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Viewing Impact Statement 'Managing Hemlock Woolly Adelgid'

Statement

- **Title** : Managing Hemlock Woolly Adelgid
- **Brief Title** : [Hemlock Woolly Adelgid](#)
- **Author** : Braman, Susan
- **Year** : 2010
- **State Issue** : Conservation & Management of Natural Resources
- **County** : Spalding
- **Group** : Entomology
- **Scope** : National

Summary

Research identified chemical control options for the invasive hemlock woolly adelgid in landscape settings. A means to manipulate tree and adelgid growth to develop a field insectary for biocontrol agents was investigated. Influence of fertilizer on resistant hemlocks and beneficial beetle predators was evaluated.

Situation

The invasive hemlock woolly adelgid (HWA), *Adelges tsugae* is a serious threat to eastern hemlock and Carolina hemlock. HWA was first documented in Georgia in 2004 and now occurs in at least eleven northern counties and is spreading at a rate of 15 km/yr

Trees treated with low rates of imidacloprid were healthier than untreated trees, but only trees treated with a 0.1× dosage had sufficient adelgids to possibly sustain predators over extended periods of time. Higher populations of adelgids and increased fecundity on fertilized trees, especially in winter, may be beneficial for survival and development of specialist predators like *L. nigrinus* and *S. tsugae*. However, the increased fecundity and corresponding intrinsic rate of growth will need to be balanced with the desire to maintain tree health. As long as trees remain healthy and the intrinsic rate of growth for predator populations exceeds that of the adelgid, we anticipate that the regime of a very low dose imidacloprid treatment and fertilization will optimize predator establishment and success. From a practical view, because they both should provide long-term effects, a combination of low-dose insecticide application with predator releases may optimize predator establishment and preservation of hemlocks. Prolonged tree health plus sustained, healthy adelgid populations should benefit other predators as well, allowing their populations to grow and spread to the surrounding forest. A one-time application of insecticide to preserve tree health long enough to provide predators a window of opportunity to establish should minimize potential for adelgids to develop insecticide resistance.

Fertilization did not disrupt resistance of Chinese hemlock to HWA. Our study did determine that the nutritive value of adelgid eggs could influence predator behavior. Therefore, nutritionally poor sites or stands of eastern hemlock may have limiting effects on predator fitness and limit establishment of biocontrol agents.

Program Function(s)

- Research

Program Area(s)

- Agriculture & Natural Resources

Topic(s)

- Forestry Resources
- Horticulture

Keyword(s)

- Entomology
- Ornamentals
- Landscape
- Urban Forestry
- Pests & Integrated Pest Management

Funding Source(s)

- Federal Grants
- Private Grants

Collaborator(s)

CAES Collaborator(s)

(None)

Non-CAES Collaborator(s)

- James Hanula
- Shimat Joseph

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