Developing an EAB Management Strategies for Properties and Cities

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Overview

- What are the management options?
- How much do they cost?
- Replacement vs replanting costs over time – break even analysis for one tree
- Developing a plan for an urban forest

Management options for a tree

- Do nothing, wait till EAB kills tree
- Remove and replant
- Treat

Cost to remove ash and replant with a mulched 2" maple

Removal costs include stump removal are $55/hr.

<table>
<thead>
<tr>
<th>DBH</th>
<th>Remov.</th>
<th>Planting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price</td>
<td>Price</td>
</tr>
<tr>
<td>8</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>12</td>
<td>225</td>
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<td>18</td>
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<td>400</td>
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<tr>
<td>30</td>
<td>1100</td>
<td>400</td>
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</tbody>
</table>

Treatment costs

<table>
<thead>
<tr>
<th>DBH</th>
<th>Home Soil</th>
<th>Arborist $3/dbh</th>
<th>Arborist $6.66/dbh</th>
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<tbody>
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<td>22</td>
<td>50</td>
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</tr>
<tr>
<td>30</td>
<td>66</td>
<td>90</td>
<td>200</td>
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</tbody>
</table>

Control vs Removal and Replacement of one tree

- Value of replacement tree vs value of tree lost
- Net present value method
How much is a tree worth?

Value in $ =
Caliper in inches
X value per sq in of cross section area
X species class ranking (0-1)
X condition class ranking (0-1)
X location class ranking (0-1)

http://www.hort.purdue.edu/hort/ext/Pubs/HO/HO_201.pdf

How much do trees grow over time?

Our guess for annual tree growth rates are as follows for a transplanted 2” DBH tree (DBH = Diameter 5’ above the soil):

DBH 2-4” = ½”
DBH 4-8 = 1”
DBH 8-11= ¾”
DBH 11-13= ½”
DBH >13= ¼”

Value of Ash and Generic Replacement

Value of Ash vs Same Age Replacement over time
Ash(0.6) Maple (1.0) Condition (0.8) at Residence (0.85)

40 yr Projected Value Differences w/ Homeowner applied pesticides

Years until value of replacement exceeds protected ash

<table>
<thead>
<tr>
<th>Caliper (in)</th>
<th>No treat</th>
<th>Self soil</th>
<th>Arborist</th>
<th>Arborist Inject</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>12</td>
<td>13</td>
<td>13</td>
<td>13</td>
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<td>18</td>
<td>&gt;40</td>
<td>&gt;40</td>
<td>&gt;40</td>
<td>&gt;40</td>
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</tbody>
</table>

Value Comparison Conclusions

The break even point for replacing with resistant trees:
≤12” DBH 13-14 yrs
14” DBH 23-28 yrs
18” DBH >40 yrs

It makes economic sense to replace small trees with resistant trees.
Larger trees take longer to replace and are worth saving if control remains effective AND you plan on staying in the house.
Problems with Value Method

- Hard to conceptualize value of tree
- Homeowners can only cash in on some of the assessed value at the time of house sale

Out of Pocket Economics

How does the value of money spent for replacing an ash of different sizes compare with the value of money spent yearly for control? Compare net present value of money spent each year for cost of control vs replacement cost of tree. Assume 5% annual valuation of all costs

Net Present Value of $50/yr Protection and Replacement Costs

![Graph showing net present value over time for $50/yr protection and replacement costs.]

Net Present Value of $100/yr Protection and Replacement Costs

![Graph showing net present value over time for $100/yr protection and replacement costs.]

Out of Pocket Expense Break Even Summary

- Value of soil applied control costs exceed cost of tree removal and replanting at 17 yrs for < 12” and 25-29 years at 18-30 DBH.
- Increased costs of injection shorten this time to 6 yrs (8-12 DBH), and 9 yrs for 18 DBH and 9 yrs for 30” DBH.
- Bottom line is over time replacement will be less expensive than perpetual control

Managing an Urban Forest

- How much of your trees are at risk
- Develop a plan to meet your objectives
  - Saving most valuable trees
  - Maintain shade and property values
  - Fiscal Planning
Use a tree inventory to identify plants to get rid of first

- Location
- Number of each species
- Size of each tree
- Condition of tree health
- Hazard potential

Welcome to the Emerald Ash Borer Cost Calculator

This program helps you estimate all of the expenses associated with a particular management strategy over a 25 year period for your trees. The calculator uses the trees you identify in a tree inventory of ash trees to costs associated with insecticide applications and spraying trees. The model adjusts the size of your ash trees every year because it assumes that the ash trees you treat with insecticide will survive and grow.

Use the calculator to compare costs of management strategies that include costs of the treatments, replacement, and insecticide treatment over a 25 year period.

Start by entering the Tree Size Class Distribution from the input tab to set the program to the number of trees you have in each of the size classes you've recorded information about these. Then enter information about insecticide treatment and/or removal costs. Finally, you can build management plans with any combination of trees removed, replaced, and/or sprayed.

Compare the out-of-pocket costs of up to 3 strategies at a time using the Comparison button.

Please remember that this comparison of out-of-pocket costs is not a complete analysis of the cost of trees to your community. It merely allows you to estimate the impacts of your decision on your annual operating expenses.

StormReady
Purdue University
Emerald Ash Borer Cost Calculator

Instructions

Enter the name of the Urban Forest you wish to manage. Be sure to record this name so it will be used to access your reports for this forest in the future.

If you would like to protect your data, you may also enter a password which will be required in order to access your reports.

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Tree Size Class Distribution

Please enter the number of each species of ash tree in your urban forest. If you do not know how many ash trees of each size class you have, you can use the urban forest size class distribution table to estimate the number of ash trees you have in each class.

<table>
<thead>
<tr>
<th>Size Class</th>
<th>Species Number of Trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
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<tr>
<td>3</td>
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<td>4</td>
<td>15</td>
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<td>5</td>
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</tr>
</tbody>
</table>

Timeframe

How long before you would like to cut down and remove them? If you are an Indistinct species where there are no specific criteria for removal, or if you do not want to remove any of your ash trees, you should set the timeframe to 1 year. If you do not want to cut down and remove any of your ash trees, you should set the timeframe to 1 year. If you do not want to remove and spray any of your ash trees, you should set the timeframe to 1 year.
Fort Wayne 12,155 Ash Trees

Years to remove ash = 5
Cost/dbh $2.75 for treatment
2 years between treatments
Replacement tree = $150

Conclusions
- Inventory is critical
- Saving trees is expensive
- Losing big trees is expensive
- Combination strategies can help with budgetary issues
Questions???

Temporary EAB Cost Calculator Website
http://extension.entm.purdue.edu/treecomputer/index.php

Look at Purdue’s EAB website for a more permanent home soon.
http://www.entm.purdue.edu/EAB/