



RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY



2025 Ornamental IPM Program Webinar

Contemporary IPM Topics and Management

June 10, 2025

Bill Errickson & Steve Rettke (Monmouth)

Tim Waller (Cumberland)

Support: Erin Quinn

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and Boards of County Commissioners, Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.

TODAYS SPEAKERS

Bill Errickson (Ag. Agent - Monmouth County RCE)

Steve Rettke (IPM Program Associate – Monmouth County RCE)

Tim Waller (Ag. Agent – Cumberland County RCE)

Erin Quinn (IPM Program Support)

Disclaimer - Materials do not cover all possible control scenarios and are intended for licensed professionals. Tradenames do not imply endorsement and are used as examples. You must strictly follow the label for each compound prior to use. Rutgers is not responsible for misused materials or damages thereof. The label is the law. Labels will provide detailed information on use and restrictions. Additionally, application intervals, compatibility, surfactant use, PHI, PPE, important and other key information is described in detail. Always discuss treatments with your local agents. **Note: Neonicotinoids can only be legally applied in commercial agriculture settings by licensed applicators.** Guidelines and recommendations made in this presentation are specific to the state of New Jersey.

Agenda



- Beneficial: Flower Fly Predator
- Oriental Beetle
 - Mating disruption lures
- Spotted Lanternfly
- Warm Season Spider Mites
 - Two-spotted spider mite
- Soft Scale Insects
 - -Indian wax scale; -Calico scale
 - -Cottony camellia scale; -Fletcher scale
- 6. Box tree moth
- 7. Bacterial shothole
- 8. Common viral symptoms
- 9. Black spot of rose

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Timely updates over on the PPA



RED-HEADED FLEA BEETLE Predictions as of 6/6/25

https://uspest.org/dd/model_app

SOUTH NJ (NJ50)			CENTRAL NJ (NJ10)			NORTH NJ (NJ59)		
Date	DDs cumu	Events	Date	DDs cumu	Events	Date	DDs cumu	Events
Jan 1	0	* START *	1-Jan	0	* START *	1-Jan	0	* START *
30-Apr	257	Start Egg hatch and larvae gen one	3-May	252	Start Egg hatch and larvae gen one	8-May	251	Start Egg hatch and larvae gen one
16-May	518	Start Adult feeding gen one	29-May	528	Start Adult feeding gen one	5-Jun	477	* NOW *
24-May	602	END Egg hatch and larvae gen one	4-Jun	608	END Egg hatch and larvae gen one	8-Jun	533	Start Adult feeding gen one
5-Jun	762	* NOW *	5-Jun	632	* NOW *	13-Jun	615	END Egg hatch and larvae gen one
17-Jun	1030	END Adult feeding gen one	24-Jun	1033	END Adult feeding gen one	4-Jul	1038	END Adult feeding gen one
8-Jul	1588	Start Egg hatch and larvae gen two	15-Jul	1572	Start Egg hatch and larvae gen two	27-Jul	1575	Start Egg hatch and larvae gen two
18-Jul	1877	END Egg hatch and larvae gen two	26-Jul	1871	END Egg hatch and larvae gen two	9-Aug	1871	END Egg hatch and larvae gen two
19-Jul	1907	Start Adult feeding gen two	27-Jul	1898	Start Adult feeding gen two			
3-Aug	2339	END Adult feeding gen two	13-Aug	2339	END Adult feeding gen two			

We will be approaching overlapping generations very soon – GDD less accurate.



RUTGERS UNIVERSITY

Agriculture and Natural Resources

New Jersey Agricultural Experiment Station



HAVE YOU SIGNED UP FOR
PLANT & PEST
ADVISORY
UPDATES YET?



[HTTPS://PLANT-PEST-ADVISORY.RUTGERS.EDU/](https://plant-pest-advisory.rutgers.edu/)

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NEW WEBSITE - LIVE



Home About ▼ Calendar Resources ▼ Contact

Rutgers Ornamental IPM Program

Contemporary IPM Topics and Management

Learn More



<https://sites.rutgers.edu/nursery-ipm/>

(Huge thanks to Erin Quinn for website development)

Working on adding all Pest Profiles / Topics covered from webinars

Spruce Spider Mite

June 6, 2025 | By [Erin O. Quinn](#) | [Pests](#)



Spruce Spider Mite (*Oligonychus ununguis*)

GDD Window (base 50): 7-121

Overview:

- Eggs are brown, round, flattened and have a thread sticking up from their center
- Growth from larvae to adult happens in about a month
- Adults are 1/2 mm in length, varying from brown to dark green in color, with salmon pink colored legs
- 3-4, but up to 10 generations can occur per year, depending on conditions

Southern Red Mite

June 6, 2025 | By [Erin O. Quinn](#) | [Pests](#)



Southern Red Mite (*Oligonychus ilicis*)

GDD Window (base 50): 7-91

Overview:

- Overwinters as red eggs on host plant leaf undersides
- Eggs hatch into pale, six-legged larvae
- Two nymph stages, protonymph and deutonymph, each have eight legs and become progressively darker in color and larger
- Adult mites are 1/2 mm long, oval, and purplish or reddish in color, with eight legs
- Multiple generations each year, population densities peak during cooler months and with periods of high humidity
- Feeding occurs on undersides of leaves

Ambrosia Beetle

June 6, 2025 | By [Erin O. Quinn](#) | [Pests](#)



Ambrosia Beetle (*Xylosandrus*)

GDD Window (base 50): 75-815

Overview:

- New Jersey notable species: Black stem borer (*Xylosandrus germanus*), granulate (Asian) borer (*Xyleborus crassiusculus*)
- Small, reddish brown to black, cylindrical beetles from 1/8 - 3/16 inches long
- Entrance and exit holes from the beetle are about 1 mm in diameter
- Increases plants' risk for infection by opportunistic pathogens (i.e. *Fusarium* spp.)

Developing a one-stop-shop for New Jersey Ornamental IPM

All the webinar videos and PDFs in one place

Webinar 1: April 8, 2025



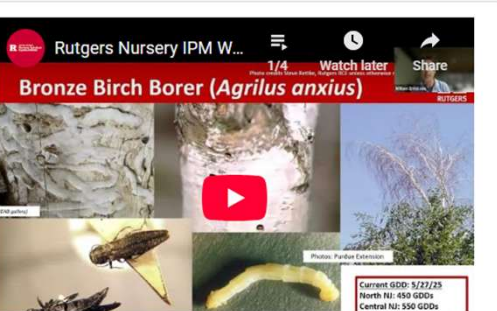
Webinar 2: April 22, 2025



Webinar 3: May 13, 2025



Webinar 4: May 27, 2025





Home About Calendar Resources Contact

Resources

- Plant & Pest Advisory
- Rutgers NJAES Plant Diagnostic Laboratory
- Scouting with Growing Degree-Days
- Rutgers NJAES Plant Diagnostic Laboratory
- USPest Growing Degree Day Model

Calendar

Today Upcoming

June 2025

TUE 10 June 10 @ 12:00 pm - 1:00 pm
Webinar - Rutgers Ornamental IPM Program
 Welcome to our Ornamental IPM Program series, covering contemporary IPM topics and management. This webinar will take place every second and fourth Tuesday from 12-1 PM from April to September ... Read More
 Free

TUE 24 June 24 @ 12:00 pm - 1:00 pm
Webinar - Rutgers Ornamental IPM Program
 Welcome to our Ornamental IPM Program series, covering contemporary IPM topics and management. This webinar will take place every second and fourth Tuesday from 12-1 PM from April to September ... Read More
 Free

Contact

Get in touch with us if you have any questions, comments, or concerns!

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Hours:
 8:30am - 4:30pm

Contact Form

Fields marked with an * are required

Name *

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Message *

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Beneficial Insect: Flower Fly (*Syrphidae* spp.)

- AKA hoverfly, syrphid fly
- Adults resemble bees (yellow or white and black striped abdomens), but are stingless flies & are not predators
- 1/8 to 5/8" long and often found hovering like hummingbirds over flowers
- Can be attracted to salt and moisture on human skin
- Nonselective pollinators, feeding on a variety of plants
 - o Attracted to white/yellow flowers, & flowers that are more open in shape
- Larvae are grayish or greenish maggots, and somewhat translucent
 - o Only the larvae are predators
- Pupate in the soil
- Adults lay eggs near aphid colonies
- **Prey pests:** aphids, caterpillars, leafhoppers, planthoppers, mealybugs, thrips

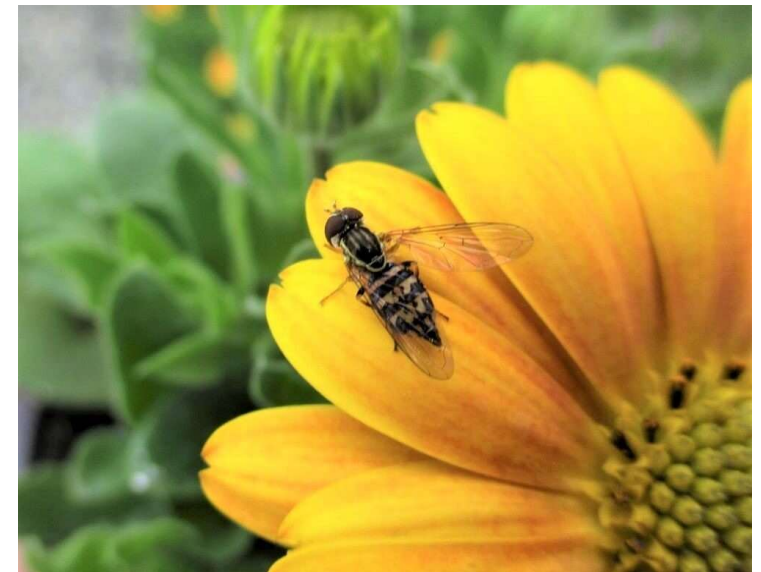


Photo via Steven K. Rettke, Rutgers Coop. Ext.

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Beneficial Insect: Flower Fly (*Syrphidae* spp.)

Photo credits: Steve Rettke, Rutgers RCE unless otherwise noted



Larva



Adult



Larva



Egg



Larva

Photos: Jack Kelly Clark, UC IPM

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

UC Statewide IPM Project
© 2000 Regents, University of California

Beneficial Insect: Flower Fly (*Syrphidae* spp.)

Fostering beneficial insect populations

- Plant a diverse mix of flowers that bloom throughout the season
- Plant native species
- Choose flowers with ample nectar and pollen
 - Asters, yarrow, anemones, milkweed, dogwood, serviceberries
- Plant with organic matter and leaf litter
- Avoid over-weeding

Beneficial predator food!



Pesticide Impacts / Considerations

- Insecticides can kill flower flies (all life stages) or disrupt their behavior, reducing their ability to navigate, find food, and mate
 - Flies are often exposed through contaminated food sources (nectar or pollen) or through encountering residues on leaves or flowers
- Applicators **MUST** follow label instructions for in-bloom applications for any insecticide
- Spray only when necessary

Current GDD: 6/10/25
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Oriental beetle (*Anomala orientalis*)



GDD Window (base 50): 450-1500

- Small, oval beetles with a tan to dark brown shell, often with darker mottling
- Adults are about 8-11 mm long and active during summer
- Larvae are white, c-shaped grubs found in soil, feeding on roots, growing to ¾" long
- One generation per year
- Adults emerge mid-June, peaking in early July
- Females lay small, spherical eggs in the soil at the bases of bushes, preferring wetter soils
- Eggs cannot develop in dry soil
- Overwinter as third-instars and enter pre-pupal stage in late May
- Adults feed on foliage – causing minor damage, but can leave holes or skeletonized leaves, especially on the top of the plants
- Damaged leaves may turn brown and drop
- Larvae damage grass and other plant roots, causing wilting and yellowing
- **Host plants:** daisies, roses, hollyhock, phlox, petunias, annual and perennial grasses, fully grown nursery stock

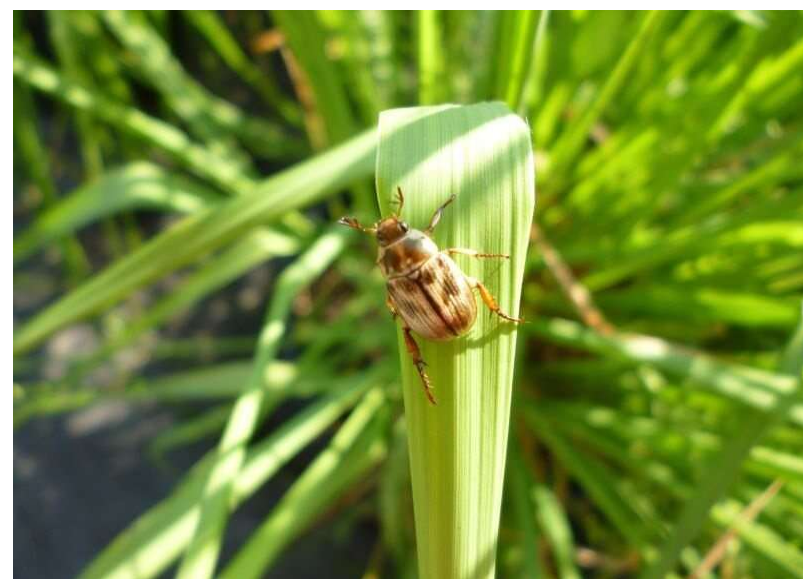


Photo via Steven K. Rettke, Rutgers Coop. Ext.

Current GDD: 6/10/25

North NJ: 670 GDDs

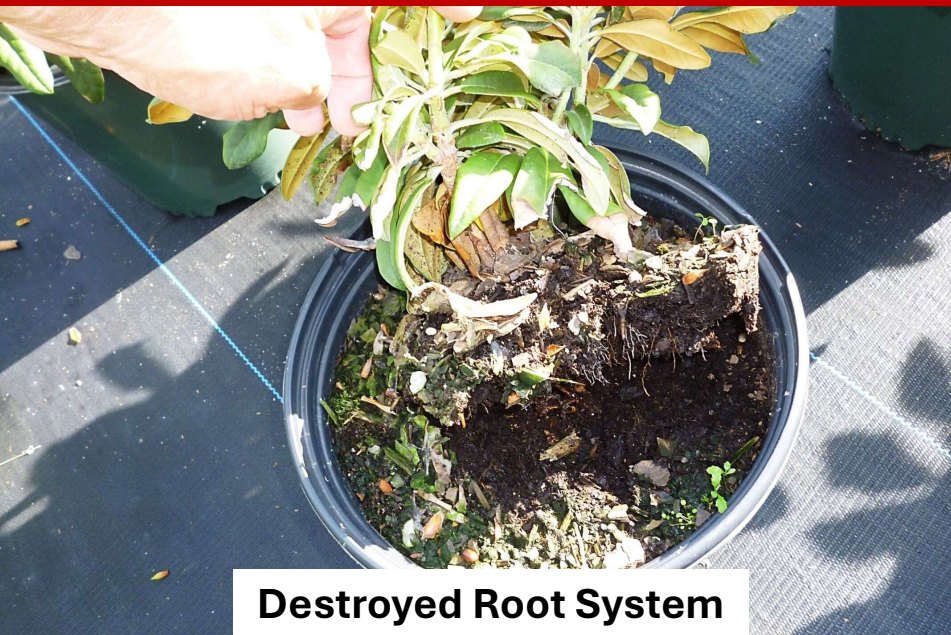
Central NJ: 780 GDDs

Southern NJ: 870 GDDs

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Oriental beetle (*Anomala orientalis*)



Destroyed Root System



**Damage
Symptoms**



Grub Larvae



T. Smith, UMass

Adults

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Oriental beetle (*Anomala orientalis*)



GDD Window (base 50): 450-1500

Management

- Cultural Practices:

- **Natural predators:** Entomopathogenic fungi (*Beauveria bassiana* and *Beauveria brongniartii*), nematodes (*Heterorhabditis bacteriophora*)
- Mating disruption using pheromones
- Maintain healthy plants and reduce stress
- Select resistant varieties
- Handpick beetles and trap in soapy water
- Use fabric covers
- Avoid overcrowding
- Delay planting until after peak activity

Materials

○ **Contact insecticides:**

- Pyrethroids [3]: -thrins
- Carbamates [1A]: carbaryl

○ **Systemic insecticides:**

- Neonicotinoids [4A]: imidacloprid
- Organophosphates [1B]: acephate
- Diamides [28]: chlorantraniliprole

○ **Considerations:**

- Will impact non-target species

○ **Biorationals:**

- Insect Growth Regulators:
 - Halofenozide [15]

Current GDD: 6/10/25

North NJ: 670 GDDs

Central NJ: 780 GDDs

Southern NJ: 870 GDDs

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Oriental beetle (*Anomala orientalis*) Mating Disruption Lures

- Dispensers containing the oriental beetles sex pheromone are available to growers, and can be used to prevent the beetles from mating and lure them into being trapped
- Should be deployed prior to the first emergence in early summer
- Typically work for 60 days, hang them at a density of 20-40 per acre



Spotted Lanternfly (*Lycorma delicatula*)



GDD Window (base 50): Adult emergence at 1100-1700

- Overwinter as egg masses on smooth surfaces, looking like a patch of mud
- In mid-May, juveniles hatch from eggs and are black with white spots
- Nymphs grow and become red and black with white spots
- Nymphs mature into adults in July and August, with a black head, gray/black spotted forewings, and reddish black spotted hind wings
- Adults feed primarily on trunk and limbs of plants from August to October using sucking mouthparts
- Considered plant hoppers
- Excrete honeydew during feeding, which grows sooty mold
- Causes reduced photosynthesis and plant vigor, leaves may wilt or curl, sap may ooze from wounds
- Leads to reduced crop yield, branch die-off, weeping wounds (grayish black trails along the trunk)
- **Host plants:** Over 70 species (grapes, fruit trees, hardwood trees)
 - o Tree of Heaven is the main host



Photo via Steven K. Rettke, Rutgers Coop. Ext.

Current GDD: 5/13/25

North NJ: 670 GDDs

Central NJ: 780 GDDs

Southern NJ: 870 GDDs

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Spotted Lanternfly (*Lycorma delicatula*)

Adults: Female = Left & Male = Right



Gravid Adult Female



1st-3rd
Instar
Nymphs



Photos: Dalton Ludwick

Egg Masses: Left = New & Older = Right



Naked
Egg
Mass



Photo: Pennsylvania
Department of Agriculture

5522639

4th
Instar
Nymph



Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Spotted Lanternfly (*Lycorma delicatula*)



GDD Window (base 50): emergence at 1100

Management

- Cultural Practices:

- **Natural predators:** spined soldier bugs, Carolina and Chinese mantises, birds
- Crush nymphs and adults, or use a shop vacuum
- Syringing
- Pay attention to quarantines in your area
- Check your vehicles, tools, and plants before transplanting

Materials

○ Contact insecticides:

- Pyrethroids [3]: -thrins
- Carbamates [1A]: carbaryl

○ Systemic insecticides:

- Neonicotinoids [4A]: imidacloprid, dinotefuran

○ Considerations:

- Will harm non-target species

○ TOH Trap Trees:

- Bring in potted Tree of Heaven as a SLF trap tree by treating trees with dinotefuran [4A]



Photo via Steve Rettke, RCE

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

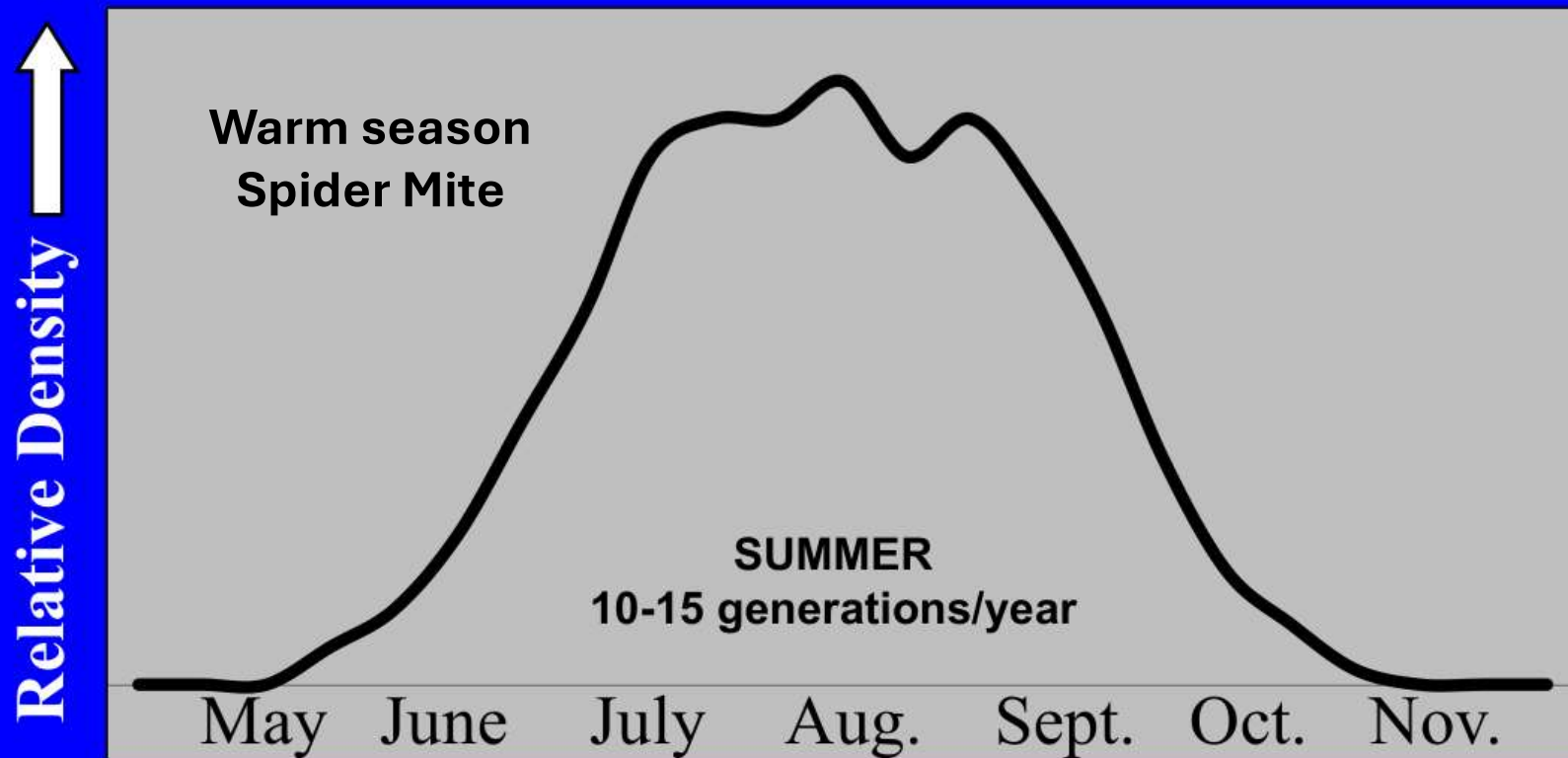
6/10/2025



- **Warm Season Spider Mites:**
 - Two-Spotted Spider Mite:
 - (363-618 GDDs = emerging overwintering females)
 - (1300-2000 GDDs = peak populations)

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Two Spotted Spider Mites (Seasonal Populations)



Two Spotted Spider Mite (*Tetranychus urticae*)



GDD Window (base 50): 363-618 (emerging overwintering females)

- **Host plants:** Over 200 species (cosmopolitan mite)
- **Microscopic (1/50") arachnids** with oval bodies, typically yellow-orange in color, **with two dark spot on each side of the body.**
- **Most common during hot, dry summer weather**
- **Overwinter as orange colored adult females beneath plants**
- **During warm summer months can have 10-15 generations / year**
- **Multiple generations can produce extensive webbing over infested plants**
- Causes yellow or white stippling on leaves, leading to leaf drop
- Leaves begin to look bronzed, bleached, or distorted
- Severe infestation can stunt plant growth and lead to death



Photo via University of California

Current GDD: 6/10/25

North NJ: 670 GDDs

Central NJ: 780 GDDs

Southern NJ: 870 GDDs

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Two Spotted Spider Mite (*Tetranychus urticae*)

363-618 GDDs (emerging overwintering females)



Extensive Webbing



Photo: Jim Willmott, RCE



Leaf stippling



Turns orange in late summer



Sentinel Plant: Burning Bush



Overwintering adult females

Photo: University of California

Current GDD: 6/10/25
North NJ: 670 GDDs
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The 2 spots on the 2-Spotted Spider Mites?

A visual top view of a 2-spotted spider mite



Magnified view with blue stain dye & under lighting



Two Spotted Spider Mite (*Tetranychus urticae*)



GDD Window (base 50): 1300-2000 (peak populations)

Management

- **Cultural Practices:**

- **Natural predators:** lady beetles, **predatory mites** (*Phytoseiulus persimilis*)
- Increase humidity around plants to deter mites
- **Reduce drought stress**
- Reduce plant stress overall
- Do not overwater
- **Do not fertilize during droughts**
- **Mulch to conserve moisture**
- Syringing

Materials

○ **Contact insecticides:**

- Pyrethroids [3]: -thrins

○ **Considerations:**

- Will impact non-target species
- **Can promote mite resurgence**
- Spray in early morning or early evening

○ **Systemics:**

- Abamectin
- Acephate (translaminar)

○ **Reduced Risk:**

- Acequinocyl
- Mito. Compx III [20D]: bifenazate
- Spiromesifen

○ **Biorationals:**

- Horticultural oil
- Insecticidal soap
- Hexythiazox (MGR)

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

6/10/2025



- **Soft Scales**

- Indian Wax Scale*: (700-1200 GDDs = crawlers)
- Calico Scale*: (750-2000 GDDs = crawlers)
- Cottony Camillia Scale: (802-1388 GDDs = crawlers)
- Fletcher Scale: (600-1200 GDDs = crawlers)

*More difficult soft scales to control

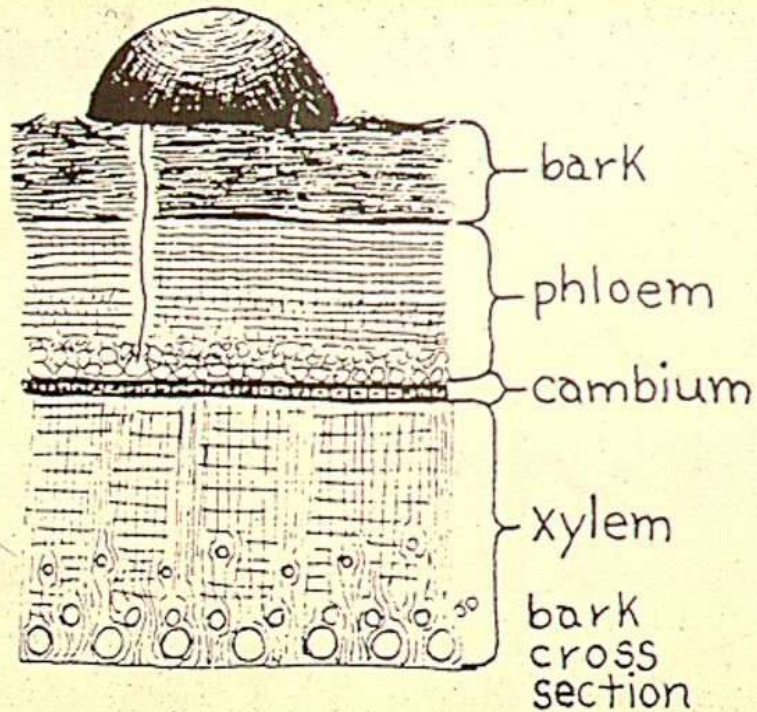
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Soft Scales

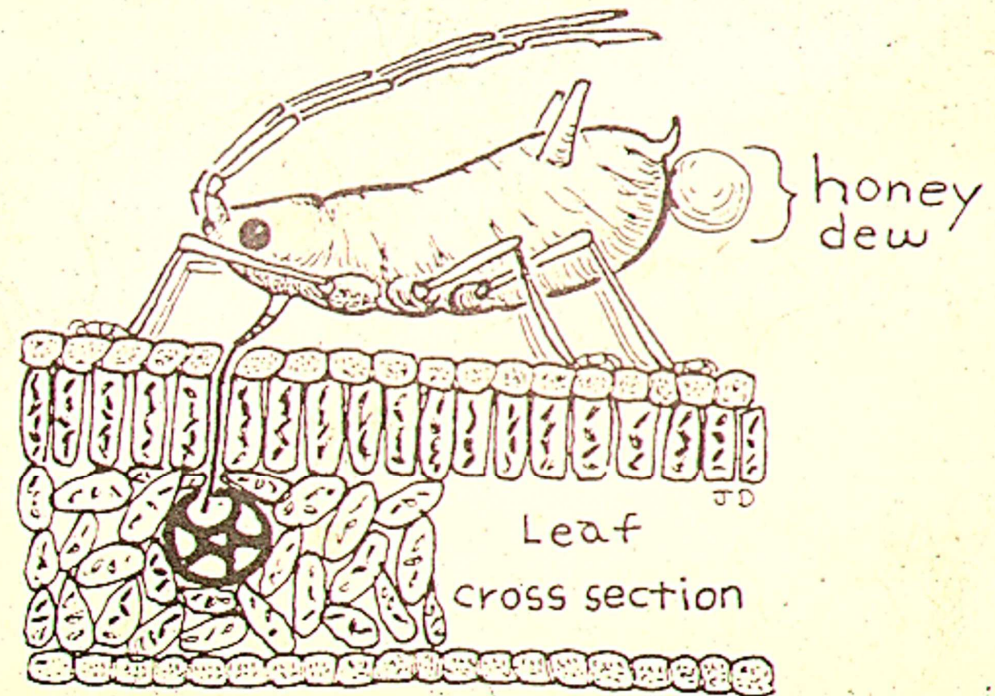
- **Secrete Honeydew (Vascular Feeders)**
- **Associated With Sooty Mold**
- **Can Move After Crawlers Settle**
- **No Leaf Stippling / Less Damage**
- **Only Nymphs Overwinter**
- **300-2000 Eggs Per Female**
- **Only 1 Generation per Year**

Honeydew producers feed in the phloem

Soft Scales



Aphids



Line Drawings: John Davidson, U of MD

Ants tending soft scales for honeydew



Photo: Tim Waller, RCE



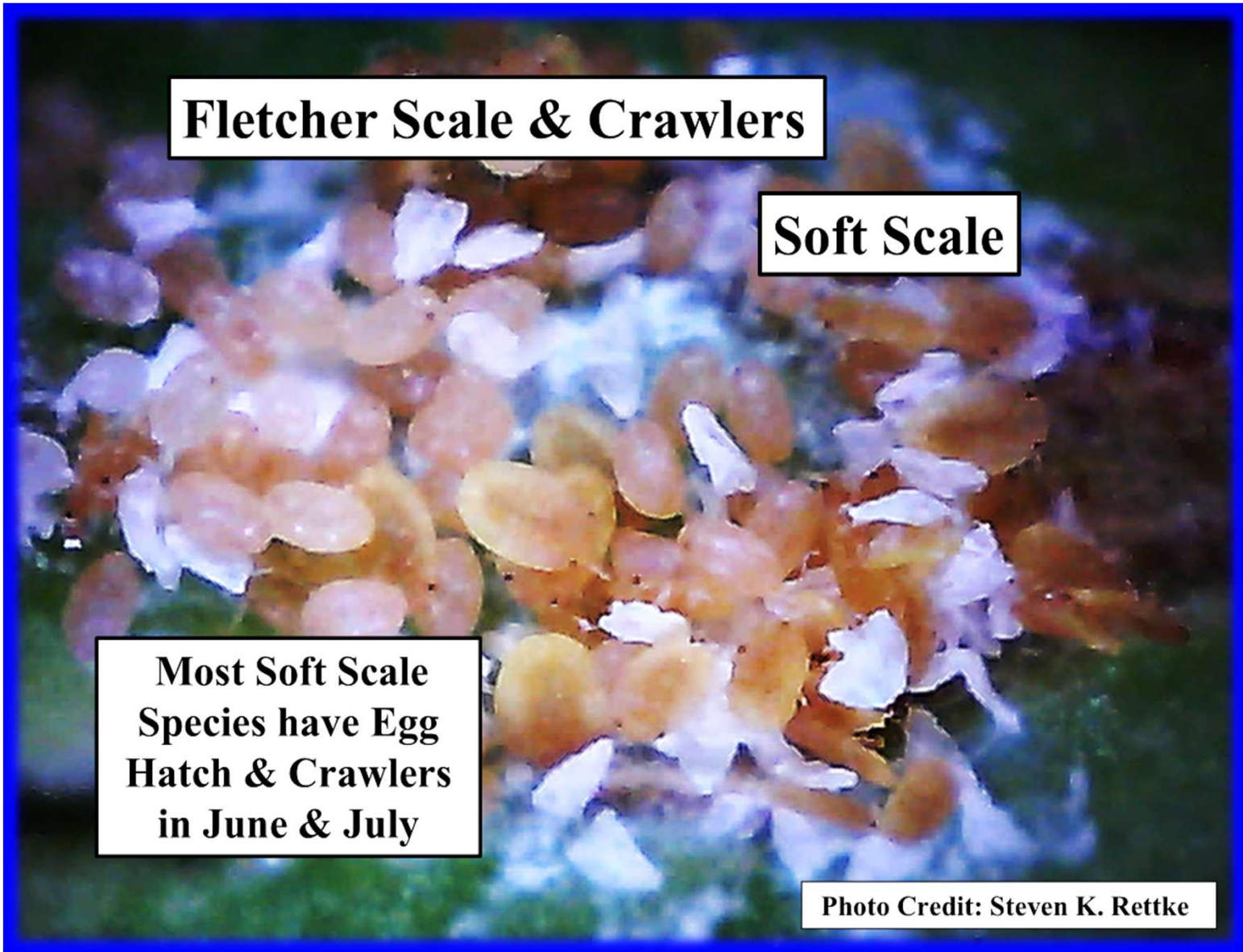
Photo: Steve Rettke, RCE

Fletcher Scale & Crawlers

Soft Scale

**Most Soft Scale
Species have Egg
Hatch & Crawlers
in June & July**

Photo Credit: Steven K. Rettke



Indian Wax Scale (*Ceroplastes ceriferus*)

GDD Window (base 50): 700-1200

- **Host plants:** 62 plant families
 - o **Evergreen** shrubs including Japanese holly, Chinese holly, boxwood, *Euonymus*, firethorn
 - o **Deciduous** shrubs including *Spirea*, flowering quince, barberry
- **Soft-bodied insects covered in white, waxy secretions, and found on branches and stems**
- Adult females are rounded, hemispherical, white, and up to ¼" in diameter – resemble a wad of gum
- **Males do not exist (Parthenogenetic)**
- Crawlers are rusty-red
- **All life stages can be found on trigs and branches & not foliage**
- One generation per year
- **Overwinter on bark as adults** (dormant oils less effective)
- Sticky honeydew and sooty mold on plant surfaces
- Yellowing and premature leaf drop, decreased plant vigor, branch dieback



Photo via Steve Rettke, RCE

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Indian Wax Scale (*Ceroplastes ceriferus*)

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Scale body under wax



Cluster of Adults



Cameo or 1st instar stage

Photos: J.R. Baker, NCSU



700-1200 GDDs

Indian wax scale crawler about the size of a grain of pollen.

Photo by J. R. Baker, NC State University



Eggs & Crawlers



Photo: SB Bambara, NCSU

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
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Indian Wax Scale (*Ceroplastes ceriferus*)



GDD Window (base 50): 700-1200 (1500 GDDs = all eggs hatched?)

Management

- Cultural Practices:

- **Natural predators:** parasitic wasps, predatory beetles, ladybeetles, lacewings
- Prune infested branches
- **Remove by hand when possible**
- Prevent plant stress
- Give plants ample spacing
- **Avoid over fertilizing**
- **Syringing**

Materials

○ **Contact insecticides:**

- Pyrethroids [3]: -thrins
- Carbamates [1A]: carbaryl

○ **Systemic insecticides:**

- Neonicotinoids [4A]: imidacloprid, dinotefuran
- Abamectin
- Acephate (translaminar)

○ **Considerations:**

- Will harm non-target species
- Target sprays during crawler stage

○ **Biorationals:**

- Horticultural oil (**not dormant**)
- Insecticidal soap
- **Neonic: acetamiprid**
- Insect Growth Regulators:
 - pyriproxifen [7C]
 - buprofezin [16]

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Calico Scale (*Eulecanium cerasorum*)

GDD Window (base 50): 750-2000

- **Host plants:** many hosts (**Deciduous**)
 - Shade trees (elm, zelkova, sweetgum, maple, honey locust)
 - Flowering trees (dogwood, star magnolia, cherry, crabapple)
 - Woody plants (firethorn, wisteria)
- Rounded, dome-shaped insects with a mottled brown and white pattern, up to ¼" in diameter
- **Crawlers emerge from mid-June into August**
- **Crawlers are white and turn yellow, settling along leaf veins**
- **Overwinter on bark as 2nd instar nymphs & become adults in spring**
- Causes honeydew and sooty mold, branch dieback and reduced vigor in heavily infested plants
- Feeding in the summer usually does not cause severe symptoms
- Can cause leaf yellowing, stunting, and premature shedding

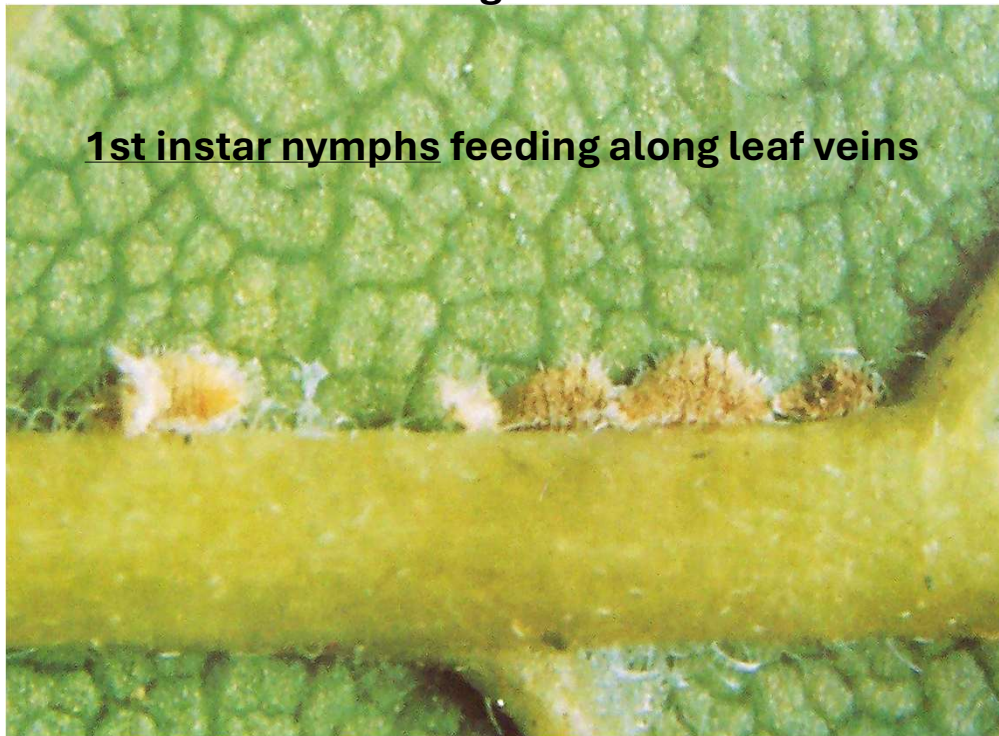


Photo via Steve Rettke, RCE

Current GDD: 6/10/25
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Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Calico scale nymphs can move again after 1st settling

Calico scale crawlers move to deciduous leaves to feed along veins in the summer



Calico scale nymphs move back to stems before leaves drop in the fall



Photos via Cornell University

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Calico Scale (*Eulecanium cerasorum*)



2nd instar nymphs overwinter on stems



100's of eggs



Numerous parasitoid exit holes

1st instar nymphs along leaf veins in summer



Photo: Joe Boggs, OSU Ext

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Calico Scale (*Eulecanium cerasorum*)



GDD Window (base 50): 400-880

Management

- **Cultural Practices:**

- **Natural predators:** lady beetles, parasitic wasps
- **Monitor populations and remove scales manually**
- Reduce plant stress
- Prune heavily infested branches

Materials

○ **Contact insecticides:**

- Pyrethroids [3]: -thrins
- Carbamates [1A]: carbaryl

○ **Systemic insecticides:**

- Neonicotinoids [4A]: imidacloprid, dinotefuran
- Organophosphates [1B]: acephate

○ **Considerations:**

- Will harm non-target species
- Target sprays during crawler stage

○ **Biorationals:**

- Horticultural oils
- Insecticidal soap
- **Neonic: acetamiprid**
- Buprofezin (IGR)
- Pyriproxyfen (IGR)

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Cottony camellia scale (*Pulvinaria floccifera*)

GDD Window (base 50): 802-1388

- **Host plants:** over 37 plant families
 - o **Yew, Holly, Camellia**
- Soft scales with a cottony mass of eggs found on branches and leaves of host plants
- Mature females are oval shaped, and yellowish tan with a brown outer ring, growing up to 1/8" in length
- Adults are usually found on the undersides of foliage
- White egg sac remains attached to the foliage after the female dies and falls to the ground
- **Overwinters on the bark of deciduous plants, and on the foliage of evergreens**
- Crawlers are pale yellow
- **One generation per year**
- **Produces honeydew which grows sooty mold**
- Leads to leaf yellowing and reduced plant vigor



Cottony camellia scale insects and ovisacs on the underside of a camellia leaf.

Photo by Trisha Gensic

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Cottony camellia scale (*Pulvinaria floccifera*)



Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Cottony camellia scale (*Pulvinaria floccifera*)



GDD Window (base 50): 400-880

Management

- **Cultural Practices:**

- **Natural predators:** ladybugs, lacewings, parasitic wasps, birds
- Reduce plant stress
- **Mulch to conserve water**
- **Prune heavily infested branches**
- Remove egg masses
- Hand pick scales

Materials

• **Contact insecticides:**

- Pyrethroids [3]: -thrins
- carbaryl

• **Systemic insecticides:**

- Neonicotinoids [4A]: imidacloprid, dinotefuran
- Abamectin
- Organophosphates [1B]: acephate (translaminar)

Will harm non-target species

Target sprays during crawler stage

○ **Biorationals:**

- **Horticultural oils**
- **Insecticidal soaps**
- Neonic: acetamiprid
- Buprofezin (IGR)
- Pyriproxyfen (IGR)

Current GDD: 6/10/25

North NJ: 670 GDDs

Central NJ: 780 GDDs

Southern NJ: 870 GDDs

Fletcher Scale (*Parthenolecanium fletcheri*)

GDD Window (base 50): 600-1200

- **Host plants:** arborvitae, yew, juniper, hemlock
- **Adults** are 2-4mm in diameter, **dome-shaped soft scales, brown to tan in color, and usually found on twigs and stems**
- Nymphs are oval, flat, and yellowish amber crawlers which remain on the same plant all season
- **Females begin laying eggs under their bodies in late May, which hatch in June**
- Overwinter as second stage instars
- **One generation per year**
- **Produces honeydew which grows sooty mold**
- Causes yellowing leaves and reduced plant vigor, as well as premature needle and leaf drop



Photo via Steve Rettke, RCE

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Fletcher Scale (*Parthenolecanium fletcheri*)



Greg Hoover
PSU Entomology



Photo: Jim Kalisch, UNB-Lincoln



Photo: Whitney Cranshaw, CSU

UGA1325098



Fletcher Scale
on Baldcypress

Joe Boggs, OSU Extension©

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Fletcher Scale (*Parthenolecanium fletcheri*)



GDD Window (base 50): 600-1200

Management

- Cultural Practices:

- **Natural predators:** lady beetles, parasitic wasps
- Reduce plant stress
- Prune and dispose of heavily infested branches

Materials

○ **Contact insecticides:**

- Pyrethroids [3]: -thrins
- Carbamates [1A]: carbaryl

○ **Systemic insecticides:**

- Neonicotinoids [4A]: imidacloprid, dinotefuran
- abamectin
- acephate (translaminar)

○ **Considerations:**

- Will harm non-target species
- Spray during crawler stage

○ **Biorationals:**

- **horticultural oil**
- **insecticidal soap**
- Neonic: acetamiprid
- buprofezin (IGR)
- Pyriproxyfen (IGR)

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Box Tree Moth (*Cydalima perspectalis*)



Photos: USDA APHIS



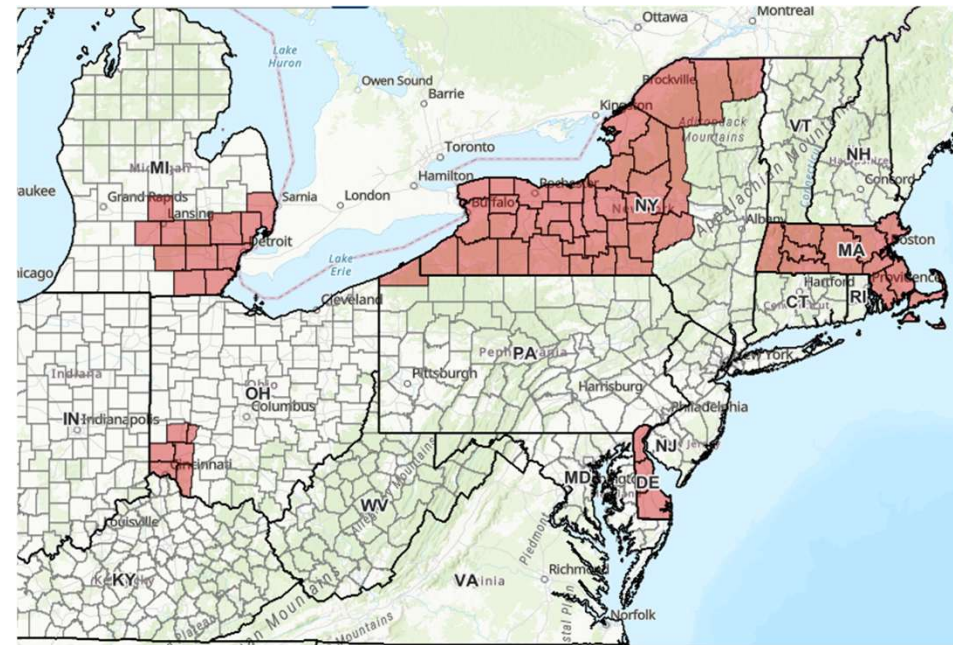
Photo credit: Joe Boggs OSU Extension (Adapted from: Box Tree (Boxwood) Moth: New Detection, What to Look For, and Management)



Photos: USDA APHIS

Box Tree Moth (*Cydalima perspectalis*)

- Invasive Lepidoptera native to eastern Asia
- Now found throughout most of Europe
- First detection in North America – Toronto 2018 (USA NY 2021)
- BTM has been detected in the Great Lakes Region (OH, PA, MI, NY) and DE, MA.
- **There are NO native caterpillars that DEFOLIATE boxwoods**
- **In Europe they also feed on:** burning bush (*Euonymus alatus*), Japanese spindletree (*E. japonicus*), purple holly (*Ilex chinensis*), and orange jessamine (*Murraya paniculata*) once all nearby boxwoods are completely defoliated
- Federal Quarantines in Effect NOW
- Monitor boxwoods April – October
- **Preventative pesticide applications= not recommended**



USDA – APHIS:

Box Tree Moth Federal Quarantine Boundary (as of 6/9/25)

Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Federal Compliance Agreement = Shipping out of quarantined area

**Box Tree Moth (BTM)
Compliance Agreement for Production Nurseries in BTM Regulated Nurseries**

Agreement #: _____

Establishment Name: _____

Establishment Address: _____

City: _____ State: _____ Zip: _____

Establishment Location(s) and Contact Information:

Upon signing, this agreement remains in effect for one year unless revoked by the State Certifying Authority or canceled by the establishment. If there is a change in establishment ownership, or any persons identified as the primary contact for the establishment, then a new agreement must be signed.

**Make sure if receiving plants from a
quarantined area you receive this paperwork**

**Box Tree Moth Compliance Agreement
Explained**

Jennifer Gray • July 2, 2024

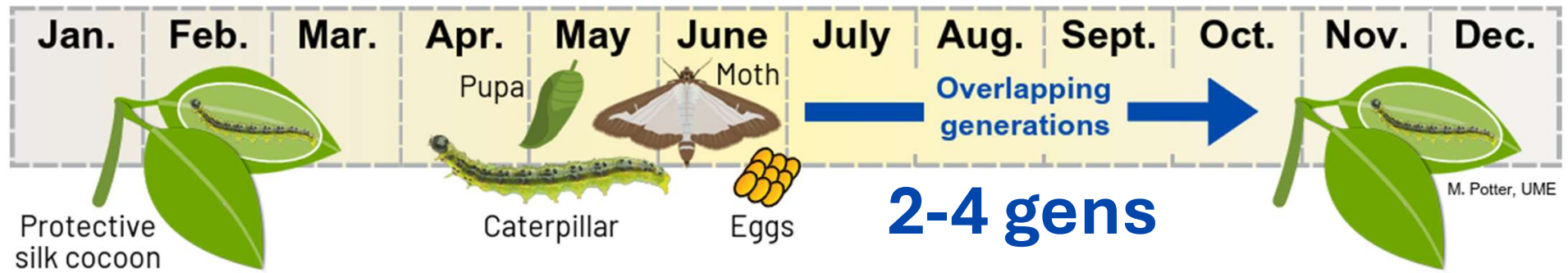


 **Horticultural**
Research Institute

The  AmericanHort Foundation

Box Tree Moth (*Cydalima perspectalis*)

A generalized annual timeline; subject to change based on further data and records.



Photos (L-R): Joe Boggs OSU Extension, Safian, UWH, Bugwood

Researchers are working on growing degree-day models for BTM in USA

Box Tree Moth (*Cydalima perspectalis*)



Alejandro Del-Pozo

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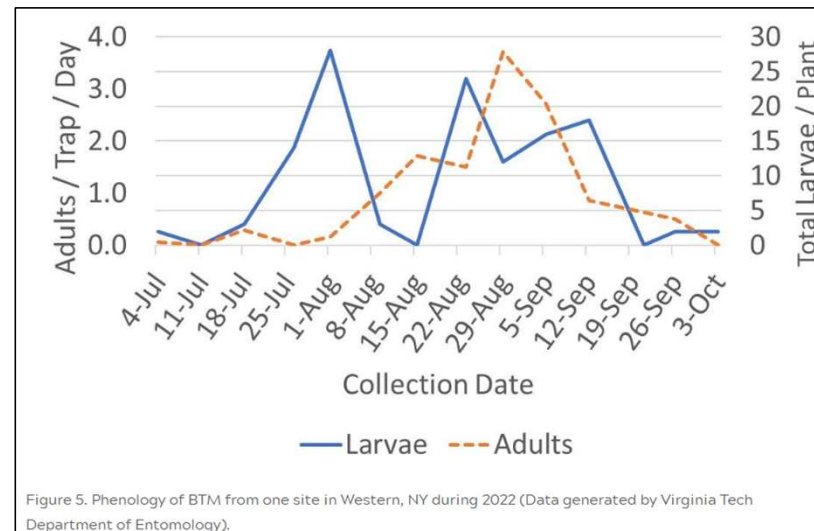
2024 Updates on Box Tree Moth

Authored by Lelia Milner, Laboratory Aide, Department of Entomology, Virginia Tech; Jason Bielski, Postdoctoral Associate, Department of Entomology, Virginia Tech; David Rivera, Graduate Student, Department of Entomology, Virginia Tech; Julie Brindley, Senior Technician, Department of Entomology, Virginia Tech; and Alejandro Del-Pozo, Assistant Professor and Extension Specialist, Department of Entomology, Virginia Tech

and the team!

Table 1. Chart showing the Growing Degree Days in base 10.1°C for the first appearance, 1st peak, and 2nd peak for early (1st-3rd) instar larvae and adult BTM, calculated from 2023 weather data.

Event	Adults	Early instar larvae
First appearance	518 GDD	568 GDD
1 st peak	616-776 GDD	613-953 GDD
2 nd peak	1,374-1,523 GDD	1,323-1,455 GDD



Current GDD: 6/10/25
North NJ: 670 GDDs
Central NJ: 780 GDDs
Southern NJ: 870 GDDs

Box Tree Moth (*Cydalima perspectalis*)



CFAES

OSU Extension

College of Food, Agricultural, and Environmental Sciences

In addition to: *Bacillus thuringiensis* - kurstaki (**Btk**)



Virginia Cooperative Extension
Virginia Tech • Virginia State University
www.ext.vt.edu

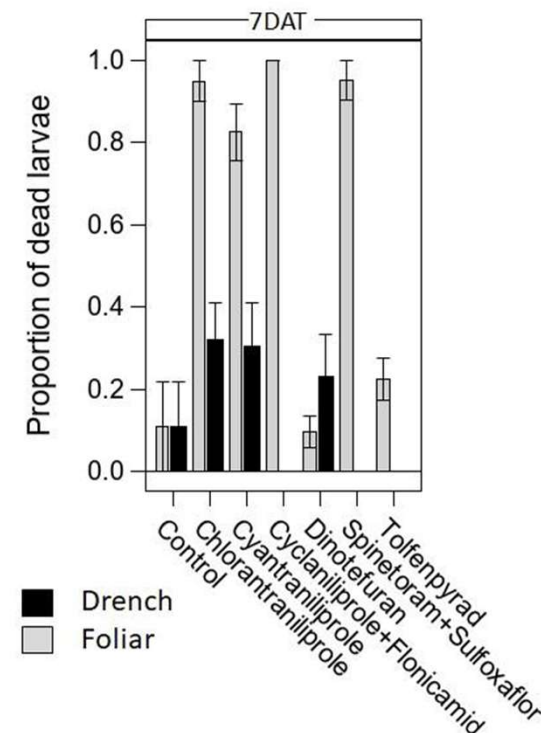
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Box Tree Moth Insecticides for Use by Professionals in Nurseries and Landscapes		
Active Ingredient(s)	IRAC MOA	Product Trade Name Examples
Carbaryl	1A	Sevin, Carbaryl
Acephate	1B	Orthene, Acephate
Bifenthrin	3A	OnyxPro, Talstar S, Talstar P, others
Cyfluthrin, beta- cyfluthrin	3A	Decathlon, Tempo SC Ultra, others
Lambda- cyhalothrin	3A	Scimitar GC, others
Deltamethrin	3A	Suspend SC
Tau-fluvalinate	3A	Mavrik
Permethrin	3A	Astro
Pyrethrins	3A	Tersus, Pyganic, EverGreen EC 60-6, others
Acetamiprid	4A	TriStar, others
Spinetoram + sulfoxaflor	5 + 4C	XXpire
Diflubenzuron	15	Dimilin 4L, Adept
Methoxyfenozide	18	Intrepid 2F
Indoxacarb	22A	Provaunt, Provaunt WDG
Chlorantraniliprole	28	Acelepryn
Cyantraniliprole	28	Mainspring GNL
Cyclaniliprole	28	Sarisa
Cyclaniliprole + Flonicamid	28 + 29	Pradia

Source: <https://bygl.osu.edu/index.php/node/2409>

DISCLAIMER: The information provided in the tables above is presented with the understanding that no product discrimination is intended, and no endorsement of any product mentioned, or criticism of unnamed products is implied. Labeling, registrations, and uses can change. The label is the law: applicators are responsible for reading and following all label directions



Bacterial Shot Hole & fungal look-a-likes



Bacterial Shot Hole:

- Bacterial infection caused by [mostly] *Xanthomonas arbuticola* pv. *pruni* or [lesser] *Pseudomonas syringae* pv. *syringae*. creating uniform holes in leaves after spots drop out
- Spots turn red, purple, and brown and eventually drop out, leaving holes
- Yellow or red halos begin to surround the lesions, and spots can coalesce
- ***Prunus* sp. trees:** Severely infected leaves yellow and drop
- **Cherry Laurels:** Develop shothole and stay attached
- Most Common Hosts in nursery:
 - o *Prunus* sp. trees
 - o *Prunus laurocerasus* 'Otto Luyken'
 - o *Prunus laurocerasus* 'Schipkaensis'
- **Fungal look-a-likes:** (*some cases pycnidia are present*)
 - o *Blumeriella jaapii*
 - o *Cercospora* sp.
 - o *Wilsonomyces carpophilus* (*Coryneum blight*)

Bacterial Shot Hole & fungal look-a-likes



Shot Hole:

- **DIAGNOSTICS** (Treatment for right issue Bacteria Vs Fungus)
- Reduce leaf wetness and humidity
- Space plants adequately / increase airflow
- Plant resistant varieties
 - o "Chesnut Hill" reported to be more resistant compared to "Otto Luyken"
- **REMOVE FALLEN LEAF LITTER**
 - o Tree Prunus sp. typically drop mid-summer
- **Suppress Bacteria AND fungi shot hole**
 - o Coppers (sulfate [M01], hydroxide [M01])
 - o Cu hydroxide [M01] + Mancozeb [M03]
 - o Mancozeb [M03]
- **Bacterial suppression**
 - o Oxytetracycline (antibiotic) [FRAC41]
 - o *Bacillus amyloliquefaciens* strain D747 [44]
- **Fungal suppression**
 - o Azoxystrobin [11]
 - o Chlorothalonil [M05] + T-methyl [M1]

Important notes:

- Shot hole is a symptom – can be caused by bacteria, fungi, physiological responses, leaf cutter bees (*but does look different*)
- Some growers report growing in-field, then pot up before sale year greatly decreases occurrence of shot hole
- Coppers at too high of rates can cause curling and localized phytotoxicity mimicking shot hole symptoms
 - o (*do not use when a [P07] has been used within 14–20-day window*)
- Many of these materials have long (24-48hr REI), *but may be the better choice in a management strategy*

Common viral symptoms



Lilac Ring Mottle Virus (*tentative ID) – Tim Waller –
Cumberland RCE



Tobacco Rattle Virus (*tentative ID) – Tim Waller –
Cumberland RCE

Pacific Northwest Plant Disease
Management Handbook



Tomato Spotted Wilt Virus – Dalhia



Figure 5. Yellow vein banding and distortion caused by rose mosaic virus disease.
Credit: Binoy Babu

Margaret McGrath – Cornell Univ.



Zucchini Yellow Mosaic Virus

Management considerations:

- Diagnostics tells us:
 1. is this likely a virus? Which one?
 2. How is it spreading / how to slow it
- Always rogue suspected virus plants
- Clean all pruning equipment in that area
- Viral expression often associated with stress
- Control the vectors if applicable (thrips, nematodes, aphids, leafhoppers, etc.)

ALWAYS READ THE LABEL FIRST – OUTDOOR FLOWER CROPS – LABEL IS THE LAW

Pests as Vectors

Thrips:

- Impatiens Necrotic Spot Virus
- Tomato Spotted Wilt Virus
- Tobacco Streak Virus (TSV)

Aphids:

- Dahlia Mosaic Virus (DMV)
- Dahlia Common Mosaic Virus (DCMV)

Leaf hoppers:

- Phytoplasmas

Nematodes:

- Tomato-Ringspot Virus



Can't directly treat these diseases – target pest!

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Black Spot of Rose (*Diplocarpon rosae*)

- Fungal disease that created black, circular spots with fringed edges on rose leaves, causing yellowing and defoliation
- Overwinters on infected canes and fallen leaves
- Leaves must be wet for at least 7 hours to be infected
- Symptoms can appear 3 days to two weeks after infection
- Spread via splashing water
- Appears on upper leaf surfaces as raised, purplish-red blotches that blister
- Spots can be up to ½" in diameter and may coalesce to form irregular lesions
- Yellow halos form around the spots
- Entire leaves may turn yellow and drop prematurely
 - o *(this repeated in the landscape weakens the plants)*
- Reduced flower production
- **Host plants:** *Rosa* spp.



Photo via Steve Rettke, RCE

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted

Black Spot of Rose (*Diplocarpon rosae*)



Photo: PSU Extension



Photos: PSU Extension



Photo: Whitney Cranshaw, CSU

Black Spot of Rose (*Diplocarpon rosae*)



Management

- **Cultural Practices:**

- Prune and remove infected leaves
- Ensure good air circulation and water plants at the base
- Plant resistant cultivars
- Avoid overhead irrigation

Materials

○ **Contact insecticides:**

- Chlorothalonil [M05]
- Mancozeb [M03]

○ **Systemic insecticides:**

- Thiophanate methyl [1]
- Propiconazole [3]
- Azoxystrobin [11]

○ **Considerations:**

- Spray fungicides as soon as the season begins
 - Spray every 7-12 days, shortening the interval during wet weather and lengthening it during dry weather

○ **Biorationals:**

- Neem oil
- Potassium bicarbonate [NC]
- Copper hydroxide [M01]
- Copper sulfate [M01]

Thank you for attending



Presentation will be available on our website.

Next session: June 24th, 2025

Key topics for next time:

1. Beneficial – Parasitoid wasps
2. Leafhoppers & *vectored diseases*
3. Fall webworm
4. Japanese beetle
5. Oak lace bugs
6. Oak spider mite
7. Honey locust spider mite
8. Mealybugs
9. Phytotoxicity diagnostic approach
10. Post-spring season sanitation
11. Scale crawler monitoring

Funding provided by:



National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

Implementation of IPM in New Jersey
-Ornamental Crops 2025

Use the Rutgers Plant Diagnostic Lab

Enables us to learn more about specific issues

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damage

Abiotic /
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Physiological /
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Arthropod
pest

Disease



Rutgers Plant Diagnostic Laboratory
Ralph Geiger Turfgrass Education Center
20 Indyk-Engel Way
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Agriculture and Natural Resources
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New Jersey Agricultural
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Online version >



Beta-version 2023
Contact: twaller@njaes.rutgers.edu

Nursery & Landscape Pest Scouting
Scouting with growing degree-days



Rutgers Green Industry Working Group

Contact: Timothy Waller, Ph.D.

twaller@njaes.rutgers.edu

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Scan here to
Report pest GDD deviations
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