TreeAzin™ Systemic Insecticide: a New Option for Pest Management

J. Meating
BioForest Technologies Inc.
December 1, 2010

Acknowledgements

- Canadian Forest Service;
  - B. Helson, J. McFarlane, D. Thompson
- Ontario Ministry Natural Resources
- National Research Council IRAP;

TreeAzin™ Systemic Insecticide

- 5% technical systemic formulation
  - Rapid uptake and translocation
  - Effective in deciduous and conifer species
- IP developed and owned by the CFS
- Under worldwide license to BioForest Technologies

TreeAzin™ Systemic Insecticide

- Neem-based reduced risk bio-insecticide;
- AI=Azadirachtin not Neem Oil
- High toxicity to wide range of damaging insect pests;
- Very low mammalian and bird toxicity;

Azadirachtin: Modes of Action

- Immature stages:
  - IGR
  - inhibits development
- Mature stages:
  - Repellant
  - Reduced fecundity

TreeAzin: Regulatory Status in the U.S.

- U.S.
  - ✓ USEPA registration October 2008 (Reg # 82996-1)
    - ➢ Professional Use
    - ➢ Master Label – Homeowner use
  - ✓ State registrations ~25
- Canada
  - ✓ Emergency Registration for EAB (ON, QU)
  - ✓ Full Registration 2011?

Environmental Fate

- What happens when treated leaves fall to the ground or into water bodies?
  - ✓ AZA concentrations almost undetectable
  - ✓ No impact on soil organisms
  - ✓ No impact on aquatic organisms

TreeAzin: OMRI Listed (Dec. 2008)

OMRI®

Listed

Organic Materials

Review Institute

TreeAzin™ Efficacy Trials 2002-2010

- Host Species
  - Red pine
  - Jack Pine
  - White pine
  - White spruce
  - Balsam fir
  - Cedar
  - Lodgepole pine
  - Red and Bur oak
  - Trembling aspen
  - Ash
  - Maple
  - White birch
  - Hemlock

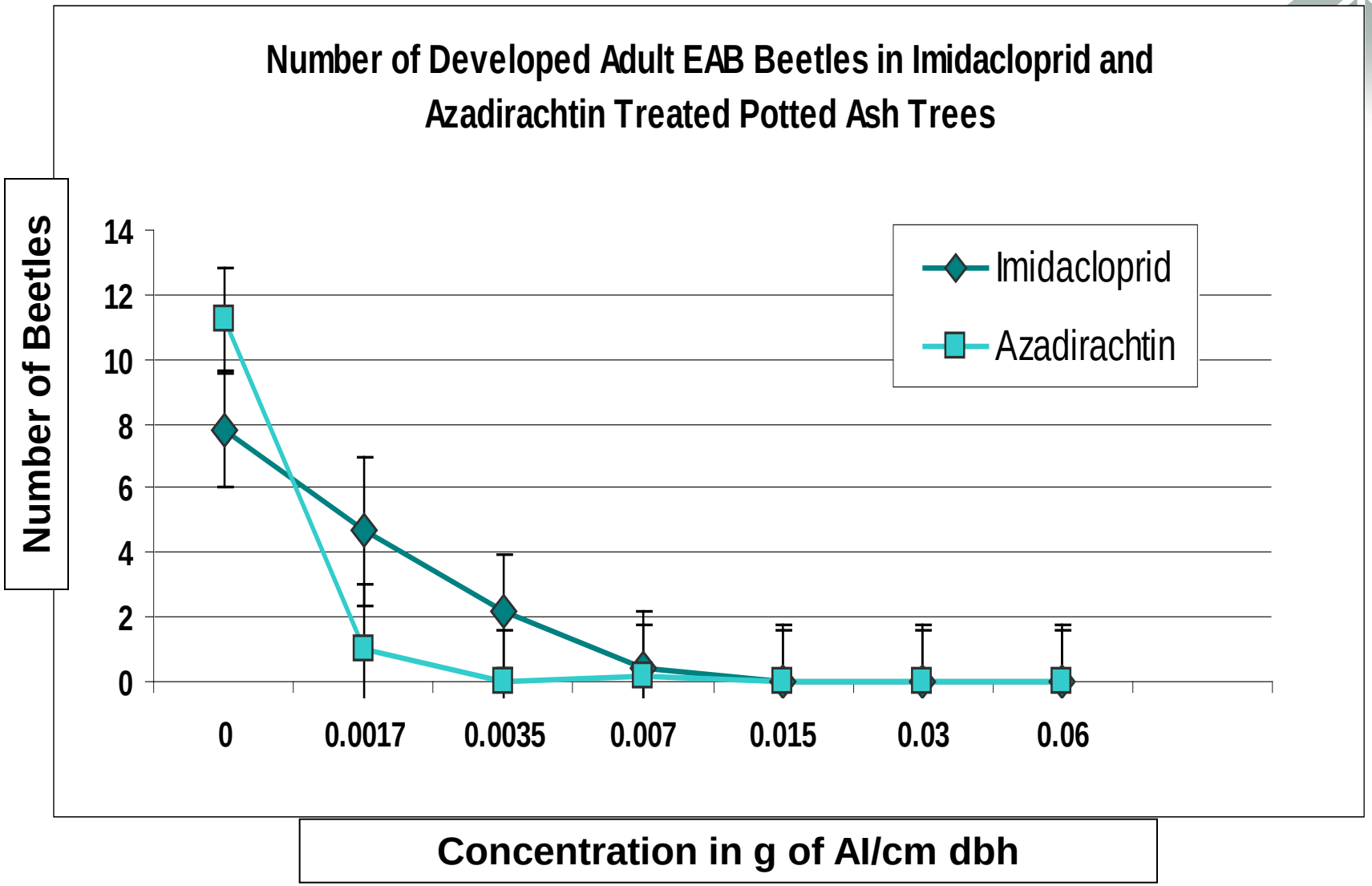
- Pest Species
  - Emerald ash borer
  - Gypsy moth
  - Pine false webworm
  - Introduced pine sawfly
  - Cedar leafminer
  - Forest tent caterpillar
  - Eastern spruce budworm
  - Jack pine budworm
  - Birch leafminer
  - Bronze birch borer
  - Hemlock wooley adelgid
  - **Mountain pine beetle*
  - **Asian longhorned beetle*

TreeAzin Label Pests

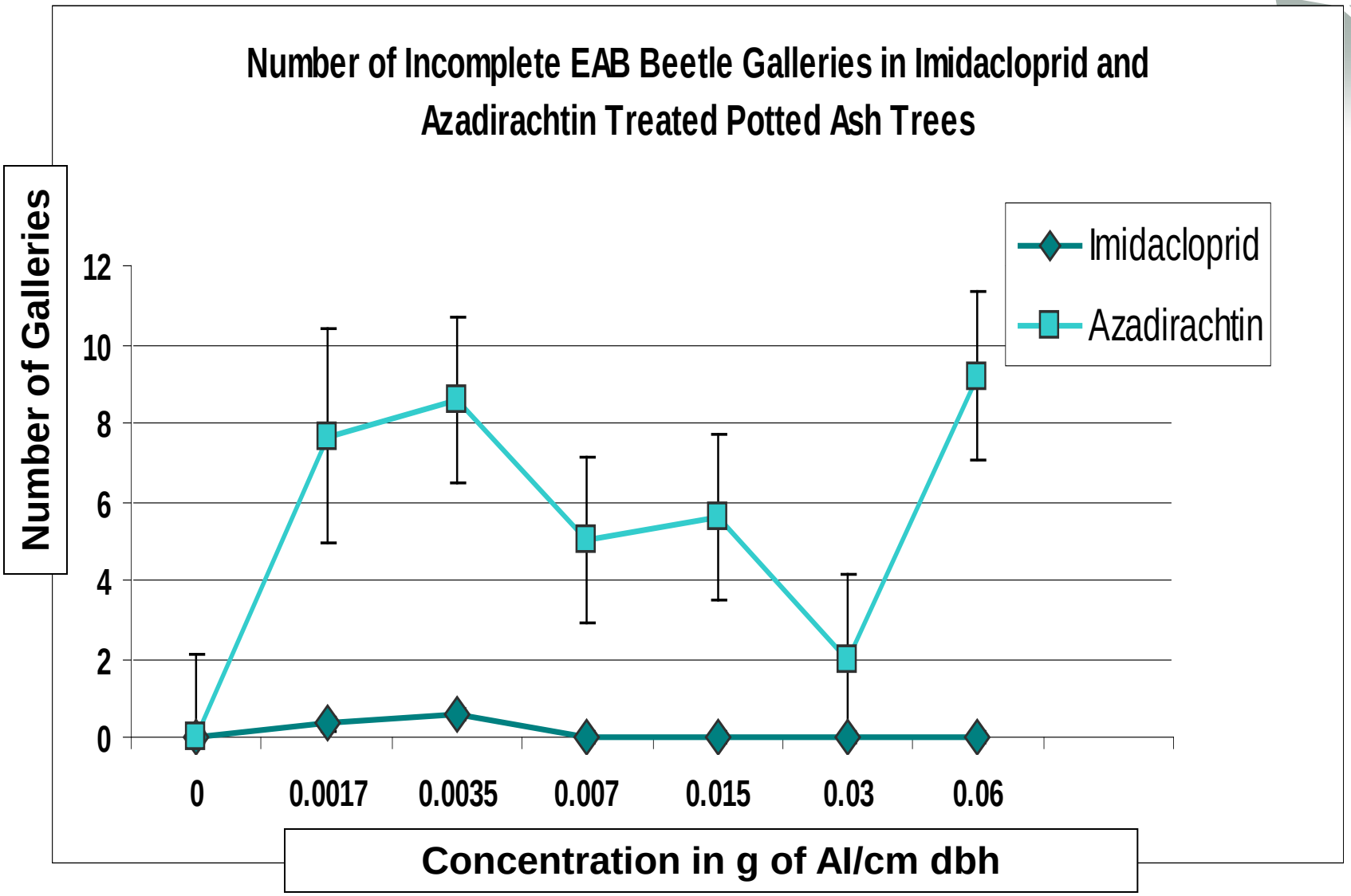
- Emerald ash borer
- Gypsy moth
- Forest tent caterpillar
- Spruce budworm
- Jack pine budworm
- Leafminers
- Sawflies
- Hemlock Woolly Adelgid
- Future additions:
  - Bronze Birch Borer
  - Asian Longhorned Beetle
  - Japanese Beetle
  - Pine Shoot Beetle
  - Winter moth

Emerald Ash Borer

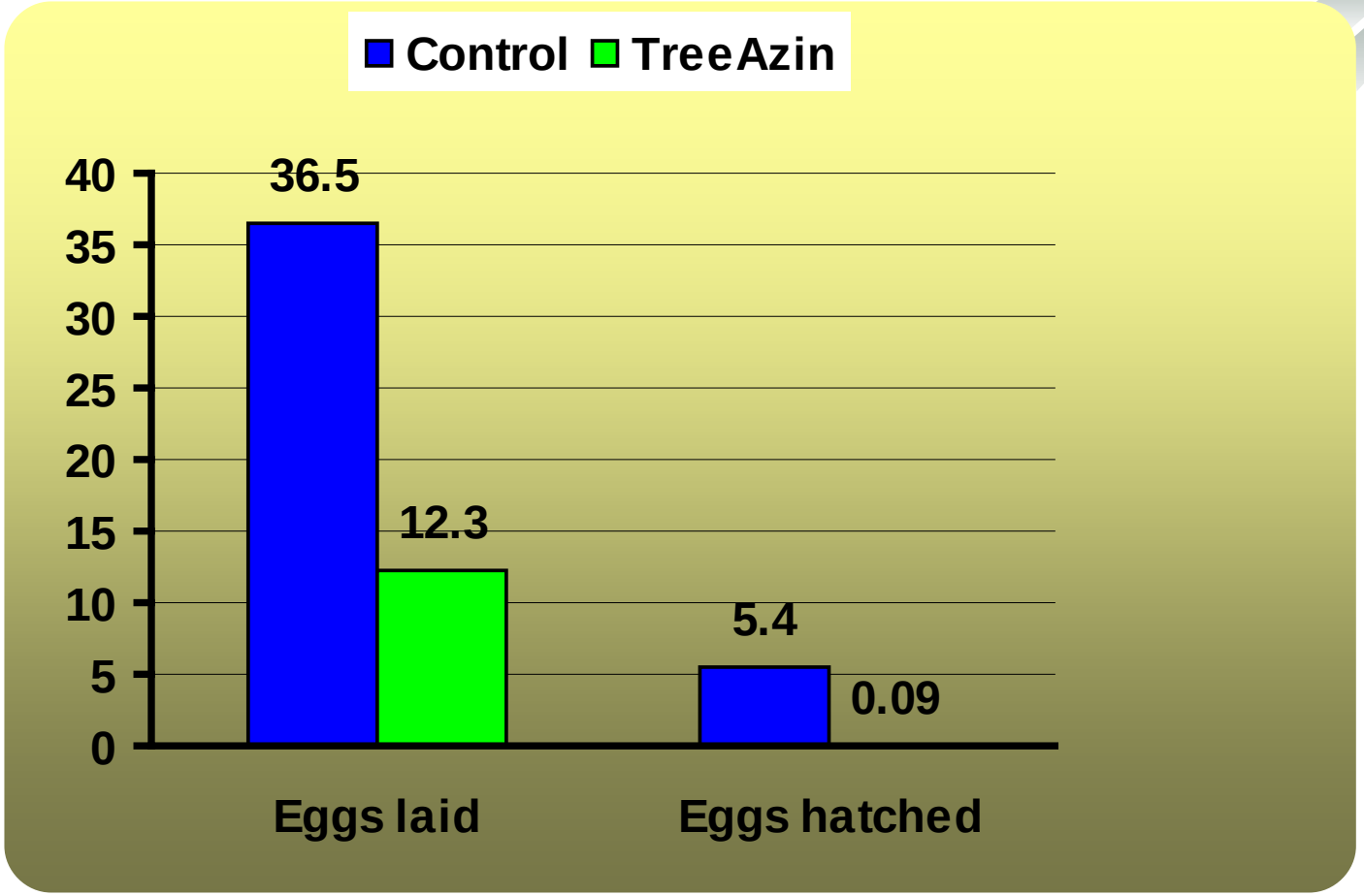
EAB Larval Development and Adult Emergence



EAB Larval Development and Adult Emergence



EAB Fecundity & Fertility



99% reduction in EAB population for Year X+1

EAB: Evidence for Two-Years Protection with TreeAzin

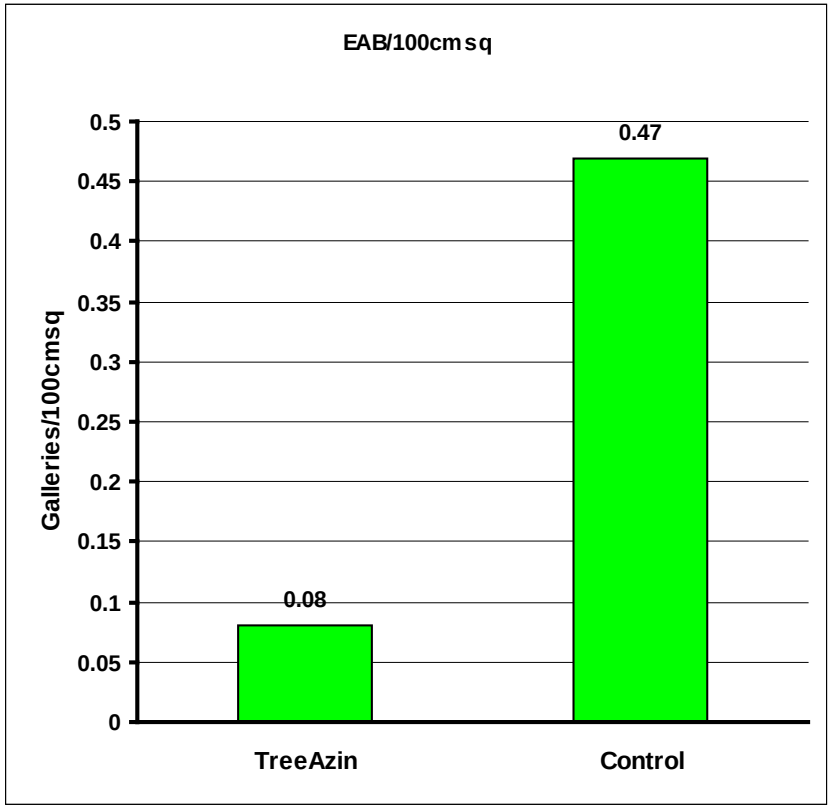
Oakville Study, March 2010

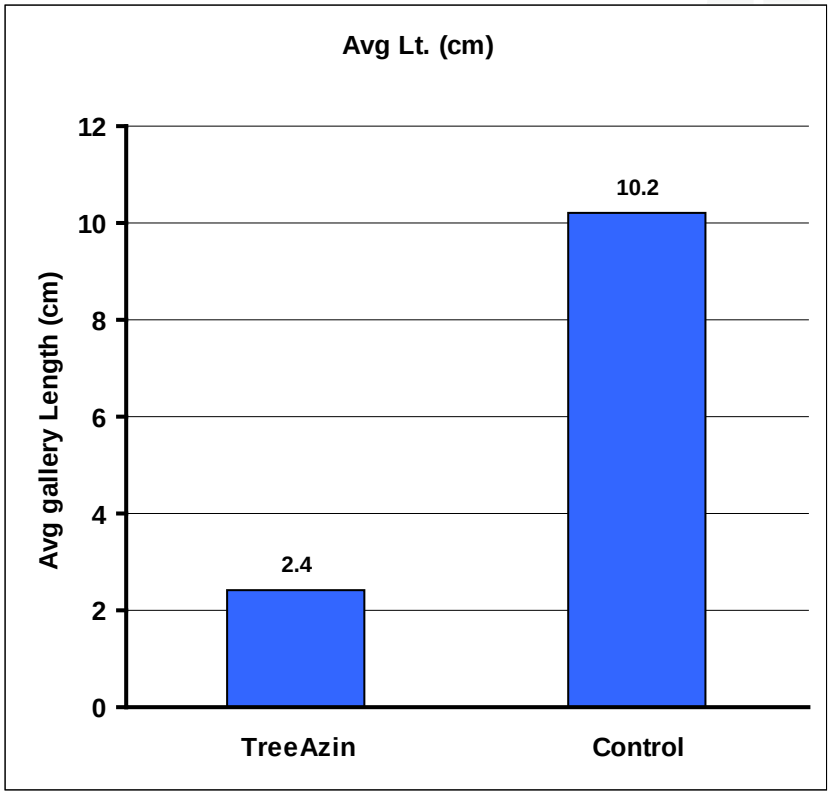
Results: Year 2

- Treated August 2008
- Feb. 2010: Trees assessed for woodpecker feeding sites and 2009 EAB galleries (n=209)

Woodpecker Feeding Site Density

EAB Galleries: Yr 2





Efficacy: Oakville 2008-2010

Heavily infested tree

Conclusions: TreeAzin

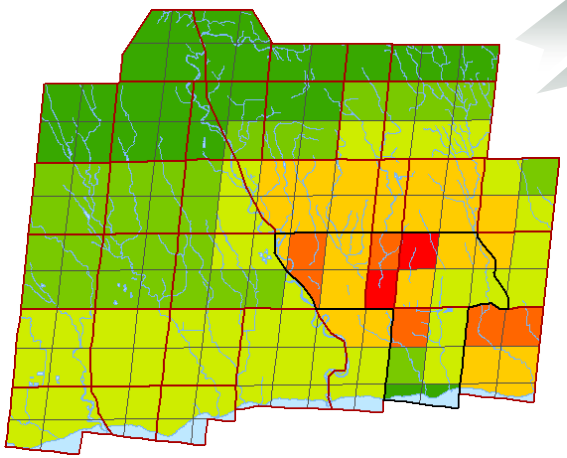
- No direct mortality of feeding adults;
- Some gallery formation;
- Highly active at inhibiting larval development and preventing adult emergence at very low dosages;
- Reduced fertility and fecundity of adults feeding on leaves.

CFS Conclusions: TreeAzin

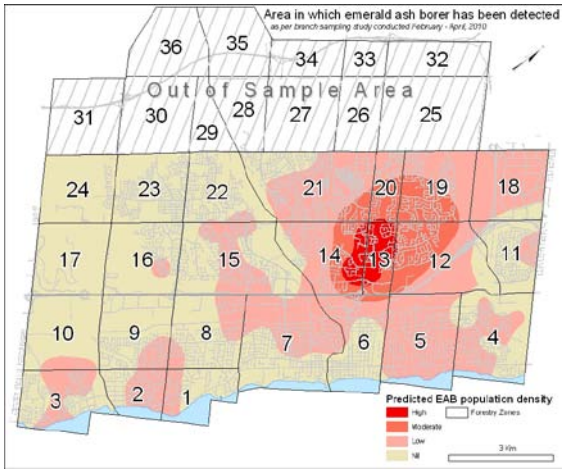
- Early summer injections at 12.5ml/in. (5ml/cm) dbh at early stages of an infestation should provide very effective control of EAB.
- McKenzie *et al*. (2010) Azadirachtin: an effective systemic insecticide for control of Agrilus planipennis (Coleoptera: Buprestidae). J. Econ. Entomol. 103 (3) 708 -717.

TreeAzin: Municipal Programs

- EABDSS implementation



- Detection survey training and analysis



TreeAzin SYSTEMIC INSECTICIDE™

BioForest Technologies Inc.

Thank you.

www.bioforest.ca