SYSTEMIC INSECTICIDE TREATMENT AGAINST EMERALD ASH BORER: ASSOCIATIONAL PROTECTION

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INTRODUCTION

- Emerald ash borer (EAB), *Agrilus planipennis* Fairmaire, is an invasive insect accidentally introduced to North America from Asia.
- Attacks ash trees (*Fraxinus spp.*)

Larval feeding

Adult feeding

Haack et al., 2002; Herms and McCollough, 2014
MANAGEMENT

Quarantine

Biological control

Removal & replacement

Insecticides

Herms and McCollough, 2014; Duan et al. 2017
HYPOTHESIS: Associational protection

- Adult ash borers feed on treated ash trees surrounding the untreated tree
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- Adult ash borers feed on treated ash trees surrounding the untreated tree
- The ash borers die
- Untreated tree survives for a longer period of time

✓ Treated tree
Research question

Can we detect associational protection one year post treatment?
Previous work

- Efficacy of different insecticides
- Controls (untreated trees) did not die as quickly as expected

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Previous work

- Associational protection of untreated tree in low EAB density area

Erin Margaret O’Brien, PhD dissertation, Ohio State University, 2017
Previous work

- No associational protection of untreated tree in high EAB density area

Erin Margaret O’Brien, PhD dissertation, Ohio State University, 2017
Methodology

12 sites spanning approx. 100 miles

- 8 sites: Emamectin benzoate - Tree-äge G4
- 4 sites: Azadirachtin (neem) - Azasol

Each site: approx. 100 trees (green ash)

50% of trees treated per site along a gradient
CROWN RATING

10    7    5    1
Results
Associational protection has not been detected in my study...
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....Yet?
Possible explanation:

- EAB densities in the sites are not high enough... Yet!
- Untreated trees in same area have relatively high crown ratings
Future work

- Repeat treatment as recommended & monitor tree crown health for 2 more years

- Effect of insecticides on ash tree phenology:
  
  ➢ *Fall 2017*: no effect on leaf abscission date and color change
Implications

Assist in amending current treatment regimens using systemic insecticides

✓ reducing insecticide use
✓ reducing treatment costs

EA-Beat it
References


