



RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY



2025 Ornamental IPM Program Webinar

Contemporary IPM Topics and Management

April 8, 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, and important safety information. Always discuss treatments with your local agents.



RUTGERS UNIVERSITY

Agriculture and Natural Resources

New Jersey Agricultural Experiment Station

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**PLANT & PEST
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UPDATES YET?



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

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New Jersey Agricultural
Experiment Station

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

WE **R** HERE WHEN YOU NEED US

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County 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.

Scan here to
Report pest GDD deviations
Comment on observations
Share pest / plant photos



Agenda

1. Aphids
2. Balsam twig aphid
3. Adelgids
4. Cooley spruce gall adelgid
5. Eastern spruce gall adelgid
6. Pine bark adelgid
7. European pine sawfly
8. Cool season mites
9. Hemlock rust mite
10. Southern red mite
11. Spruce spider mite
12. Ambrosia beetle
13. Box tree moth
14. Boxwood blight
15. Phytophthora

Current GDD: 4/8/25
North NJ: 40 GDDs
Central NJ: 70 GDDs
Southern NJ: 110 GDDs

Aphids (*Aphidoidea*)

GDD Window (base 50): 7-120

- Small, 1/16" to 1/8" long, soft-bodied, pear-shaped insects
 - o Range from pink, green, blue-green, black, brown, tan, to yellow in color. May be covered in a fluffy white wax.
- All adults have cornicles, and long, slender mouthparts
- May or may not have wings
- Excrete sticky honeydew, which can then grow sooty mold
- Congregate on new growth, usually on the stems or leaves
 - o Attracted to overly fertilized growth and stressed plants
- **Host plants:** Wide range of plants, including vegetables, fruits, flowers, and ornamental plants
 - o *Aphelandra*, *Dieffenbachia*, *Gynura*, *Hoya*, and *Schefflera*

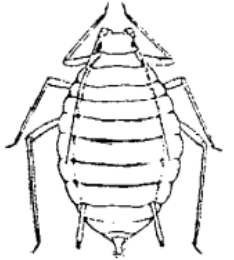


Photo via Rutgers NJAES

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Aphids (*Aphidoidea*)

Photos: Steven Rettke, Rutgers Cooperative Extension
Diagrams: George Hamilton & Louis Vasvary, Rutgers Cooperative Extension



Wingless form
(greatly enlarged)



Winged form
(greatly enlarged)



Current GDD: 4/8/25
North NJ: 40 GDDs
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Southern NJ: 110 GDDs

Aphids (*Aphidoidea*)

GDD Window (base 50): 7-120

Management

- Cultural Practices:

- **Beneficial insects:** ladybug, beetles, lacewings, syrphid fly, parasitic wasps
- **Companion plantings:** dill, coriander, yarrow, fennel, garlic, chives, marigolds, nasturtiums
- **Traps:** Sticky traps
- Destroy weeds near planting
- Avoid over-fertilizing with nitrogen
- Heavy sprays of water
- Prune infested twigs and branches

Materials

○ Contact insecticides:

- Avermectins [6]: Abamectin
- Pyrethroids [3]: -thrins

○ Systemic insecticides:

- Tetronics [23]: Spirotetramat
- Neonicotinoids [4A]: Imidacloprid, Thiamethoxam, dinotefuran,
- Organophosphates [1B]: Acephate
- Diamides [28]: Cyantraniliprole

○ Considerations:

- Pyrethroids and carbamates **will harm beneficial predators**

- Biorationals:

- Insecticidal soaps
- Horticultural oils
 - Mineral oil, neem oil

Current GDD: 4/8/25
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Balsam twig aphid (*Mindarus abietinus*)

GDD Window (base 50): 100-150

- 1/16 to 1/8" long, appearance varies with life stage
 - Eggs are brown and covered in white waxy rod-like structures
 - Stem mothers are plump, covered with white powder and small cornicles
 - Adults are greenish-blue, offspring gather around adults
- Feeding causes newly emerging needles to become twisted, needle death may occur
- Honeydew causes shoots to stick together
- **Host plants:** Most firs (*Abies*), particularly Balsam and Fraser firs. Common pest for Christmas tree production.



Photo via Neil Thompson, University of Maine

Current GDD: 4/8/25
North NJ: 40 GDDs
Central NJ: 70 GDDs
Southern NJ: 110 GDDs

Balsam twig aphid (*Mindarus abietinus*)



Photo: Steven Rettke, Rutgers Cooperative Extension



Photo: R. Childs, UMass



Photo: R. Childs, UMass



Photo: Steven Rettke, Rutgers Cooperative Extension

Current GDD: 4/8/25
North NJ: 40 GDDs
Central NJ: 70 GDDs
Southern NJ: 110 GDDs

Balsam twig aphid (*Mindarus abietinus*)

GDD Window (base 50): 100-150

Management

- Cultural Practices:

- **Beneficial insects:** ladybug beetles, lacewings, parasitic wasps (*Aphidius colemani*)
- **Companion plantings:** dill, coriander, yarrow, fennel, garlic, chives, marigolds, nasturtiums
- **Traps:** Sticky traps
- Mesh barriers, tree wraps
- Avoid over-fertilizing with nitrogen
- Heavy sprays of water
- Prune infested twigs and branches

Materials

○ Contact insecticides:

- Pyrethroids [3]: permethrin, cypermethrin, deltamethrin
- Carbamates [1A]: *major risks to off-target predators*

○ Systemic insecticides:

- Organophosphates [1B]: malathion, diazinon, acephate
- Neonicotinoids [4A]: Imidacloprid, Thiamethoxam

○ Considerations:

- Pyrethroids and carbamates **will harm beneficial predators if present**

- Biorationals:

- Insecticidal soaps
- Horticultural oils
 - Mineral oil, neem oil

Current GDD: 4/8/25
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Adelgids (*Adelgidae*)

GDD Window (base 50): 22-618, depending on species

- Small, aphid-like insects associated with conifers
- 1.5mm in length, varying in color by species, from dark reddish-brown to purplish-black.
- May or may not have wings.
- No cornicles.
- Nymphs resemble small adults.
- Adults produce a protective wool-like filament.
- Cause white, cottony masses at the base of needles.
- Can lead to off-color, grayish needles, thinning crowns, premature needle loss, and dieback and death of trees.
- Can cause gouting, or abnormal swelling of branch nodes and buds.
- **Host plants:** Conifers - Douglas-fir, hemlock, larch, pine, spruce



Photo via Steven Rettke, Rutgers Cooperative Extension

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Adelgids (*Adelgidae*)

Photos: Steven Rettke, Rutgers Cooperative Extension



Above Photo: USDA

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Adelgids (*Adelgidae*)

GDD Window (base 50): 22-618 (depending on species)

Management

- **Cultural Practices:**

- **Beneficial insects:** ladybug beetles, lacewings, parasitic wasps (*Pseudoscymnus tsugae*)
- **Companion plantings:** marigolds, nasturtiums, dill, basil
- **Traps:** Sticky traps, monitoring traps
- Mulch to suppress weeds and retain moisture
- Reduce plant stress
- Avoid over-fertilizing
- Heavy sprays of water

Materials

○ **Contact insecticides:**

- Pyrethroids [3]: permethrin, bifenthrin, cypermethrin, deltamethrin
- Carbamates [1A]: Carbaryl

○ **Systemic insecticides:**

- Organophosphates [1B]: malathion, diazinon, acephate
- Neonicotinoids [4A]: Imidacloprid, Dinotefuran
- Diamides [28]: Cyantraniliprole

○ **Considerations:**

- Pyrethroids and carbamates **will harm beneficial predators if present**

- **Biorationals:**

- Insecticidal soaps
- Horticultural oils
 - Mineral oil, neem oil

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Cooley Spruce Gall Adelgid (*Adelges cooleyi*)

GDD Window (base 50): 25-120 → spring control of overwintering females

90-180 → 1st adults active – Douglas-fir

210-310 → 1st galls visible - spruce

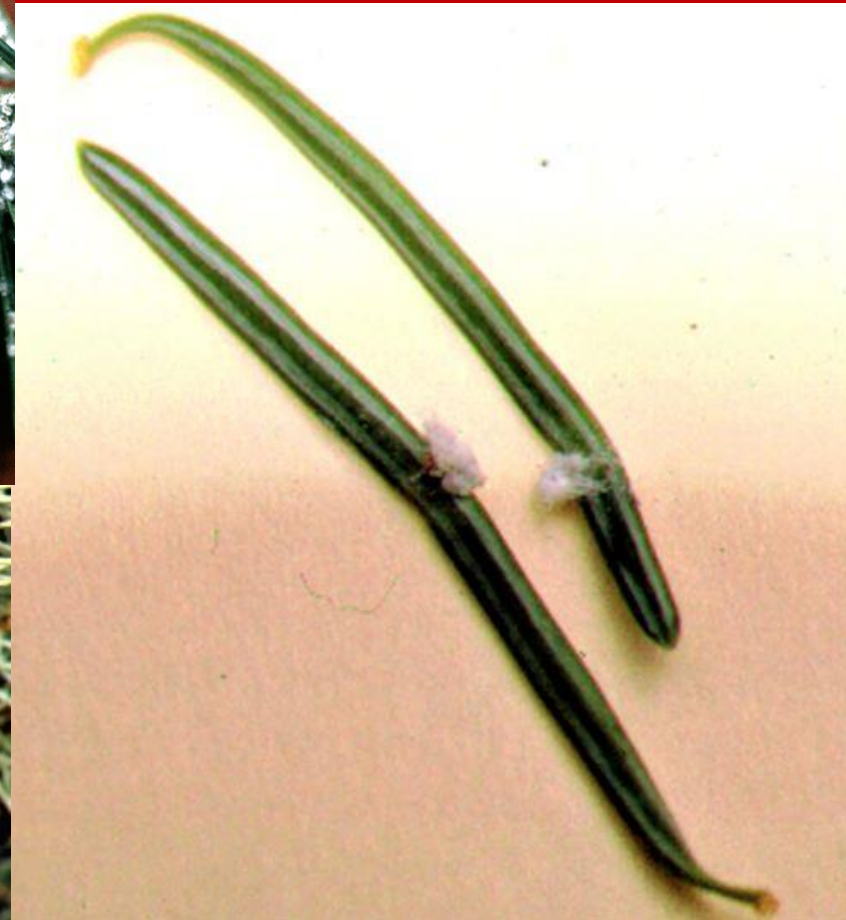
- Small, black, soft-bodied insect. Adults can be winged or wingless.
- Overwinters as an immature females in a crevice at the base of a spruce bud.
- Eggs are covered in a waxy thread, deposited around May.
- Eggs hatch when shucks break away from the buds, exposing new needles.
- Nymphs crawl into the new needles to feed, causing needle bases to swell, forming a 1-2" gall shaped like a pineapple in which the adelgids reside.
- Some mature adelgids emerge from galls around July or August and fly to Douglas firs to lay eggs which overwinter, producing a new brood in the spring, which can damage and distort trees but does not form galls.
- In late September, galls open and adelgids escape to produce overwintering females.
- Infested trees become disfigured, weakened, and vulnerable to pests and diseases.
- **Host plants:** Colorado blue spruce, Douglas fir, Sitka spruce, Engelmann spruce



Photo via Whitney Cranshaw, Colorado State University

Current GDD: 4/8/25
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Cooley Spruce Gall Adelgid (*Adelges cooleyi*)



Current GDD: 4/8/25
North NJ: 40 GDDs
Central NJ: 70 GDDs
Southern NJ: 110 GDDs

Cooley Spruce Gall Adelgid (*Adelges cooleyi*)

GDD Window (base 50): 25-120 → spring control of overwintering females

90-180 → 1st adults active – Douglas-fir

210-310 → 1st galls visible - spruce

Management

- Cultural Practices:

- **Companion plantings:** parsley, nasturtiums
- **Traps:** Sticky traps, monitoring traps
- Remove green colored galls before adelgids emerge and they turn brown
- Avoid planting spruce and Douglas-fir together
- Plant trees with generous spacing to allow for good air circulation
- Avoid tree stress
- Prune affected branches

Materials

○ Contact insecticides:

- Pyrethroids [3]: permethrin, cypermethrin
- Carbamates [1A]: carbaryl

○ Systemic insecticides:

- Neonicotinoids [4A]: Imidacloprid (soil drench), Dinotefuran

○ Considerations:

- Use with caution. Can harm beneficial insects and lead to resistance if overused. **Apply before gall formation.**

- Biorationals:

- Insecticidal soaps
- Horticultural oils
 - Mineral oil, neem oil
- Apply before bud break, or after galls have opened but before adelgids move to alternate hosts.

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Eastern Spruce Gall Adelgid (*Adelges abietis*)

GDD Window (base 50): 25-100

- 1/16" long, soft-bodied, aphid-like insects. Adult females are bluish-green, covered with cottony, waxy strands.
- Overwinter as partially grown females, maturing into stem mothers in early spring.
- Stem mothers lay 100-200 oval, brown eggs with a coating of woolly wax around budbreak.
- Eggs hatch and brownish black nymphs feed on new needles, creating green, cone-shaped galls which develop around the insects who continue to feed inside of them.
- In late summer, galls dry out and turn brown, open, and mature nymphs emerge, developing into winged females who will lay more eggs, which hatch into overwintering nymphs.
- Causes branch thinning and dieback, weakening stems
- **Host plants:** Norway and white spruce, occasionally red and Colorado blue spruce



Photo via R. Childs, UMass

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Eastern Spruce Gall Adelgid (*Adelges abietis*)



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Eastern Spruce Gall Adelgid (*Adelges abietis*)

GDD Window (base 50): 25-100

Management

- Cultural Practices:

- Kill young stages before galls can form. Once galls form, insecticides won't work and pruning is the only option.
- Remove infested twigs and branches
- Remove galls before they dry and turn brown
- Consider removing severely infested trees to protect other trees
- Ensure optimal tree health to reduce stress
- Plant trees with generous spacing

Materials

○ Contact insecticides:

- Avermectins [6]: Abamectin
- Pyrethroids [3]: -thrins

○ Systemic insecticides:

- Tetronics [23]: Spirotetramat
- Neonicotinoids [4A]: Imidacloprid, Thiamethoxam, Dinotefuran,
- Organophosphates [1B]: Acephate
- Diamides [28]: Cyantraniliprole

○ Considerations:

- Pyrethroids and carbamates **will harm beneficial predators**

- Biorationals:

- Insecticidal soaps
 - Will not kill eggs
- Horticultural oils
 - Mineral oil, neem oil
 - Will kill eggs
- Apply before bud break, or after galls have opened but before adelgids move to alternate hosts.

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Pine Bark Adelgid (*Pineus strobi*)

GDD Window (base 50): 58-618

- Short legged, dark purplish to yellow colored, teardrop shaped insects.
- Live under a white wooly mass that they secrete for protection. This wool persists even after the insects die.
- In high populations, they form large patches on branches or trunks.
- Overwintering adelgids begin feeding and secreting wool during the first days of warm weather in the spring.
- Adults develop in the late spring and early summer and begin to lay milky to light yellow-brown eggs which darken as the embryo matures.
- Eggs hatch into yellow crawlers, which can move to other parts of the host plant or be blown into nearby trees. Crawlers mature into winged or wingless adults, which remain on the host and reproduce or move to new trees.
- As many as 5 generations per year.
- Yellowing, witches brooming, and sooty mold can occur because of feeding.
- **Host plants:** Eastern white pine, Scots pine, Austrian (black) pine



A typical adelgid and her eggs at the base of pine needles.

Photo by J. R. Baker

Current GDD: 4/8/25
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Pine Bark Adelgid (*Pineus strobi*)



Photo via Steven Rettke, Rutgers Cooperative Extension



Photo via J.R. Baker



Photo via Steven Rettke, Rutgers Cooperative Extension

Current GDD: 4/8/25
North NJ: 40 GDDs
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Pine Bark Adelgid (*Pineus strobi*)

GDD Window (base 50): 58-618

Management

- **Cultural Practices:**
 - Natural predators: syrphid flies, lacewings, lady beetles, *Harmonia axyridis*, *Chilocorus stigma*, *Cicadophilus marginata*, and *Leucopis simplex*.
 - Syringing, or washing off the adelgids with a strong water jet.
 - Plant Eastern white pine away from Austrian and Scots pines.
- **Materials:**
 - **Contact insecticides:**
 - Pyrethroids [3]: -thrins
 - Carbamates [1A]: carbaryl
 - Avermectins [6]: abamectin
 - **Systemic insecticides:**
 - Organophosphates [1B]: malathion, diazinon, acephate
 - Neonicotinoids [4A]: Imidacloprid, Dinotefuran
 - Diamides [28]: Cyantraniliprole
 - **Considerations:**
 - Pyrethroids and carbamates **will harm beneficial predators if present**
- **Biorationals:**
 - Insecticidal soaps
 - May require multiple treatments.
 - Horticultural oils
 - Mineral oil, neem oil
 - Apply before bud break. Can impact beneficial insects if not applied correctly.

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European pine sawfly (*Neodiprion sertifer*)

GDD Window (base 50): 35-145→ hatched larvae **100-195**→ 1st larvae active

- Also known as Redheaded pine sawfly
- Mature larvae are grayish-green, 18-25 mm long, and caterpillar-like in appearance, with ten pairs of legs and stripes running parallel along the length of their bodies.
- Eggs appear as an even spaced row of light brown spots along the length of a pine needle.
- Adults are wasp-like, brown to black in color and 10-12 mm long.
- In the fall, females slit the edges of pine needles and lay eggs in the openings.
- Larvae feed in groups on the needles from the previous year and new bark, moving to new trees as needed.
 - Needles appear dry and straw-like. Defoliation stunts the growth of the tree.
- After a month, mature larvae drop to the ground and undergo transformation to the pupal stage.
- In late summer, mature larvae pupate inside golden-brown cocoons in leaf litter. Adults emerge from mid to late fall.
- **Host plants:** Mugo pine, Scots pine, red pine, Japanese red pine, Table Mountain pine, Eastern white pine, Austrian pine, ponderosa pine, shortleaf pine, pitch pine



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European pine sawfly (*Neodiprion sertifer*)



Photo: Thérèse Arcand

Current GDD: 4/8/25
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European pine sawfly (*Neodiprion sertifer*)

GDD Window (base 50): 35-145→ hatched larvae **100-195**→ 1st larvae active

Management

- **Cultural Practices:**
 - Natural predators: hymenopteran and dipteran parasitoids, ants, beetles, lacewings, spiders, small mammals, birds, pathogenic fungi and bacteria
 - Monitor host trees for eggs in needles from early fall to early spring
 - Prune branches to remove larvae
 - Remove and dispose of clusters of caterpillars with a gloved hand
 - Remove plant if severely infested
 - Northern cultivars of Scots pine are more resistant than southern cultivars
- **Materials:**
 - **Contact insecticides:**
 - Pyrethroids [3]: -thrins
 - Carbamates [1A]: carbaryl
 - **Systemic insecticides:**
 - Neonicotinoids [4A]: Imidacloprid (soil drench), dinotefuran
 - Organophosphate [1B]: acephate
 - **Considerations:** Use with caution. Can harm beneficial insects and lead to resistance if overused. Apply before gall formation.
- **Biorationals:**
 - Insecticidal soaps
 - May require multiple treatments.
 - Horticultural oils
 - Mineral oil, neem oil
 - Azadirachtin [UN]
 - Apply before bud break. Can impact beneficial insects if not applied correctly.

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Major Landscape Mite Groups

- Plant Feeding Mites

- Spider Mites
- Eriophyid Mites
 - Rust/Gall/Bud/Sheath
 - Predatory Mites



- Predatory Mites

Common Genera

- Phytoseiulus
- Amblyseius
- Neoseiulus



<https://extension.umd.edu/resource/predatory-mites/>

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Major Landscape Spider Mites

- **Cool Season Mites:**

- **Eriophyid Mites**

- Hemlock Rust Mite
 - Maple Bladder Gall Mite
 - Maple Erinium Gall Mite

- **Spruce Spider Mite**

- Conifers

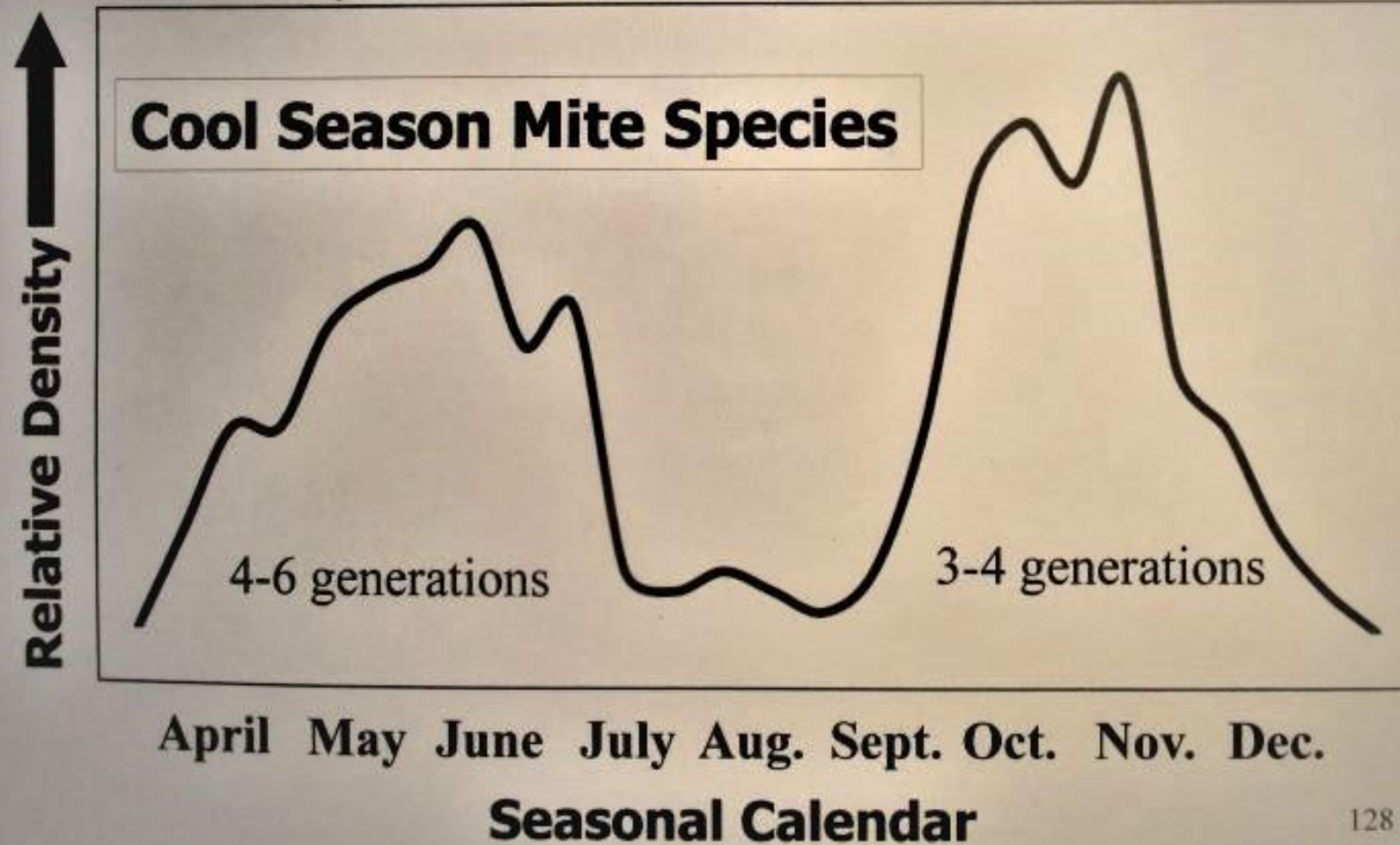
- **Southern Red Spider Mite**

- Broadleaf Evergreens

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Spruce Spider Mite

(Seasonal Populations)



Current GDD: 4/8/25
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Never Walk the Landscape Without a Handlens



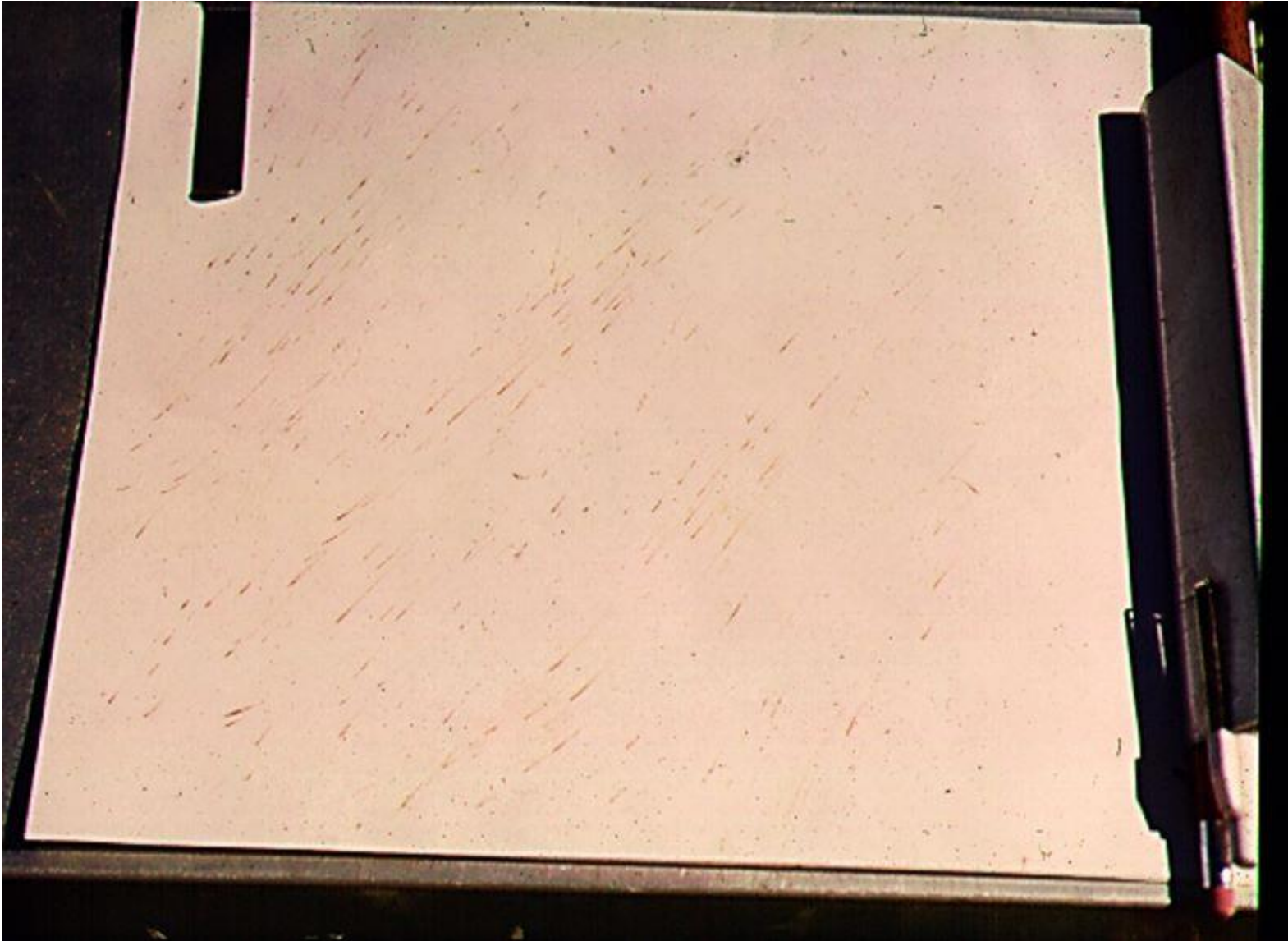
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Using a "Beating Tray"



Current GDD: 4/8/25
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Beating Tray and Mite Color Streaks



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Cool season mites (*Eriophyidae*)

GDD Window (base 50): 7-363, depending on species

- Tiny, often "carrot-shaped," translucent white
- Can only be seen with magnification (1/100" in length)
- Usually two pairs of legs
- Live on host plant leaves
- Can cause leaf bronzing ("rust")
- Some produce galls on leaves, buds, or flowers
- Some cause leaf-curling or witches' brooms
- Disfiguration can occur
- **Host plants:** Some are host specific, while others attack many species of plants, trees, and shrubs
 - Conifers and Broadleaf Evergreens

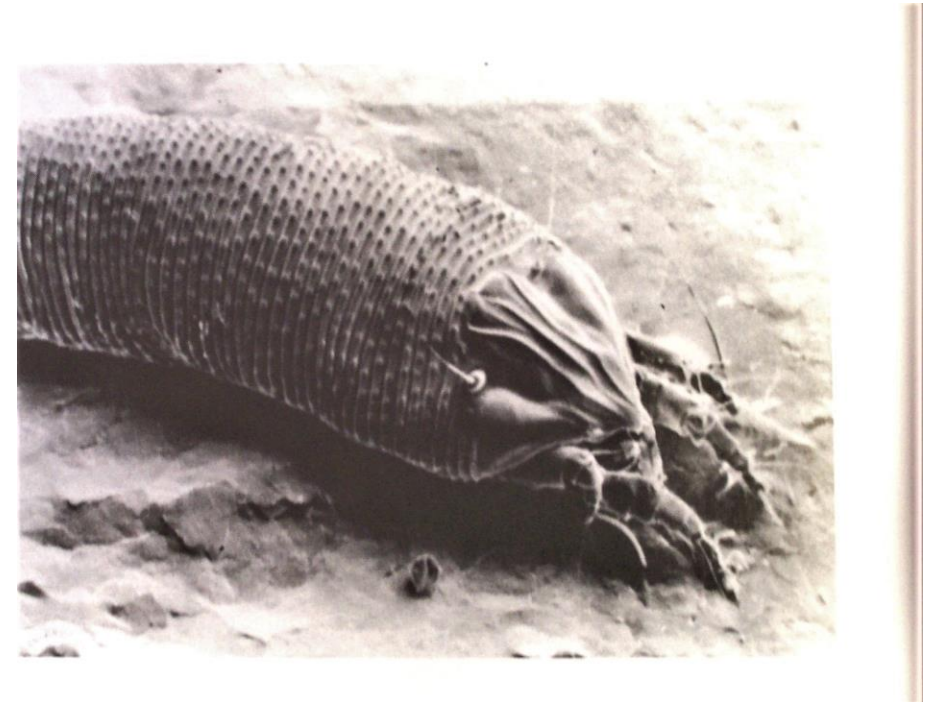


Photo: Cornell University Press

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Cool season mites (*Eriophyidae*)



Maple Bladder Gall & Maple Erinium
Gall Mites

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Cool season mites (*Eriophyidae*)

GDD Window (base 50): 7-363, depending on species

Management

- Cultural Practices:

- Natural predators: predatory mites (*Phytoseiulus persimilis*, *Amblyseius andersoni*) and *Stethorus punctillum* (predatory beetle), depending on species of mite
- Companion plants: basil, cilantro, chives, garlic, nasturtiums, marigolds, onions, oregano, rosemary, thyme
- Use resistant plant varieties
- Reduce plant stress
- Prune affected plant material
- Avoid overwatering

Materials

- Contact insecticides:

- Pyrethroids [3]: Bifenthrin, Deltamethrin, Permethrin, Pyrethrin
- Avermectins [6]: Abamectin
- Carbamate [1A]: Carbaryl

- Systemic insecticides:

- Organophosphates [1B]: malathion
- Neonicotinoids [4A]: Imidacloprid

- Considerations:

- Pyrethroids and carbamates **will harm beneficial predators if present**

- Biorationals:

- Insecticidal soaps and oils. May require multiple treatments.
 - Apply 7-10 days before bud break and again at bud break.
- Sulfur
 - Full coverage necessary. Do not apply when temperatures are over 90F, or in high humidity
- Kaolin clay
 - Full coverage necessary. Frequent applications required. Monitor plant response to avoid overapplication.

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Hemlock Rust Mite (*Nalepella tsugifoliae*)

GDD Window (base 50): 7-450 (7-22: active mites emerge)

- Tiny, wormlike insects that require magnification to be seen
 - In the spring, scout using a 10x hand lens
- Adult mites are yellow and spindle-shaped with four legs
- Thin, white colored cast skins may be visible with magnification
- Tiny, yellowish-orange eggs
- Overwintering eggs are reddish to tan, laid in clusters
- Adults overwinter in the cracks of bark
- Feed on needles of hosts year round
- Feed by injecting saliva and sucking out plant juice
 - Tiny pale spot forms at each feeding puncture
- Causes most of its damage in the spring, and damage becomes most noticeable by mid-summer
 - By that time, populations die off
- Foliage may appear blue-ish and turn yellow before dropping from the plant
- Populations thrive in cool and dry conditions
- **Host plants:** Fir, Golden larch, Hemlock, Spruce, Yew



A wonderful portrait of hemlock rust mites and eggs.

Photo by Sandy Gardosik, Pennsylvania Department of Agriculture

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Hemlock Rust Mites (*Eriophyidae*)



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Hemlock Rust Mite (*Nalepella tsugifoliae*)

GDD Window (base 50): 7-450 (7-22: active mites emerge)

Management

- Cultural Practices:

- Natural predators: predatory mites, lady beetles, lacewings, *Hirsutella thompsonii* (parasitic fungus)
- Prune out and destroy individual, infested branches when possible

Materials

- Contact insecticides:

- Pyrethroids [3]: Pyrethrin
- Pyrethrins [3+Synergist]: Pyrethrin + piperonyl butoxide
- Avermectins [6]: Abamectin
- Carbamate [1A]: Carbaryl
- Mito. Compx III [20D]: Bifenazate

- Systemic insecticides:

- Tetronics [23]: Spirotetramat

- Considerations:

- Pyrethroids and carbamates **will harm beneficial predators if present.**

- Biorationals:

- MGI [10A]: Clofentezine
- MGI [10B]: Etoxazole
- Horticultural oil (neem oil)

Apply 7-10 days before bud break and again at bud break to target eriophyid mites and avoid impact on beneficial insects.

Test for phytotoxicity before spraying the whole plant.

Current GDD: 4/8/25
North NJ: 40 GDDs
Central NJ: 70 GDDs
Southern NJ: 110 GDDs

Southern red mite (*Oligonychus ilicis*)

GDD Window (base 50): 7-91

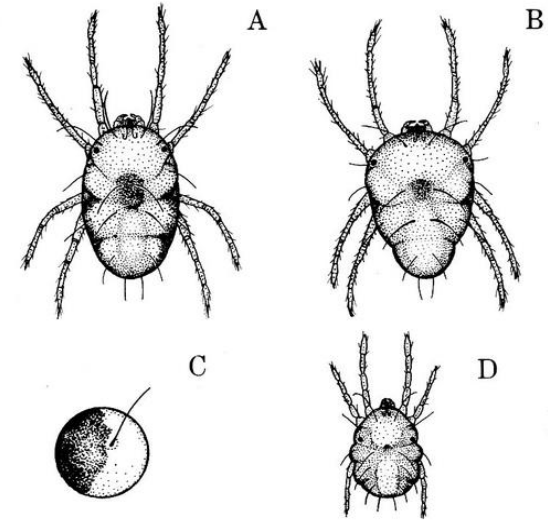
- Overwinters as red eggs on host plant leaf undersides
- Eggs hatch into pale, six-legged larvae
- Two nymph stages, protonymph and deutonymph, each have eight legs and become progressively darker in color and larger.
- Adult mites are ½ mm long, oval, and purplish or reddish in color, with eight legs
- Multiple generations each year, population densities peak during cooler months and with periods of high humidity
- Feeding occurs on undersides of leaves
- Foliage becomes bronzed or stippled and even distorted
- **Host plants:** *Ericaceaea* and *Aquifoliaceae* families
 - Broad-leaved evergreens



Photo: NC State Extension

Current GDD: 4/8/25
North NJ: 40 GDDs
Central NJ: 70 GDDs
Southern NJ: 110 GDDs

Southern red mite (*Oligonychus ilicis*)



Southern red mite. A, Female. B, Male. C, Egg. D, Larva.

Photo: NC State Extension

Current GDD: 4/8/25
North NJ: 40 GDDs
Central NJ: 70 GDDs
Southern NJ: 110 GDDs

Southern red mite (*Oligonychus ilicis*)

GDD Window (base 50): 7-91

Management

• **Cultural Practices:**

- Natural predators: *Iphiseiodes zuluagai*, *Euseius citrifolius*, and *Amblyseius herbicolus*
- Reduce plant stress
- Syringing, or spraying infested foliage with a heavy water stream, may help to dislodge the mites and reduce infestation severity.

Materials

- **Contact insecticides:**

- Avermectins [6]: Abamectin
- Pyrethroids [3]: -thrins, Tau-fluvalinate
- METI acaricides and insecticides [21A]: Fenazaquin
- Spinosyns [5]: Spinosad

- **Systemic insecticides:**

- Tetronics [23]: Spirotetramat
- Organophosphates [1B]: Malathion, Acephate

- **Biorationals:**

- MGI [10A]: Hexythiazox
- MGI [10B]: Etoxazole
- *Beauveria bassiana*
- *Chromobacterium subtsugae*
- *Metarhizium anisopliae (robertii)*
- Horticultural oil
 - Test for phytotoxicity before spraying the whole plant.

Current GDD:4/8/25
North NJ: 40 GDDs
Central NJ: 70 GDDs
Southern NJ: 110 GDDs

Spruce spider mite (*Oligonychus ununguis*)

GDD Window (base 50): 7-121

- 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 ½ 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
- When temperature is too hot, SSM enters a dormancy period until it becomes cooler in the fall
- Wind is main dispersal mechanism
- Leaves behind tiny strands of webbing on the needles of host plants
- Can lead to damage, dropping needles and a reddish-brown tint
- Early signs of infestation include a stippled yellow color on the upper surface of host needles
- Prefer older needles over new ones, on the lower inner branches of the tree
- Can cause sudden damage as reproduction quickly occurs
- **Host plants:** Ornamental landscape conifers
 - Can be present in natural forests

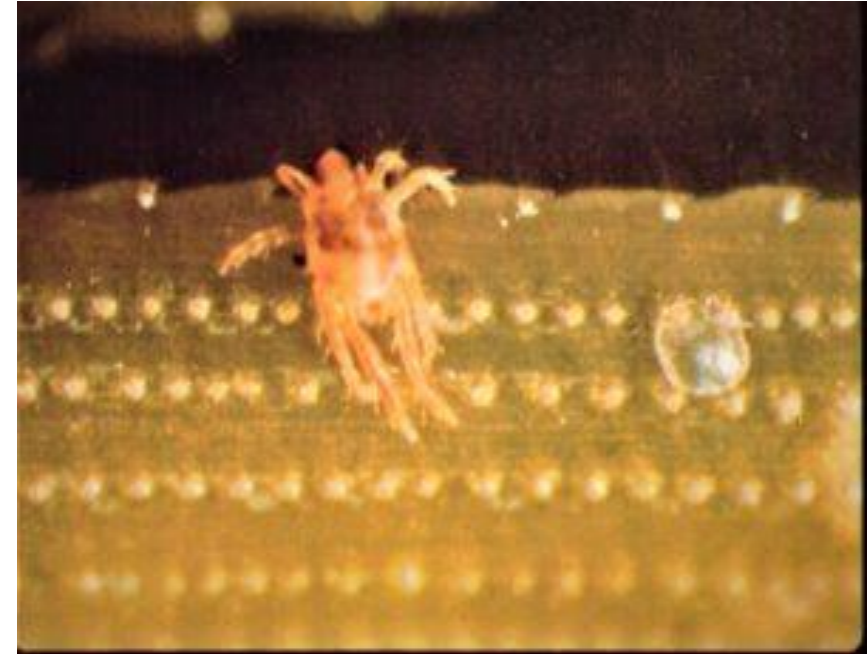
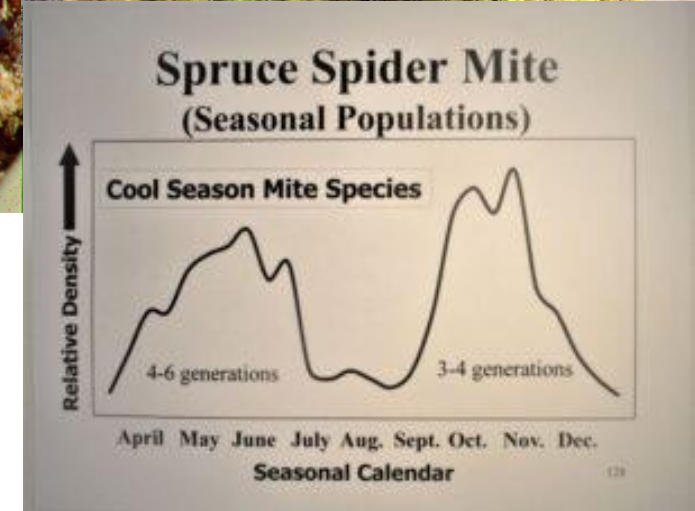


Photo: Cornell University Press

Current GDD: 4/8/25
North NJ: 40 GDDs
Central NJ: 70 GDDs
Southern NJ: 110 GDDs

Spruce spider mite (*Oligonychus ununguis*)



Current GDD: 4/8/25
North NJ: 40 GDDs
Central NJ: 70 GDDs
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Spruce spider mite (*Oligonychus ununguis*)

GDD Window (base 50): 7-121

Management

• Cultural Practices:

- Natural predators: phytoseiid mites, spiders, some beetles, lacewings
- Pests are less active in hot, dry weather
- Simulated rainfall on Fraser fir seedlings significantly limits spruce spider mite populations
- Reduce plant stress
- Syringing, or spraying infested foliage with a heavy water stream, may help to dislodge the mites and reduce infestation severity.
- Tap branches over white paper to scout for presence

Materials

- Contact insecticides:

- Avermectins [6]: Abamectin
- Pyrethroids [3]: -thrins, Tau-fluvalinate
- METI acaricides and insecticides [21A]: Fenazaquin
- Spinosyns [5]: Spinosad

- Systemic insecticides:

- Tetronics [23]: Spirotetramat
- Organophosphates [1B]: Malathion, Acephate

- Biorationals:

- MGI [10A]: Hexythiazox
- MGI [10B]: Etoxazole
- Azadirachtin [UN]
- *Beauveria bassiana*
- *Chromobacterium subtsugae*
- *Metarhizium anisopliae (robertii)*
- Horticultural oil
 - Test for phytotoxicity before spraying the whole plant.

Current GDD: 4/8/25
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Ambrosia beetle (*Xylosandrus*)

GDD Window (base 50): 75-815

- 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 1mm in diameter
- Increases plants' risk for infection by opportunistic pathogens (i.e. *Fusarium* spp.)
- Two generations per year
- Overwinter in tree galleries (tunnels they create inside of the trees)
- First attacks occur from April to June, but peak adult emergence, flights, and egg-laying occur during the first two weeks of May
- Sawdust and frass pushed out from the holes resemble toothpicks
 - Once these are observed, it is too late to apply protective insecticides
- Can cause increased sap production, branch wilting, dieback, bark cracking, and wood staining
- **Redbud flower bloom is a useful PPI**
- **Host plants:** Deciduous, thin-barked species
 - Dogwood, honey locust, magnolia, maple, redbud, Japanese snowbell



Photo: Brad Barnd, BugGuide.net

Current GDD: 4/8/25
North NJ: 40 GDDs
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Ambrosia beetle (*Xylosandrus*)



Current GDD: 4/8/25
North NJ: 40 GDDs
Central NJ: 70 GDDs
Southern NJ: 110 GDDs

Ambrosia beetle (*Xylosandrus*)

GDD Window (base 50): 75-815

Management

- **Cultural Practices:**

- Avoid transporting infested plants
- **Reduce plant stress**
 - Provide appropriate soil conditions and sufficient space for root growth
 - Protect trees from injury
 - Avoid excessive pruning, over- and underwatering
 - Trees under anaerobic stress are more likely to be attacked
- Ethanol baited traps
 - Use to scout for infestations and time spraying treatments
- **Watch for successive 70F days = triggers flight**

- **Materials:**

- **Contact insecticides:**

- Pyrethroids [3]: permethrin, bifenthrin
 - Spray on lower stems before peak beetle flight

- **Systemic insecticides:**

- Not effective because beetles **feed on fungus in trees**, *NOT* the tree tissues themselves

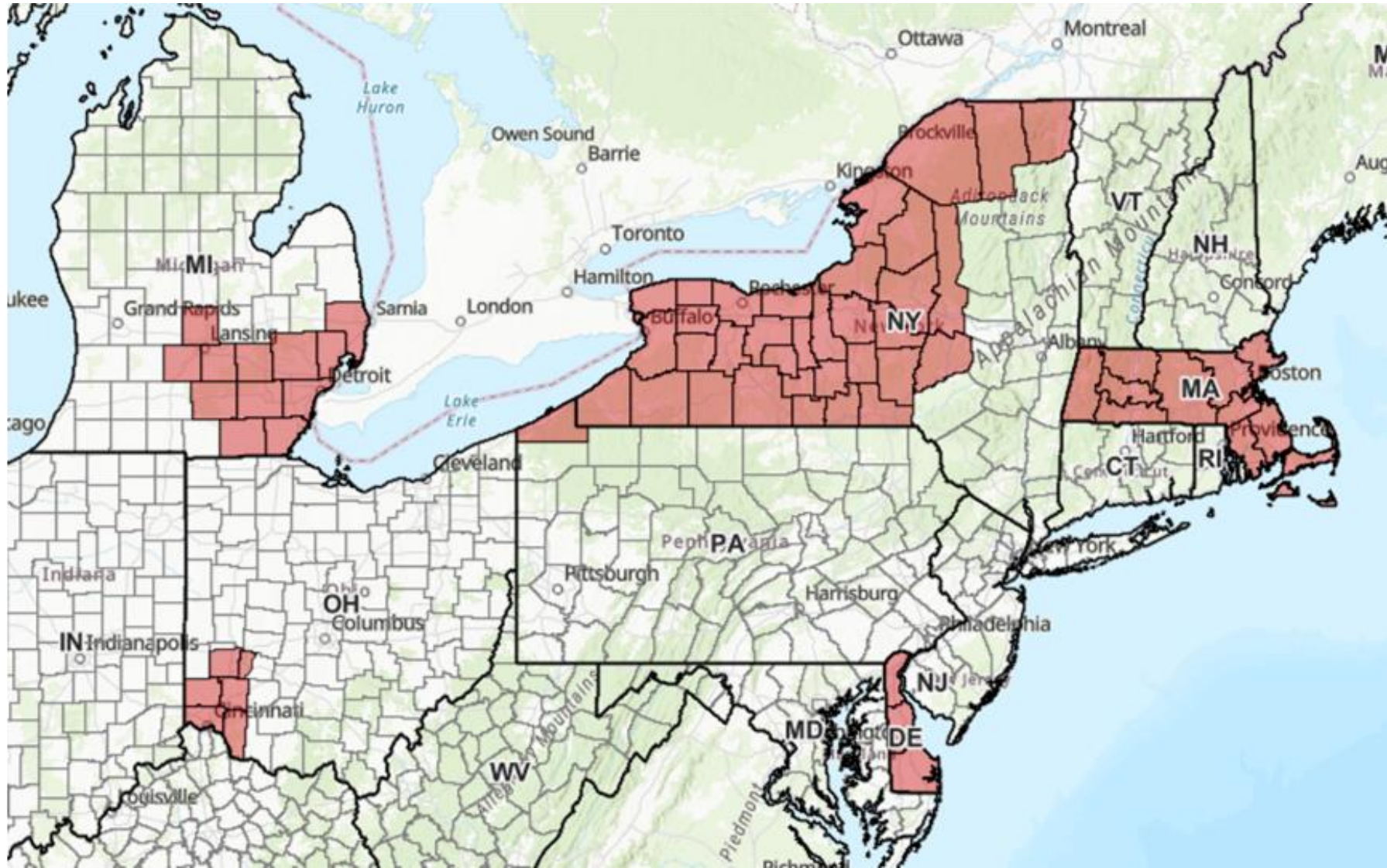
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Box tree moth (*Cydalima perspectalis*)



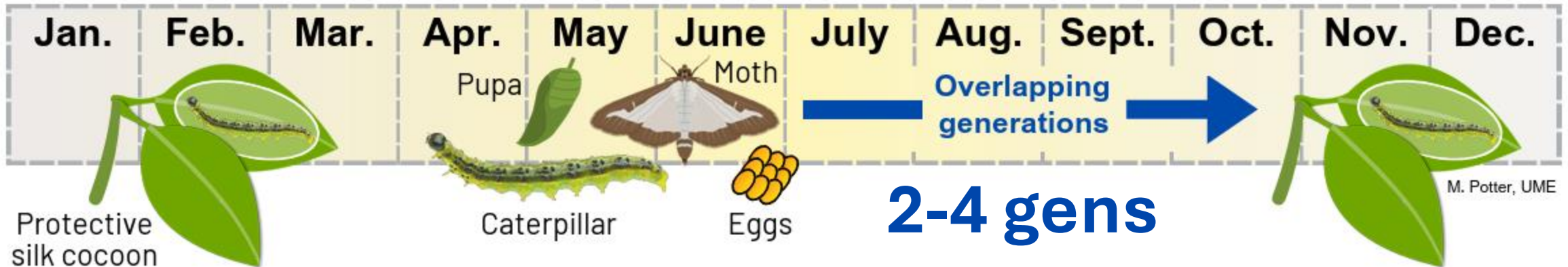
Box tree moth (*Cydalima perspectalis*)

Current BTM Quarantine Map (4/8/2025)



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

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.

Box Tree Moth Compliance Agreement Explained

Jennifer Gray - July 2, 2024



 **Horticultural**
Research Institute

The  American **Hort** Foundation

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

MARCH 22, 2023 [TIM WALLER](#)

Immediate potential for Boxwood Blight 3/24 and 3/25 – First infection potentials

There is a potential for new boxwood blight infections this FRIDAY and SATURDAY throughout much of NJ – especially central regions. Increased temperatures and prolonged periods of leaf wetness will contribute to the spread of boxwood blight infections.

- It is time to begin protective fungicide applications in high value areas if you have not already done so!
- **Protective fungicide** applications should remain in effect or be **initiated immediately for Boxwood Blight** in "Infection risk or High Risk areas".
- If your area is not listed (throughout all of NJ please visit the USPEST.ORG Boxwood Blight Risk Model – [CLICK HERE TO CHECK YOUR LOCAL PREDICTIONS](#)

Boxwood Blight risk-model information, considerations, and links:

Boxwood Blight Risk Assessment as of 3/22/2023									
Region	Location	CODE	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	NOTES
Southern	Upper Deerfield	NJ50	Very Low	Low	Low	Infection Risk	Very Low	Very Low	
Central	Howell / Freehold	NJ10	Very Low	Low	HIGH Risk	HIGH Risk	Very Low	Very Low	High prob. of first BWB infections
Northern	High Point	NJ59	Very Low	Very Low	Infection Risk	Very Low	Very Low	Very Low	
Please check YOUR LOCAL risk (click here)									

(input your area code – select closest weather station – check 7-14 prediction – click on graph / table)

These advisories **are general in nature, change rapidly over time, are site-specific...therefore** Someone from your business should be using this risk model **daily** if boxwood is **important to your financial stability**– In 30 seconds you can have a better idea of boxwood blight (and other pathogen) activity in your immediate area! Please contact Tim Waller if you need help using this service (twaller@njaes.rutgers.edu), we want to help!



Boxwood blight



- **Causes leaves to DROP-OFF**
 - *(hypersensitive response)*
- **COOL/wet** = black cankers & white hyphae
 - Anytime we have prolonged 60F+ rain events

Sticky spores – spreads VERY easily in water



Management:

- **Removed diseased** leaves, stems, plants, soil (persistent for LONG periods) when **DRY**
- **Protective fungicide applications**
- **USPEST Boxwood Blight Risk Model**

Boxwood blight

Boxwood Blight Quick Diagnostic

Take foliage sample, dampen,
place into Ziplock / container

If White + fluffy ~ BWB

If bumpy and peach = Volutella

Fungicides applied at regular intervals

- [M05]: Chlorothalonil
- [M05 + 1] Chlorothalonil + Thiophanate methyl
- [11] Trifloxystrobin + [7] Fluopyram
- [11] Trifloxystrobin + [3] Triadimefon
- [M03] Mancozeb
- [12] Fludioxonil
- [3] Tebuconazole



Phytophthora / Pythium / Phytopythium

Rotation is extremely important

[4] – Mefenoxam

[40] – Dimethomorph / Mandipropamid

[21] – Cyazofamid

[49] – Oxathiapiprolin

[11] – Fenmidone

[43] – Fluopicolide

[PO7] – Phosphonates

Quaternary ammoniums

Oxidizers

[BM02] Biologicals

Oomycete Material Options and Considerations in
the Nursery, Landscape, Christmas Trees



Use the Rutgers Plant Diagnostic Lab

Enables us to learn more about specific issues

Mechanical
damage

Abiotic /
Environmental

Physiological /
nutritional /

Arthropod
pest

Disease



Rutgers Plant Diagnostic Laboratory
Ralph Geiger Turfgrass Education Center
20 Indyk-Engel Way
New Brunswick, NJ 08901

Telephone: 732-932-9140

Fax: 732-932-1270

Email: rutgerspdl@njaes.rutgers.edu



Thank you for attending

Presentation will be available on our website

Next session: April 22, 2025

Key pests for next time:

- Boxwood leaf miner
- Honeylocust plant bug
- Eastern tent caterpillars
- Spongy moth
- Andromeda lace bug
- Azalea lace bug
- Holly leaf miner
- Lilac clear wing moth
- Dogwood clear wing moth
- Ambrosia borer
- Redheaded flea beetle
- Fire blight / pruning

Photo: Steven Rettke, Rutgers Cooperative Extension



Pheromone-baited wing-trap

Funding provided by:



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

Implementation of IPM in New Jersey
-Ornamental Crops 2025