ash tree has EAB? Symptoms of an EAB infestation can include **canopy thinning** starting in the upper portion of the tree, **epicormic sprouting** (i.e., formation of sprouts) along the trunk, **bark splitting**, and **woodpecker damage**. These symptoms indicate general tree stress, and can be due to EAB. However, they also can be caused by diseases or insects other than EAB. Specific signs of EAB include **D-shaped exit holes** (~$^{3}/_{16}$ inch wide) in the bark of the tree, **S-shaped larval tunnels** and/or **larvae** (cream colored, up to 1½ inches long) beneath the bark, and **adults** (metallic green, ~$^{5}/_{8}$ inch long). Visit the UW-Madison Emerald Ash Borer in Wisconsin website (http://www.entomology.wisc.edu/emeraldashborer) for additional information on the symptoms and signs of EAB. If you suspect an EAB infestation, call the Wisconsin EAB Hotline at 1-800-462-2803.

If I decide to treat my ash tree, will I have to treat every year? In most cases, yes. Most insecticides registered for EAB management require yearly applications to effectively protect a tree. The one exception is TREE-äge (active ingredient = emamectin benzoate), which can protect a tree for at least two years. TREE-äge is a trunk-injected insecticide available only to professional insecticide applicators (e.g., certified arborists). TREE-äge can effectively protect an ash tree if the tree is treated every two years.

Revised Dec. 18, 2012

Biological Control

- Method of controlling pests through the use of natural predators, parasites, and pathogens
- For EAB this involves small, stingless wasps
- May be a sustainable, long-term option for managing EAB over large areas, such as woodlots and forested areas
  - *Pesticides not suitable for large areas*

EAB Biocontrol in Wisconsin

- Parasitic wasps released in Wisconsin, starting in 2011
- Long-term effectiveness not known

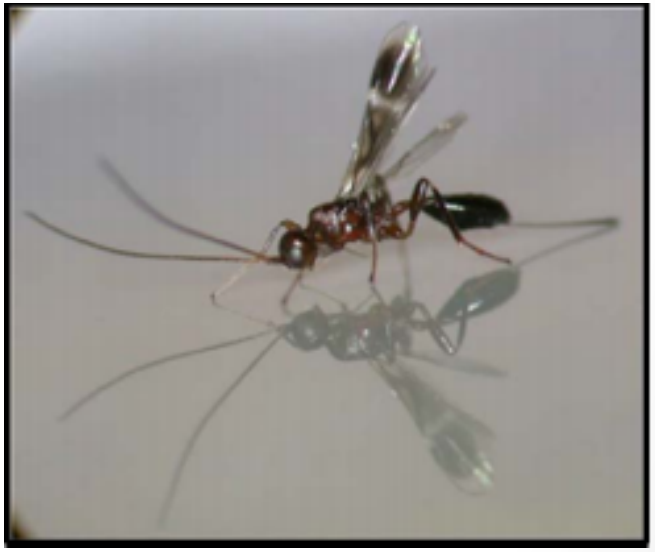


Photo Credits: USDA APHIS

Questions about Parasitoids

- Will Biological Control of EAB work?
- Can parasitoids survive the northern winters?
- What are the conditions required for establishment/survival of parasitoids?
- What number of parasitoids must be released to establish a sustainable population?