



RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY



2025 Ornamental IPM Program Webinar

Contemporary IPM Topics and Management

July 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, 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



1. Beneficial: Minute pirate bug
2. Two-banded Japanese weevil
3. Nantucket pine tip moth
4. Dogwood sawfly
5. Inner needle discoloration of spruce
6. Azalea leafminer
7. Plant leaf galls (*Eriophyid* mites)
8. Mimosa webworm
9. Summer symptoms of root disease
10. Sprayer calibration and nozzle selection

Current GDD: 7/8/25
North NJ: 1320 GDDs
Central NJ: 1505 GDDs
Southern NJ: 1620 GDDs

Updates



RUTGERS UNIVERSITY

Agriculture and Natural Resources
New Jersey Agricultural Experiment Station



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UPDATES YET?



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

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Contemporary IPM Topics and Management

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

Beneficial Insect: Minute Pirate Bug (*Orius tristicolor*)

- This predator is a true bug & all three life stages are smaller than 0.2" in length
- Adults are oval-shaped, black, and sometimes black and white, with wings
- Immature stages are yellow and brown and do not have wings, can resemble aphids or bed bugs
- Adults lay eggs which hatch and become adults all in three weeks
- Overwinter in dead leaves, bark, trees, etc.
- **Many generations per year, active throughout the entire summer**
- In the fall, when flowers and pests are less prevalent, they may bite humans
- Bites may cause minor irritation, but are not harmful
- They are often attracted to lighter colors and are more active in hotter weather
- Feed with a straw-like mouthpart
- **Prey pests: Mites, thrips, whiteflies & other small insects**



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

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Beneficial Insect: Minute Pirate Bug (*Orius tristicolor*)

Photo credits: UMN Extension



Adult



2nd instar nymph



Pollinator



**Adult feeding on
whitefly larvae**



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Beneficial Insect: Minute Pirate Bug (*Orius tristicolor*)

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
- Allow some amount of aphids to be present

Beneficial predator food!



Pesticide Impacts / Considerations

- Insecticides can kill predators & parasitoids & disrupt their behavior, reducing their ability to navigate, find food, and mate
 - Often exposed through contaminated food sources (nectar or pollen) or through encountering residues on leaves or flowers
 - When pests are exposed, beneficial insects are exposed
- Applicators **MUST** follow label instructions for in-bloom applications for any insecticide
- Spray only when necessary

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Two-banded Japanese weevil (*Pseudocneorhinus bifasciatus*)

GDD Window (base 50): 1644-2271 (adults)

- Adults are 3/16" long, round, and brown to gray with two dark bands across the wing covers
 - Wing covers have white stripes in the grooves, and white spots and two dark brown stripes towards the back. Wings are fused and flightless.
- Eggs are small, cream colored, and elongated, usually found within a folded blade of grass or leaf
- Larvae are white, legless, and 1/4" long
- **When eggs hatch, larvae burrow into the soil and feed on roots**
- Will drop to the ground and remain motionless if disturbed
- **Overwinters in leaf litter as adults and remains until summer**
- One generation per year
- **Adults cause leaf notching damage on lower leaves in late July**
 - **Notches deeper & closer to the leaf mid-rib, & feeds during the day**
- Larvae feeding on roots causes stunted growth and decline in plant health
- **Host plants:** Shrubs – privet, azalea, rhododendron, mountain laurel, euonymus, etc.



Photo via UMD Coop. Ext.

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Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Two-banded Japanese weevil (*Pseudocneorhinus bifasciatus*)



Deep Leaf Notches
(symptoms)



Photo: Dr. Michael Thomas, IFAS



Deep Leaf Notches
(symptoms)

LAURA JESSE
PLANT & INSECT DIAGNOSTIC CLINIC
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Eggs inserted
in plant tissue

Photo: James Baker, NCSU

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Two-banded Japanese weevil (*Pseudocneorhinus bifasciatus*)

GDD Window (base 50): 1644-2271 (adults)

Management

• Cultural Practices:

- **Natural predators:** spiders, birds, parasitic fungi, nematodes
- Handpick and dispose of visible weevils
- **Trap or monitor for adults by laying a white sheet under the shrub and shaking the branches**
- Destroy trapped weevils by dropping them into soapy water or freezing them

Materials

• Contact insecticides:

- Pyrethroids [3]: -thrins

• Systemic insecticides:

- Organophosphates [1B]: Acephate
- Neonicotinoids [4A]: Imidacloprid, acetamiprid

• Considerations:

- **Resistant to carbaryl [1A]**
- Will harm non-target species

- Biorationals:

- Horticultural oil
 - Neem oil
 - Azadirachtin [UN]
 - Acetamiprid [4A]
 - *Beauveria bassiana*
 - Entomopathogenic nematodes

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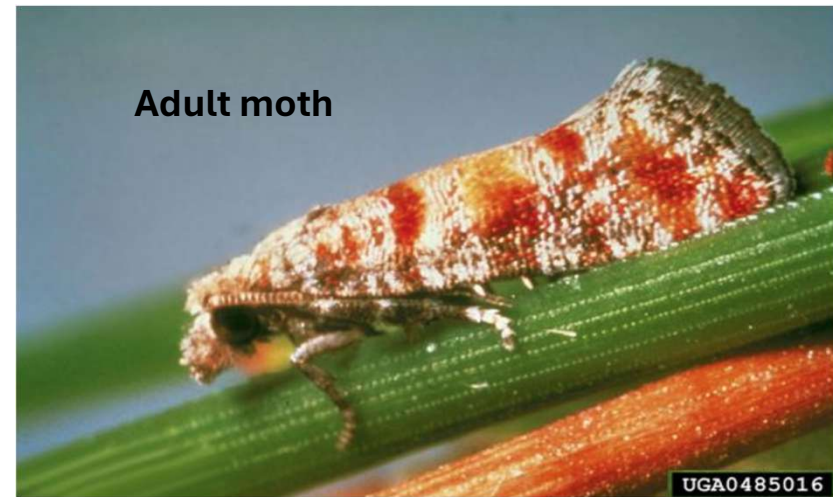
Southern NJ: 1620 GDDs

Nantucket pine tip moth (*Rhyacionia frustrana*)



GDD Window (base 50): 121-448 (1st gen larvae) / 1514-1917 (2nd gen larvae)

- Caterpillar pest that overwinters as brown-colored pupae within branch tips
- On small trees and in low populations, the tips can be pruned out before adults emerge
- **Adults first emerge in April to lay their eggs on the tips of new growth = (2 generation per year)**
- Adults are ¼" long or less and have gray wings that are mottled with rust-colored patches
- **Newly hatched larvae feed on the needles first and then enter the buds and stems**
- Pines less than 6 ft. tall growing in full sun will show the most damage
- **Second generation occurs in July**
- Feeding causes growing tips to turn reddish-brown and die back
- Dead or dying branch tips are often curved or ripped
- Causes resin beads and fine silk webbing on branch tips
- Damage tree parts will be hollow
- **Host plants: pines – mostly two- and three-needle species (Loblolly and shortleaf pines are especially susceptible)**



The Nantucket pine tip moth.

Photo by USDA Forest Service , USDA Forest Service, Bugwood.org

Current GDD: 7/8/25

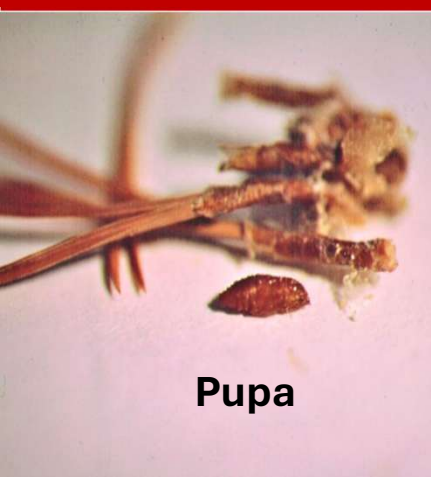
North NJ: 1320 GDDs

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Southern NJ: 1620 GDDs

Nantucket pine tip moth (*Rhyacionia frustrana*)

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Pupa



Moths caught in pheromone trap



Dieback of branch tips



Caterpillar dugout of branch tip



More extensive branch dieback

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Nantucket pine tip moth (*Rhyacionia frustrana*)

GDD Window (base 50): 121-448

Management

• Cultural Practices:

- **Natural predators:** parasitoids, spiders, birds
- **Pheromone traps can detect initial emergence of male moths**
 - When the first moth is caught, wait 10 to 14 days before applying controls
- Prune out dying tips and destroy
- Reduce plant stress
- Allow weed growth to encourage natural predator populations
- Plant resistant species
 - Eastern white pine, longleaf pine



Materials

○ Contact insecticides:

- Spinosyns [5]: spinosad
- Pyrethroids [3]: -thrins (cyfluthrin, fluvalinate)

○ Systemic insecticides:

- Neonicotinoids [4A]: imidacloprid
 - Effective when proper lead time is provided (4-8 weeks with soil injections or drenches)
- Organophosphates [1B]: acephate
- Avermectins [6]: Abamectin

○ Considerations:

- Will harm non-target species

- Biorationals:

- Spinosyns [5]: spinosad
- Tebufenozide (IGR)
- Diflubenzuron (IGR)

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Dogwood sawfly (*Macremphytus tarsatus*)

GDD Window (base 50): 1151-1500

- **Adults are slender, shiny, black, wasp insects & emerge May to July**
- Females insert up to 100 eggs into a leaf using an ovipositor
 - Eggs cause bumps in the leaves which turn brown
- Young larvae feed in groups along the margins of the leaves
- First instar larvae resemble small, greenish-yellow tadpoles
- Second and third instar larvae have a smooth, amber-colored body with black rectangular markings along the top and sides
- **Maturing larvae have a white powdery coating over the surface of their bodies**
- Final instar larvae are about an inch long, and cream in color with black spots, they eventually stop feeding in groups and disperse throughout the tree to feed individually
- **Larvae and shed skins can resemble bird droppings or caterpillars**
- Mature larvae bore into soft wood, forming cells
- **One generation per year**
- Young larvae will initially skeletonize leaves
- Larger larvae will consume the entire leaf area except for the mid-veins
- **Host plants: dogwoods**



Dogwood sawfly caterpillars probably in their next to the last stage.

Photo by Whitney Cranshaw, Colorado State University, Bugwood.org

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Dogwood sawfly (*Macremphytus tarsatus*)



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Dogwood sawfly (*Macremphytus tarsatus*)



Management

- Cultural Practices:

- **Natural predators:** birds, spiders, predatory stink bugs, wasps
- **Prune out or handpick when within reach**
- Encourage natural predators by providing food, water, and shelter
- Reduce plant stress
- Dispose of fallen leaves
- Allow for air circulation and sunlight penetration

Materials

○ Contact insecticides:

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

○ Systemic insecticides:

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

○ Considerations:

- Will harm non-target species

- Biorationals:

- Horticultural oil
- Insecticidal soap
- Spinosad
- Azadirachtin
- Acetamiprid

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Middleman Topics

- 1. Inner needle discoloration of spruce**
- 2. Azalea leafminer**
- 3. Plant leaf galls (*Eriophyid* mites)**
- 4. Mimosa webworm**

Inner needle discoloration of spruce (*Picea* spp.)

- **Host plants:** most common on White and Colorado spruce species, but sometimes seen on Norway spruce
- Current needle growth has a blue-green color, but older, inner needles lose their desirable color (blue glaucous bloom) and turn pale or even yellow.
- This sometimes becomes dramatic and initiates both aesthetic and plant health concerns
- Reasons for these symptoms can be from a complex number of conditions, but a **compromised root system is typically the underlying cause (often excessively wet soils)**
 - To determine the cause, first eliminate other causes such as the spruce spider mite stippling systems or dormant oil applications that may have removed the waxy bloom growth on the needles



Photo via Steve Rettke, Rutgers RCE

Inner needle discoloration of spruce (*Picea* spp.)

- **Compromised root systems result in nutrient deficiencies within the spruce**
 - **The inability of the roots to uptake Potassium (K) or Magnesium (Mg) are often involved**
 - Highly acidic soil pH can also be a factor
 - **Excessively dry or wet soils will cause inner needle discoloration**
- **To compensate, the tree creates a self-induced deficiency of potassium (K) to older needles by translocation of K to the newest growth needles**
- Pale older needles often never fully return back to their previous coloration even after soil conditions are corrected
 - Often improves in 2-3 years with new growth



Photo via Steve Rettke, Rutgers RCE

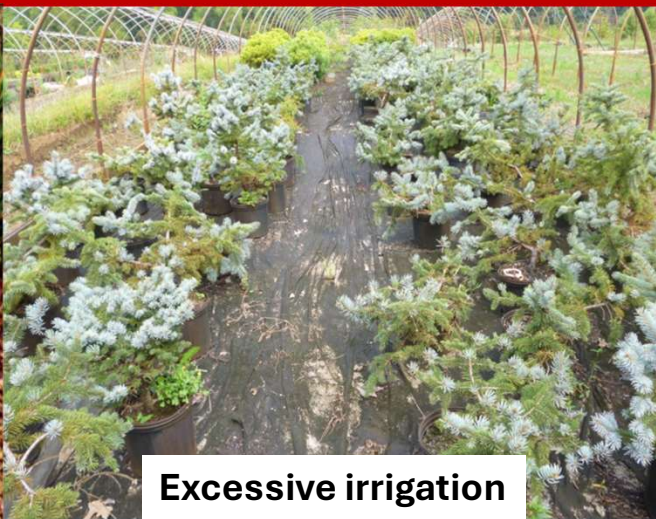
Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Inner needle discoloration of spruce (*Picea* spp.)



Poor / slow drainage



Excessive irrigation



Spider mites on Fraser fir



Desirable color
with good drainage
on hillside

Inner needle discoloration of spruce (*Picea* spp.)

Management

- **Fertilization with potassium (K) will not solve the problem** because the **cause is from root stress** and not a shortage of potassium (K) in the soil (usually)
- Excessive nitrogen fertilization can make the problem worse
- Rework the soil to improve drainage
 - **This might be difficult in lower areas with high % clay soils**
= (Christmas tree farms must select tree species planting sites carefully)

Azalea leafminer (*Caloptilia azaleella*)

GDD Window (base 50): 450-800 (1st gen) / 1260-1500 (2nd gen)

- **Host plants: Azalea (*Rhododendron* spp.)**
- **Symptoms are often subtle and overlooked**
- Early instar stages are **leafminers**, while the later instar stages are **leafrollers**
- **2+ generations per year**
- Leafminer stages occur first on infested azaleas, but **symptoms are usually not noticed until the later leafroller stages**
- When larvae reach the larger stage of development in early June or August, they leave the mines and move out to form the leafroller stages

3 leafminers & 1 leafroller stages



Photo via Steve Rettke, Rutgers RCE

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Azalea leafminer (*Caloptilia azaleella*)

GDD Window (base 50): 450-800 (1st gen) / 1260-1500 (2nd gen)

- **By late June, the 1st generation adults have already emerged & begin to lay eggs**
- Adults insert eggs under leaf tissue near the mid-ribs
 - Early instars create blotch or elongated mines
- Late instar stage caterpillars are ½" long, and **usually only a single leafroller will feed per leaf** (they create curled leaf tips with silk & continue to feed inside the leaf cover until they pupate)
- Adult moths are yellowish brown and about 3/8" in size, with folded wings when they are at rest, and they stand at a 60-degree angle
- **In southern NJ, adults that emerge from the 2nd generation in August** will lay eggs and start a partial 3rd generation, which overwinters within the leaves as larvae or pupae

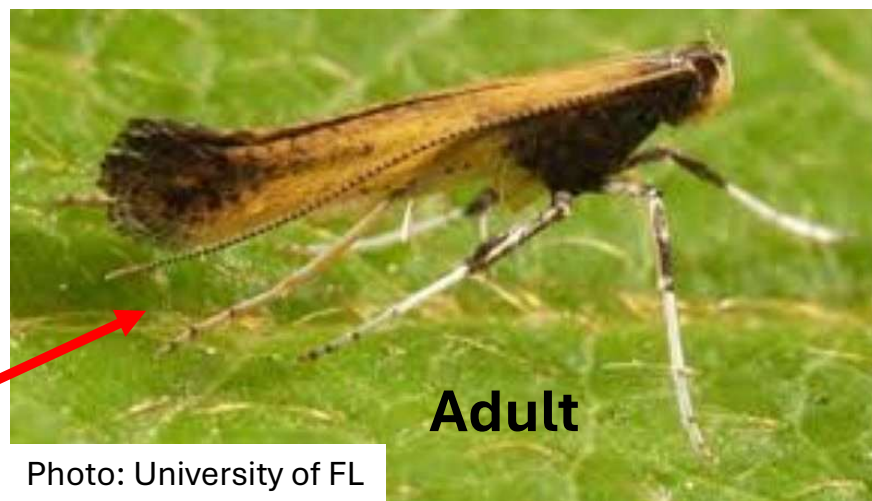


Photo: University of FL

Adult

Current GDD: 7/8/25

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Central NJ: 1505 GDDs

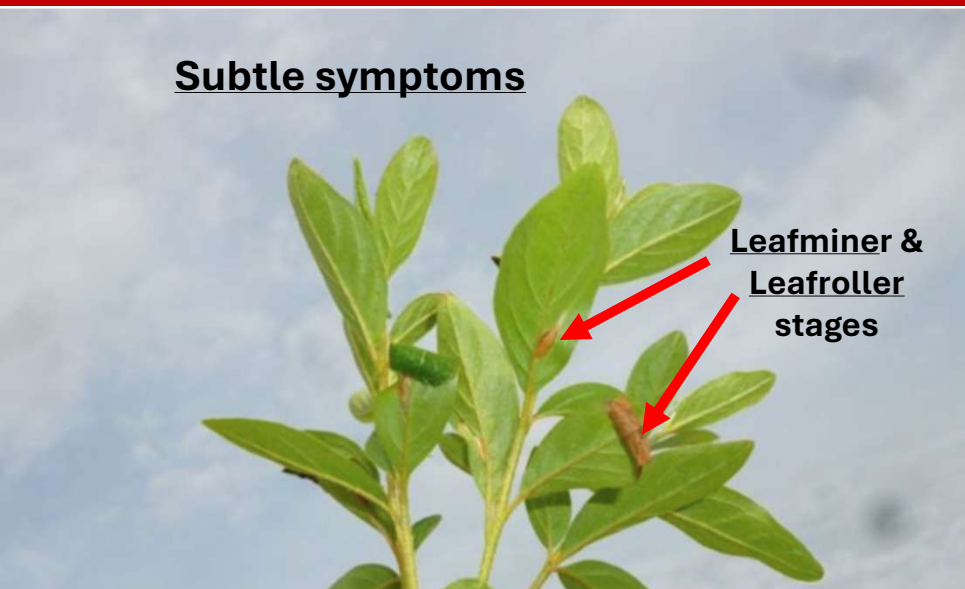
Southern NJ: 1620 GDDs

Azalea leafminer (*Caloptilia azaleella*)

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Subtle symptoms



**Leafminer &
Leafroller
stages**



**Caterpillar larva in
leafroller stage**

**450-800 GDD (1st gen)
1260-1500 GDD (2nd gen)**



Empty leafroller



**Leafminer &
leafroller stages**



Leafroller stages only

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Azalea leafminer (*Caloptilia azaleella*)

GDD Window (base 50): 450-800 (1st gen), 1260-1500 (2nd gen)

Management

- **Cultural Practices:**
- **Natural predators: Few**
 - Detect early, and apply controls during the early leafminer stages in May or July
- **Apply controls for second generation in July**
 - Populations of adult egg-laying moths can be estimated during the weeks of late June and early July by shaking the plants and forcing them to fly briefly

Materials

- **Contact insecticides:**
 - Avermectins [6]: Abamectin
 - Spinosyns [5]: Spinosad
 - Carbamates [1A]: Carbaryl
- **Systemic insecticides:**
 - Organophosphates [1B]: acephate (translaminar)
 - Neonicotinoids [4A]: imidacloprid, acetamiprid
- Avermectins [6]: Abamectin
- **Considerations:**
 - Achieve controls during early leafminer stages with systemic or translaminar materials

- **Biorationals:**

- Horticultural oils
 - Azadirachtin [UN]
- Insecticidal soaps
- Spinosyns [5]: Spinosad
- Neonicotinoids [4A]: acetamiprid

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Plant leaf galls (*Eriophyid* mites)

- **Host plants:** Numerous
- Abnormal growths triggered by various factors
- Appear as bumps, bladder, & spindle galls, or *Erineums* (dense cluster of plant hairs) as a plant's reaction to the presence or activity of foreign substances
 - Appear on leaves
 - Vary in size, shape, color, and texture
- Caused by feeding or egg-laying *Eriophyid* mites which release chemicals that cause the plant cells to multiply rapidly
- Generally, not harmful, but can cause some minor issues like leaf drop or stunted growth in severe cases



Photo via Steve Rettke, Rutgers RCE

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Plant leaf galls (*Eriophyid* mites)



Leaf galls on willow leaf

Eriophyid Leaf Gall Mites on willow leaves. Willows are susceptible to leaf gall mites & symptoms can sometimes become extreme. Leaf photosynthesis can become compromised. (Photo Credit: Steven K. Rettke, Rutgers Coop. Ext.)



Erinium
gall mites
on maple

Maple *Erinium* Gall Mites on silver maple produce a reddish, beaded gall appearance. Sometimes they are mistaken as fungal leaf infections. They are another species of *eriophyid* mites. (Photo Credit: Steven K. Rettke, Rutgers Coop. Ext.)

Plant leaf galls (*Eriophyid* mites)

Management

- **Often, no treatment is needed (aesthetic concerns)**
- Pruning affected areas can be an option
- Sprays can be effective if applied before gall formation
- **Preventative treatments are available, but with a very small window of opportunity (leaf bud break/swell)**
- Precise treatment timing is required (practicable?)
- **Contact materials required (miticides)**
(systemics are not effective after gall formation)
- Horticultural dormant oils & soaps; abamectin; carbaryl; neem oil; acephate



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Mimosa webworm (*Homadaula anisocentra*)

GDD Window (base 50): 880-1200 (1st gen egg hatch), 1800-2100 (2nd gen egg hatch)

- **Host plants:** mimosa and honey locust trees
- Overwinters as pupae in cocoons, and within bark flaps and cracks of the trunk
- **Cocoons are bright white and have the appearance of puffed rice, often occurring in masses**
- **Emerge as adults in June** and lay small, pearly-white, oval-shaped eggs on leaflets or small twigs of honeylocust trees
- Adults are silver-gray moths and have black speckles, growing to 3/8" long, and are mostly nocturnal
- **Early instar larvae feed by etching the undersides of leaflets, and begin as only 2mm long**
- Mature caterpillars reach about 3/4" long, and have a brownish body with five white stripes running along the length of their bodies



Adult moth

Photo via Dan McCord, Indiana State Coop. Ext

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Mimosa webworm (*Homadaula anisocentra*)



GDD Window (base 50): 880-1200 (1st gen egg hatch), 1800-2100 (2nd gen egg hatch)

- They use webbing to bring leaflets together to create protective feeding areas. The webbing becomes larger and denser as the larvae grow.
- Mature first generation larvae will pupate within the webbing where they will emerge as adults
- **The 1st generation does most of its feeding in July**
- When 1st generation adults emerge, they will lay eggs within the previous webbing and the 2nd generation will expand the damage
- **Webbings form at the outer edges of the leaf canopy, and can expand throughout the entire crown**
- Late instars skeletonize leaves and eventually consume entire leaflets
- **Feeding symptoms are more pronounced during the 2nd generation in August/September**
- Cause leaf browning, and the tree may appear to be scorched by a fire



Adult moths
emerge
from
overwintering
cocoon

Photo via Steve Rettke,
Rutgers Coop Ext

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Mimosa webworm (*Homadaula anisocentra*)

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted



Mimosa webworm (*Homadaula anisocentra*)

GDD Window (base 50): 880-1200 (1st gen egg hatch), 1800-2100 (2nd gen egg hatch)

Management

- Cultural Practices:

- **Natural predators:** parasitoids, stink bugs, assassin bugs, green lacewings, birds, lizards
- Killed by cold temperatures, and urban environments can enhance survival
 - Trees located along streets and paved areas will experience the highest populations



Materials

○ Contact insecticides:

- Spinosyns [5]: spinosad
- Pyrethroids [3A]: -thrins
- Carbamates [1A]: carbaryl

○ Systemic insecticides:

- Diamides [28]: chlorantraniliprole
- Acephate (translaminar)
- Abamectin

○ Considerations:

- Successful suppression of 1st generation will reduce the emergence of the 2nd generation

- Biorationals:

- Bt [11] *Bacillus thuringiensis*
 - Work best against young instars
- Spinosyns [5]: spinosad
- Azadiractin
- Diflubenzuron (IGR)

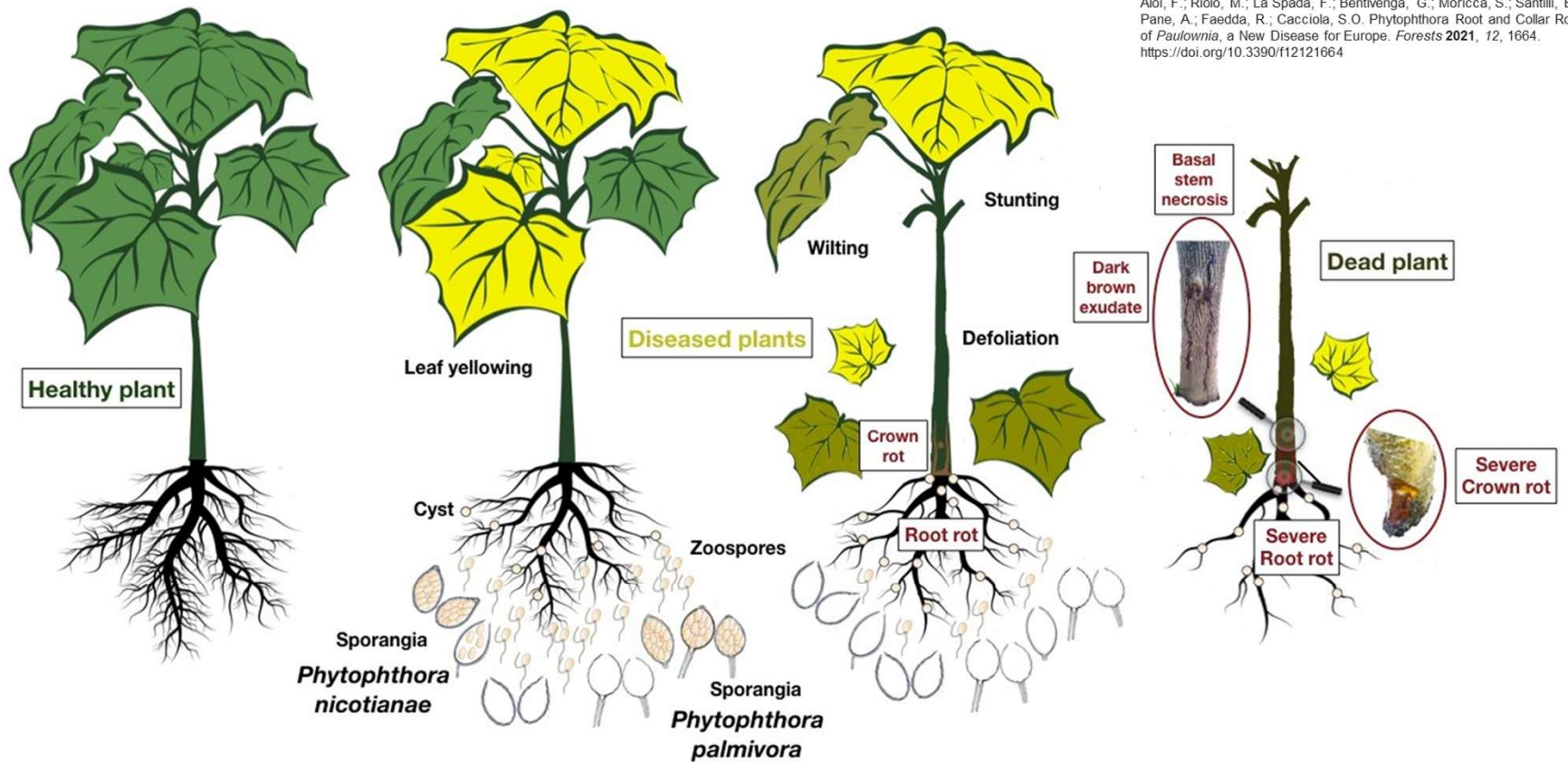
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Summer symptoms of root disease



Destroys plant's ability to gather resources = **major plumbing problems**

Summer symptoms of root disease (*Conifers*)



Stunted new growth
Yellowing



Flagging
Zone death



**NO to very little
needle drop**

Summer symptoms of root disease (*Broadleaf*)



**Stunted new growth
Yellowing
Curled leaves**



**Zone death
WITHOUT dropping
leaves**



**Interveinal
chlorosis**

Things to look for



Dispersal patterns matter



**Multiple plants with
stunted growth**



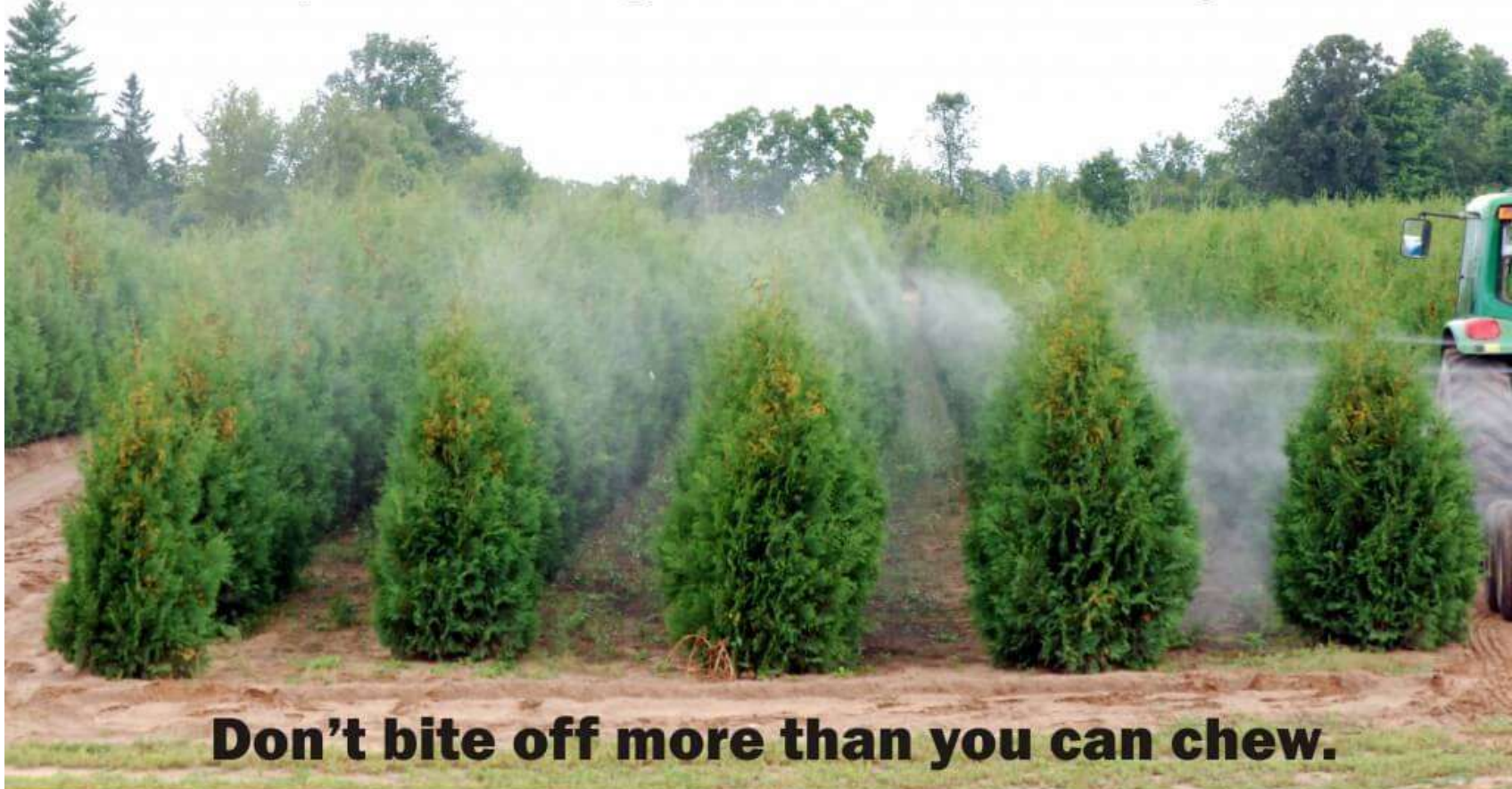
**Repeated attempts
at regrowth**

Why Calibrate?

1. Get the most bang-for-buck with pesticides
2. Deliver **pest-lethal** and **plant-safe doses**
3. Guard bottom line by applying only what is recommended / **needed**
4. Understand the spray uniformity (or lack thereof) – helps with...
 - **Problem solving later issues**
 - Spacing / design considerations in the future

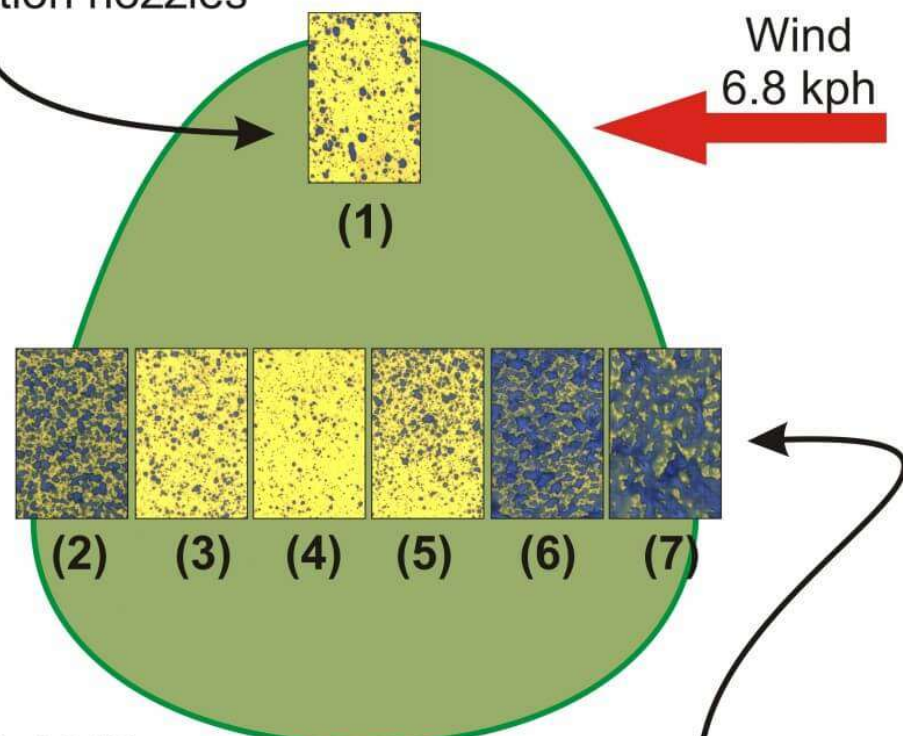
Coverage is almost always compromised by spraying too many rows with a single pass.

← **Sporadic Coverage** **Excessive Coverage** →



Don't bite off more than you can chew.

Sprayed by
air induction nozzles



May 3, 2012
G. Delicious
4.9 m high
5.2 m wide
7.6 m rows
Sprayed from both sides

Sprayers101



<https://sprayers101.com/>

Calibrating blast/cannon sprayers



1. Check speed (speedometer, manual, GPS function)
2. Check and correct air direction, volume, and speed
3. Calculate expected nozzle output, then measure it, replace or change if needed
4. Verify coverage with water sensitive paper



Adapted from: **Six Steps to Calibrate and Optimize Airblast Sprayers**
By [*Gwen Hoheisel*](#), WSU Regional Extension Specialist

Entomology – Insect
Biology and Management

Meet Our Staff

Events

NC Disaster Information

Beekeeping

Biocontrol

Fruits

Apple Pest Management
Current Western NC Orchard
Insect PopulationsBrown marmorated stink bug
Biological Control of Brown
Marmorated Stink BugBlueberry Insect Pests ...
Dormant Season Blueberry
Pests,
Pre Bloom Blueberry Pests,
Petal Fall Blueberry Pests

Vegetable Pest Management

Insect Management on Fruiting
Vegetables in North Carolina
Benefits of Applying Insecticides with
Drip Chemigation
Biological Control With Predators and
Parasitoids ...
Biological Control of Spider
Mites in Tomatoes,
Biological Control of Brown
Marmorated Stink Bug

Field Crops



Search

[Home](#) » [Benefits of Applying Insecticides with Drip Chemigation](#)Benefits of Applying Insecticides
with Drip Chemigation[en Español / em Português](#)

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Dr. Tom Bilbo, Steve Schoof, and Dr. Jim Walgenbach

- [Background](#)
- [Advantages and Disadvantages](#)
- [Pest Control Attributes](#)
- [How to Use & Safety](#)
- [Conclusions](#)

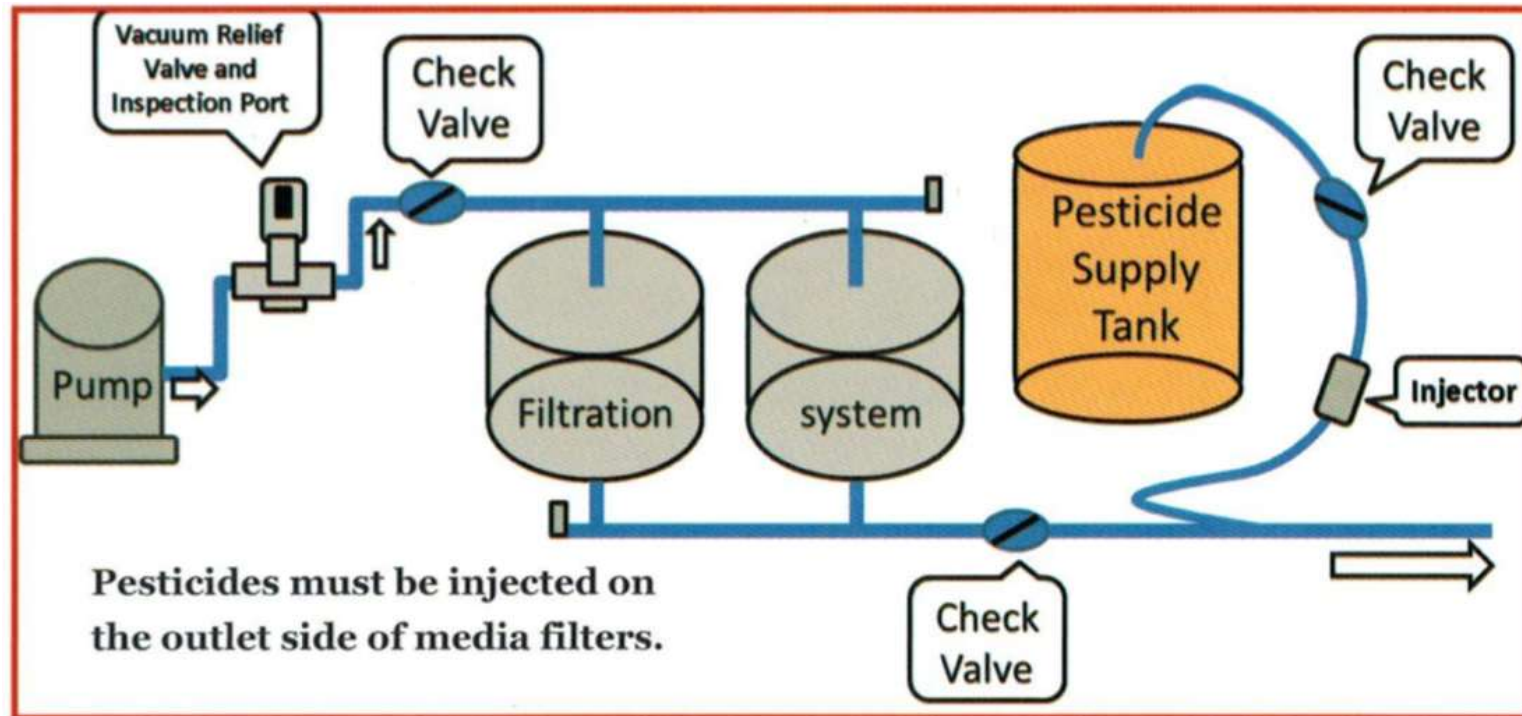


Chemigation



Another great resource

Chemigation



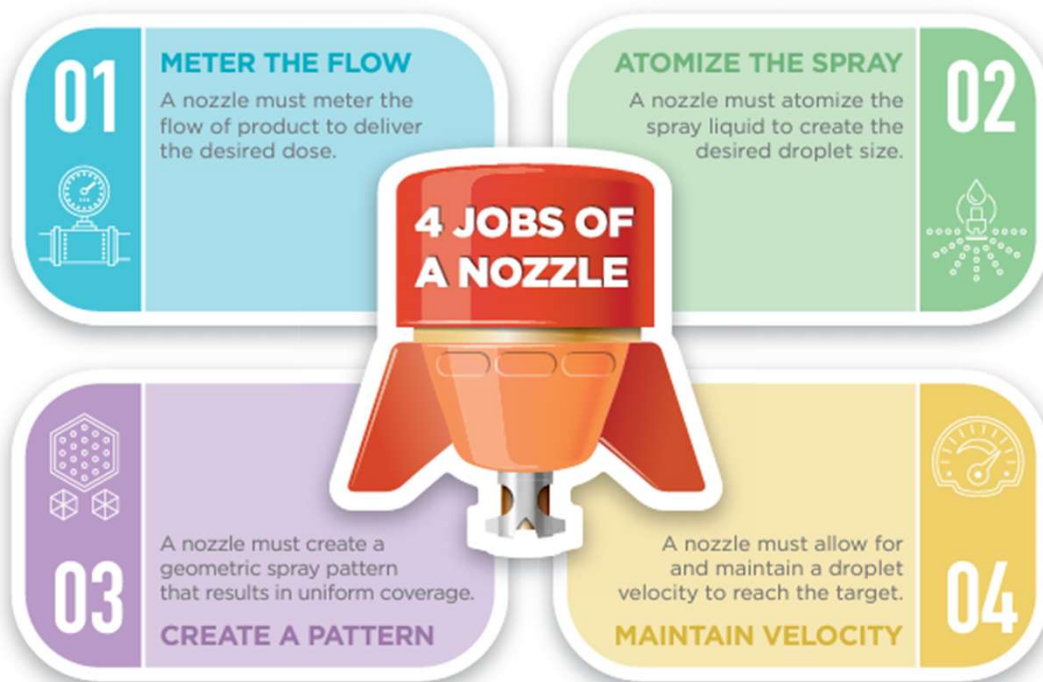
Delivery only as good as irrigation pattern and selection of the right materials

Typically:

- Systemic insecticides: (neonics [4A], diamides [28], flonicamid [29])
- Systemic fungicides / oomycides: (Phosphonates [P07], Qols [11], DMI [3])
- *Typically not used in full coverage scenarios*

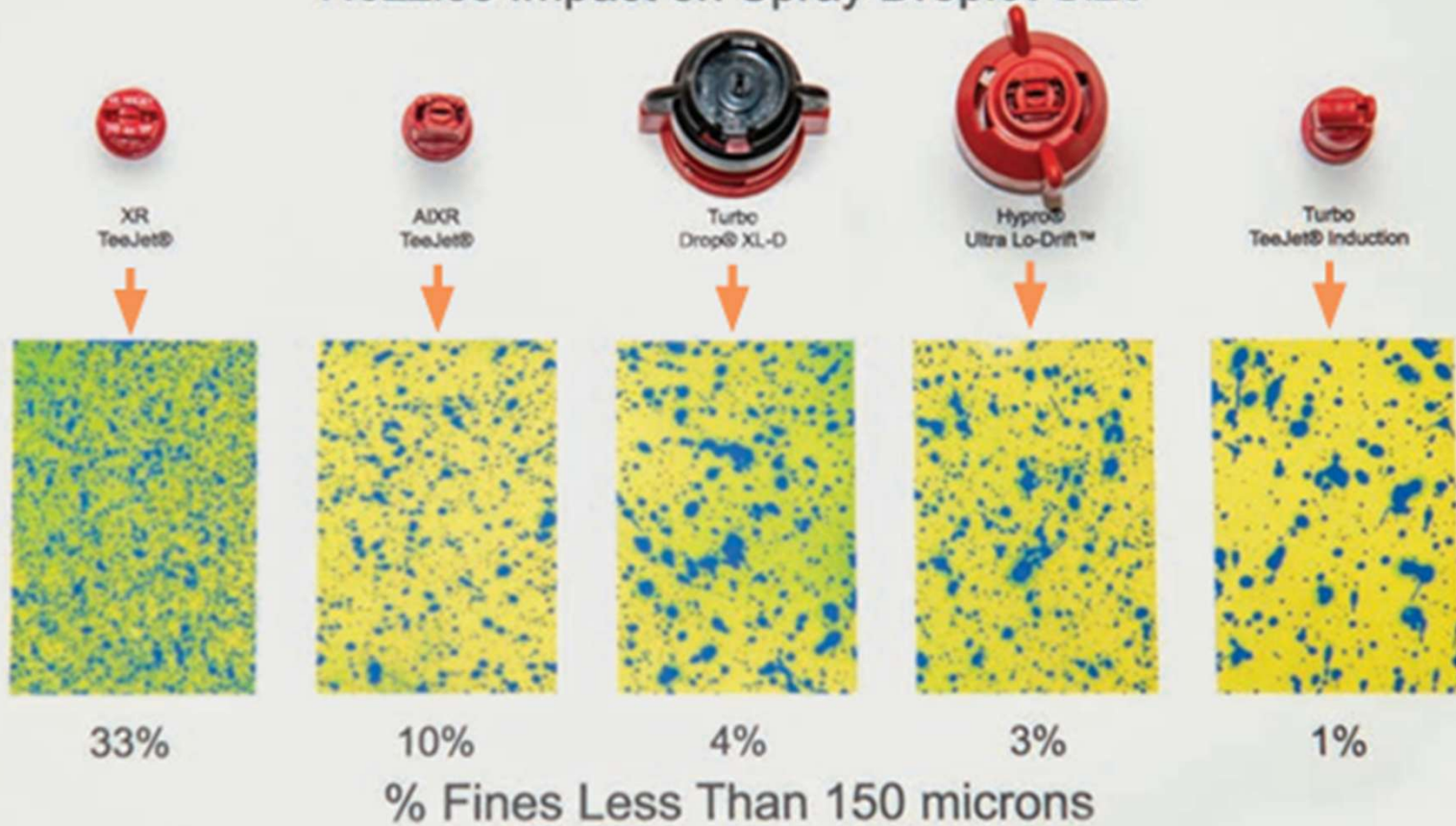
Agricultural Spray Nozzles

A COMPREHENSIVE REVIEW



https://ag.purdue.edu/departments/extension/ppp/resources/ppp-publications/_docs/ppp-153.pdf

Nozzles Impact on Spray Droplet Size

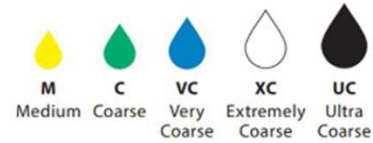


Water Sensitive Paper Demonstrates Droplet Size

SPRAY PATTERN



DROPLET SIZE CLASSIFICATION



OPTIMUM SPRAY HEIGHT

<p>ANGLE</p>	<p>20" SPACING</p> <p>HEIGHT</p>
110°	20"

RECOMMENDED PRESSURE RANGE



MATERIALS AVAILABLE



APPLICATIONS



HERBICIDE
SOIL APPLIED
VERY GOOD
CONTACT
VERY GOOD
SYSTEMIC
EXCELLENT



FUNGICIDE
CONTACT
GOOD
SYSTEMIC
EXCELLENT



INSECTICIDE
CONTACT
GOOD
SYSTEMIC
EXCELLENT



DRIFT CONTROL
EXCELLENT

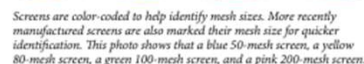
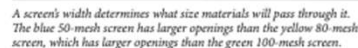


PWM APPROVED

TeeJet
TECHNOLOGIES



Nozzle Tip Screens, Caps, and Turrets



Nozzles with flow rates at 0.2 GPM or greater have 50- or 80-mesh screens. Such screens are recommended because



	15	30	45	60	75	90
F	F	F	F	F	F	V
F	F	F	F	F	F	F
M	F	F	F	F	F	F
M	M	F	F	F	F	F
M	M	M	F	F	F	F
M	M	M	M	F	F	F
M	M	M	M	M	F	F
M	M	M	M	M	M	F
C	M	M	M	M	M	M
C	M	M	M	M	M	M
C	M	M	M	M	M	M
VC	VC	VC	C	C	C	M
VC	VC	VC	C	C	C	M



(C) This blue screen indicates a specific mesh size.



This standardization

https://ag.purdue.edu/departments/extension/ppp/resources/ppp-publications/_docs/ppp-153.pdf

Fact Sheet



Cooperative Extension Fact Sheet FS747

Preventing Heat Stress in Agriculture

Kate Brown, Agriculture and Natural Resources Agent, Somerset County

Stephen Komar, Agriculture and Natural Resources Agent, Sussex County

Michelle Infante-Casella, Agriculture and Natural Resources Agent, Gloucester County

William Bamka, Agriculture and Natural Resources Agent, Burlington County

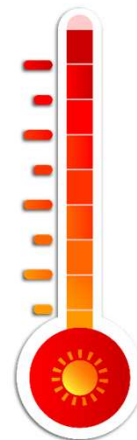
Heat exposure can be a serious concern for agricultural laborers when working outside during the growing season. When a person's ability to adapt to heat stress is exceeded, exposure can lead to reduced productivity, mistakes in job performance, increased workplace incidents, and/or heat-related illnesses. Each person's heat tolerance varies and several factors including type of physical activity, fitness level, underlying health issues, and humidity can dramatically impact the potential for heat related injury. To determine the level of heat risk, employers should consider the job, the environment, and the worker. This fact sheet provides basic knowledge about heat stress, first-aid treatment, and preventative measures that are important to both employers and workers.

**I cracked my head open
after a day of spraying
cranberry bogs in July**

Spraying pesticides during high heat periods

Generally, phytotoxicity can occur during the following....

- ***Sustained temperatures + 90F***
- Bright sunny days
 - Leaf temperature can be much hotter than air!
- When sensitive plants in full bloom
 - (we've trialed chlorothalonil to burn off unwanted blooms on crops)



Best approach

- Wait until a cooler period (not always possible)
- Spray at night / very early morning
- Systemics over protectants, WP over EC/Oils during heat waves

Note many fungi /oomycetes go into dormancy during this level of heat

Thank you for attending



Presentation will be available on our website.

Next session: July 22nd, 2025

Tentative key topics for next time:

- | | |
|-------------------------------------|---------------------------|
| 1. Beneficial: Predacious Mites | 7. Tuliptree aphid |
| 2. 'Dog-day' Cicada | 8. Orangestriped Oakworm |
| 3. Northern European hornet | 9. Azalea Whitefly |
| 4. Pear psyllid | 10. Loopers (Lepidoptera) |
| 5. Vascular disorders and diseases | 11. Juniper webworm |
| 6. Leaf spots and treatment windows | |

PLEASE SHARE WHAT
YOU SEE WITH US!

**ALWAYS OPEN TO NEW
TOPICS AND IDEAS**

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 /
Environmental

Physiological /
nutritional /

Arthropod
pest

Disease



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Ralph Geiger Turfgrass Education Center
20 Indyk-Engel Way
New Brunswick, NJ 08901

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Email: rutgerspdl@njaes.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

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Comment on observations
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