

Title:

Pests of Woody Ornamental Plants – An Online Resource for IPM Information

Project Leaders:

Shari Romar, Lead Writer; Gary Couch, Technical Advisor, NYS IPM Program; Jody Gangloff-Kaufmann, Project Coordinator;

Cooperators:

Karen English, Web Design and Maintenance, NYS IPM,
Spider Graphics, Inc., Ithaca, NY

Abstract:

The Pests of Woody Ornamentals web resource is a comprehensive, searchable database of pest identification, problem diagnosis, and prevention and management primarily in New York State, but applicable to much of the Northeast region. This project is a significant addition to web-based resources geared toward the ornamental horticulture industry, including landscapers, cooperative extension, and the public. It is intended to be a companion publication for the “Pest Management Guide for Commercial Production and Maintenance of Trees and Shrubs”, produced by Cornell Cooperative Extension.

Background and justification:

To date there is no comprehensive online diagnostic and management tool available for pests of trees and shrubs for New York State residents. In 2006 the NY State Integrated Pest Management (IPM) Program was provided with funding to develop a guide that focuses on IPM for trees and shrubs. The resource is a web-based comprehensive IPM manual for trees and shrubs that will be integrated with the Cornell Pest Management Guide for Commercial Production and Maintenance of Trees and Shrubs, and yet stand alone in the amount and type of information contained within. It will focus on pest identification, but also include other IPM aspects such as monitoring and management. The resource will also concentrate on pests occurring in New York State, but will apply to the Northeast region. Some existing information (such as additional pictures and fact sheets) will be enhanced to include new information (such as Emerald ash borer), integrate useful information (such as growing degree days), and generally fill the gaps in IPM knowledge.

This project has begun with 42 of the major insect pests, and will progress to include more insects and the major diseases of trees and shrubs. On the home page a search engine leads the user to quick information about each pest with a link to a fact sheet. Each fact sheet contains a description, life cycle, and damage information, photographs, range maps, monitoring tips and tools, including growing degree day and plant-phenology indices, and pest management and prevention guidelines.

The overall impact of such a resource may be to raise awareness in the land care industry as well as New York State residents (and others) about how to best manage pests of trees and shrubs, by first correctly identifying them and then considering non-pesticidal prevention and management strategies. Following these procedures, landscapers and home gardeners should be able to reduce the haphazard and unnecessary application of pesticides because they will have clearer knowledge of the pests that affect their plants. Increased awareness and use of non-pesticidal approaches are assumed to have positive impacts on water quality.

Objectives:

1. To develop an online resource for pests of trees and shrubs in New York State.
2. To provide a companion publication to the Cornell Pest Management Guide for Commercial Production and Maintenance of Trees and Shrubs that focuses on the prevention and non-pesticidal steps in management of pests.
3. To publicize the launch of the New York State IPM “Pests of Woody Ornamental Plants – An Online Resource for IPM Information” site.

Procedures:

Shari Romar, the technical writer, began working in October 2006. Her first task was to develop a large database housed in a spreadsheet that contained insect names, host plants, and many other details. From there a series of fact sheets were developed that combined the information available from *Insects that Feed on Trees and Shrubs* (Johnson and Lyons, 1991) and many other university and extension-based websites.

Spider Graphics, Inc., of Ithaca, NY, is developing the tree and shrub resource website. Fact sheets for the priority insects are currently being finalized and uploaded to the site. After review by members of the advisory committee, the website is expected to be ready for release in early 2008, pending decisions about uses of photographs.

Results and discussion:

The Pests of Woody Ornamental Plants Resource will provide the horticulture industry and gardeners with a searchable database and comprehensive fact sheets, in order to easily implement IPM practices, thus reducing pesticide use by encouraging readers to correctly identify the pest and consider alternative options first. With a better understanding of IPM practices, the audience will be less reliant on pesticides, lowering operating expenses and benefiting the environment. The horticulture industry throughout New York and the Northeast will potentially benefit from the website because it will be freely available to all, user friendly, and comprehensive. In the future, disease pests will be added to complete the resource. By offering comprehensive IPM information, this website could increase professional land care industry profits by reducing pesticide

expenses. Press releases and similar outreach must be employed to inform the horticulture industry, cooperative extension, and the public once the website is launched.

This resource adds to the body of knowledge by combining many of the professional and high-level sources of information into simple, yet complete, fact sheets with photographs and diagrams from various sources. It also adds in useful tools such as plant phenology and growing degree day accumulations to predict insect emergence and development. Since this project is still in progress, the impact cannot be determined at this point, however project leaders anticipate that the resource will be popular. Success can partly be measured by the numbers of hits to the home page, which will be tracked. The addition of disease pests will further increase the value and use of the site.

Project location(s):

The results of this outreach project will apply throughout New York State as well as within the Northeastern United States.

Samples of resources developed:

Samples of the resource can be found at the following urls:

Search page: http://nysipm.cornell.edu/aes_ornamental.asp

Bagworm online fact sheet:

<http://nysipm.cornell.edu/ornamentals/Bagworm.asp>

Additionally, see the fact sheet example at the end of this report.



DRAFT

Synanthedon exitiosa Say

Lepidoptera: Sesiidae

Peachtree borer

Keywords and Photos

To be filled in

Introduction

The peachtree borer is a serious native clearwing moth pest, killing more peach and related trees in the United States than any other insect. It is found throughout North America.

(Add range map)

Description and Life Cycle

Larvae overwinter under the bark of host trees and resume feeding in the spring to early summer after which time they pupate in bark or soil. Pupation lasts for 18-30 days in silk cocoons with fragments of chewed wood.

Adults emerge in early July often on warm, sunny days following heavy rain. Though moths, adults look similar to wasps with metallic, purplish black bodies. Females have nearly 1" (3.5-3.8 cm) wingspans, with dark blue forewings and clear hindwings. They are marked with a thick orange band on the abdomen. Male wingspans are smaller at 1" (2.7-3.0 cm), and all wings are clear, though veins and edges are dark blue. Narrow yellow bands (usually 3-4) appear on the abdomen, thorax, head and legs. Males are more slender than females and are more commonly seen as they can be captured in pheromone traps.

Moths are active during daylight hours through September. They mate shortly after emerging and egg laying can begin in 30 minutes. Females may continue to lay between 400-800 eggs for six weeks under bark or rough bark scales.

Eggs are small, oblong, appearing chestnut or reddish brown. Larvae hatch in 8-10 days and burrow into inner bark where they feed, often girdling the host tree. They are cream colored with dark brown heads. Young larvae measure 1/16" (1.5 mm) long and reach 1" (2.8 cm) at maturity. They will continue feeding until fall when they overwinter.

There is one generation per year.

Damage

Peachtree borer attacks plum, peach, cherry, nectarine, wild cherry, wild plum and the highly susceptible purpleleaf sand cherry. It is frequently found in young, nonbearing trees or unmanaged plantings (unlike its relative the lesser peachtree borer, which favors managed orchards).

Borers attack bark in the lower 12” of trunk extending down to the soil line. Feeding on inner bark leads to weakened trees with yellowing leaves that become predisposed to other insects and disease. Bark will eventually peel off damaged areas. Trees can be killed from girdling, particularly young specimens.

Monitoring

Spring pruning is a great opportunity to look for injury but vigilance is required all year long. Look for oozing gum with reddish brown frass around the lower 12” of trunk. Pupal cases found at the soil line near trunks are further evidence.

Use pheromone traps to monitor emergence, gauge population size, and time insecticide applications if other management controls do not work. Set traps in May and note emergence date, and when emergence peaks with the most insects trapped in a week. Peak numbers can be up to 50 insects. Exercise caution as traps will capture similar looking insects like the lesser peachtree and lilac borers leading to misidentification.

Management

Healthy trees are less susceptible to attack. Proper irrigation, fertilization and general tree care will help to this end. Young trees are particularly vulnerable and require extra care and monitoring. Avoid injury to lower trunk as this can create an entrance for borers. Mulching around the root zone to the canopy line helps prevent bark injury from mowers or weed-whackers. Also avoid volcano mulching which further weakens bark on lower trunk.

“Worming” trees is another control but must be done with **extreme caution** as it may cause further damage. To worm, insert a wire into borer holes and gently probe to puncture larvae. Similarly, a knife can be used to make careful vertical cuts. This practice is most successful in late fall or before spring bud break.

Pheromone ties can be used to disrupt mating in large plantings (5 or more acres).

Natural predators and parasitic nematodes provide some control. Ants, spiders, and lacewings are predators of larvae while birds eat both larvae and adults.

Once larvae are established in bark, chemical controls are ineffective, thus aim to control other life stages to prevent damage.

Life Cycle Chart

Need to find chart

Links to Pesticide Information

Fill in with links

Actions Based on Growing Degree Days and Plant Phenology Index

Growing Degree Days/Month	Plant Phenology Index	Actions
1500-1800 GDD Mid to Late July	IN BLOOM: Abelia, False Spirea	Treat with registered pesticide if other management practices i

[Side Bar]

QUICK TIPS

What to look for

- Adult males: wasp-like moths with metallic, purplish black bodies and 3-4 yellow bands on abdomen. Wings are clear and span 1" (2.7-3.0 cm).
- Adult females: 1.2" (3.5-3.8 cm) wingspans, and a thick, orange band around abdomen. Forewings are dark blue while hindwings are clear.
- Larvae: 1/16" (1.5 mm) to 1" (2.8 cm) long, cream colored with dark brown heads
- Holes in lower trunk with frass and gumosis

When to look

- Adults: daytime hours from early July and through September
- Larvae: mid July through fall and again in spring

Where to look

- Adults: may observe activity (mating, resting, flying) near host trees, particularly near lower trunk. Look for males in traps.
- Lower trunk for larval damage

How to recognize damage

- Oozing sap with reddish frass on trunk
- Peeling bark in damaged areas
- Yellowing leaves and dieback

What to do and when to do it

- Install pheromone traps in May to monitor emergence, population size and properly time chemical controls
- Use of pheromone ties can disrupt mating in plantings of at least 5 acres

- “Worm” tree in late fall or spring before bud break by inserting wire or knife into entrance holes and smashing larvae (exercise caution as this may damage tree)

Prevention

- Keep trees healthy with proper irrigation and fertilizing
- Monitor young trees as they are very susceptible

References

Bessin, Ric. “Peachtree Borer.” Revised January 2004. University of Kentucky Entomology. <http://www.uky.edu/Ag/Entomology/entfacts/fruit/ef200.htm> (accessed May 21, 2007).

Cranshaw, W.S. “Peach Tree Borer.” Updated July 31, 2006. Colorado State University Cooperative Extension. <http://www.ext.colostate.edu/PUBS/INSECT/05566.html> (accessed May 21, 2007).

Howitt, Angus H. “Peachtree Borer.” Michigan State University Extension, Van Buren County. <http://www.canr.msu.edu/vanburen/fptb.htm> (accessed May 21, 2007).

Johnson, Warren T. and Howard H. Lyon. *Insects that Feed on Trees and Shrubs*, 2nd ed. (Ithaca, NY: Cornell University Press, 1991), 258, 260.

Lienk, S.E. “Peachtree Borer.” Cornell University, New York State Integrated Pest Management Program. <http://www.nysipm.cornell.edu/factsheets/treefruit/pests/ptb/ptb.asp> (accessed May 21, 2007).

Welty, Celeste. “Peachtree Borer, HYG-2032-94.” Ohio State University Extension. <http://ohioline.osu.edu/hyg-fact/2000/2032.html> (accessed May 21, 2007).