

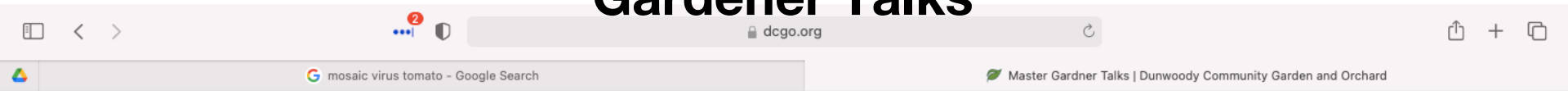
Managing Common Garden Pests - *Organically*

Dunwoody Community Garden Workshop
July 8, 2023

Cyndi McGill
DeKalb County Master Gardener Extension Volunteer



DCGO.org > Resources > Master Gardener Talks



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MISS A MASTER GARDENER TALK?

Click to see the presentation

— Companion Planting

— Diagnosing Plant Problems

— Fall Vegetable Gardening

— Fruit Trees

— Gardening 101

— Herbs

— Hot Weather Gardening Tips



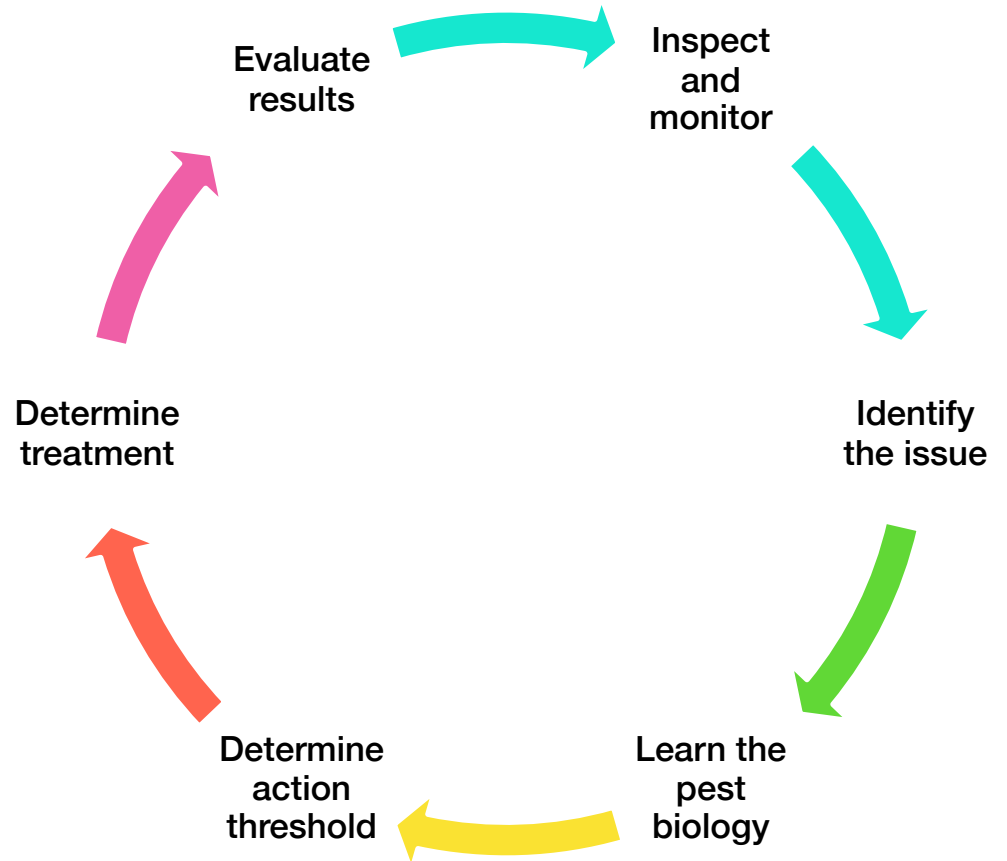
What We'll Cover

- The Basics of Integrated Pest Management
- The Usual Suspects in Dunwoody Gardens
 - Who/What They Are
 - How to Manage Them – Organically
- Resources

Start Strong!

- Good Soil
- Healthy Plants
- Right Plant/Right Place/Right Time
- Good Air Circulation
- Food and Beverage
- Keep it Clean!

Integrated Pest Management (IPM)



WWSA?

(What would Sherlock ask?)



What did your soil test say?



What has the recent weather pattern been?



How often are you watering?



What's going on in your neighbor's yard?



Is it a problem with one plant or many?



What's been sprayed? Applied?



Have drainage conditions changed?



Are pollinators present?



Are leaves/fruit damaged? How?



Are insects present?

Good Bugs

**Hunters
(other insects, nectar and
pollen)**

Loners

Not Plant Picky

No Plant Damage

Bad Bugs

**Gatherers
(plant eaters)**

Large Groups

Plant Picky

Evidence is Clear



LADY BEETLE



MULTICOLORED ASIAN
LADY BEETLE

More Good Guys



[Aggie-horticulture.tamu.edu](http://aggie-horticulture.tamu.edu)



[Citybugs.tamu.edu](http://citybugs.tamu.edu)



clemson.edu

Soft-bodied Insect Predators



UKY.edu

Lacewings



Wikipedia



UKY.edu

Lady Beetle Larvae



UKY.edu

Hoverflies (Syrphid flies)

Repelling the Bad Guys

Attracting the Good Guys

- ***Repel plant-eating insects*** with scented plants : Lavender, basil, thyme, mint, alliums, petunias
- ***Attract predators*** with plants with flat, open flowers: Yarrow, dill, marigolds, fennel, sunflowers, clover



Milkweeds



Tulip trees, Magnolia



Passionflower Vine



Carrot, Dill, Fennel



Milkweeds



Tulip trees, Magnolia



Passionflower Vine



Carrot, Dill, Fennel

Soft-bodied Pests:

Small but Fierce

Aphids



Aleksandr Rybalko | Adobe



Missouri Botanical Garden

Aphids





Cyndi McGill

Sooty Mold?

Look up!



Ronald S. Kelley, Vermont Department of
Forests, Parks and Recreation, Bugwood.org



David B. Langston, University of Georgia, Bugwood.org

Whitefly

Thrips and Thrip Damage



UC Statewide IPM Project
© 2000 Regents, University of California

Scale Insects



Lesley Ingram, Bugwood.org



Lorraine Graney, Bartlett Tree Experts, Bugwood.org



Eric R. Day, Virginia Polytechnic Institute
and State University, Bugwood.org

Mealybugs



Kudzu Bugs

Photos: Bugwood.org



IPM Treatment Methods

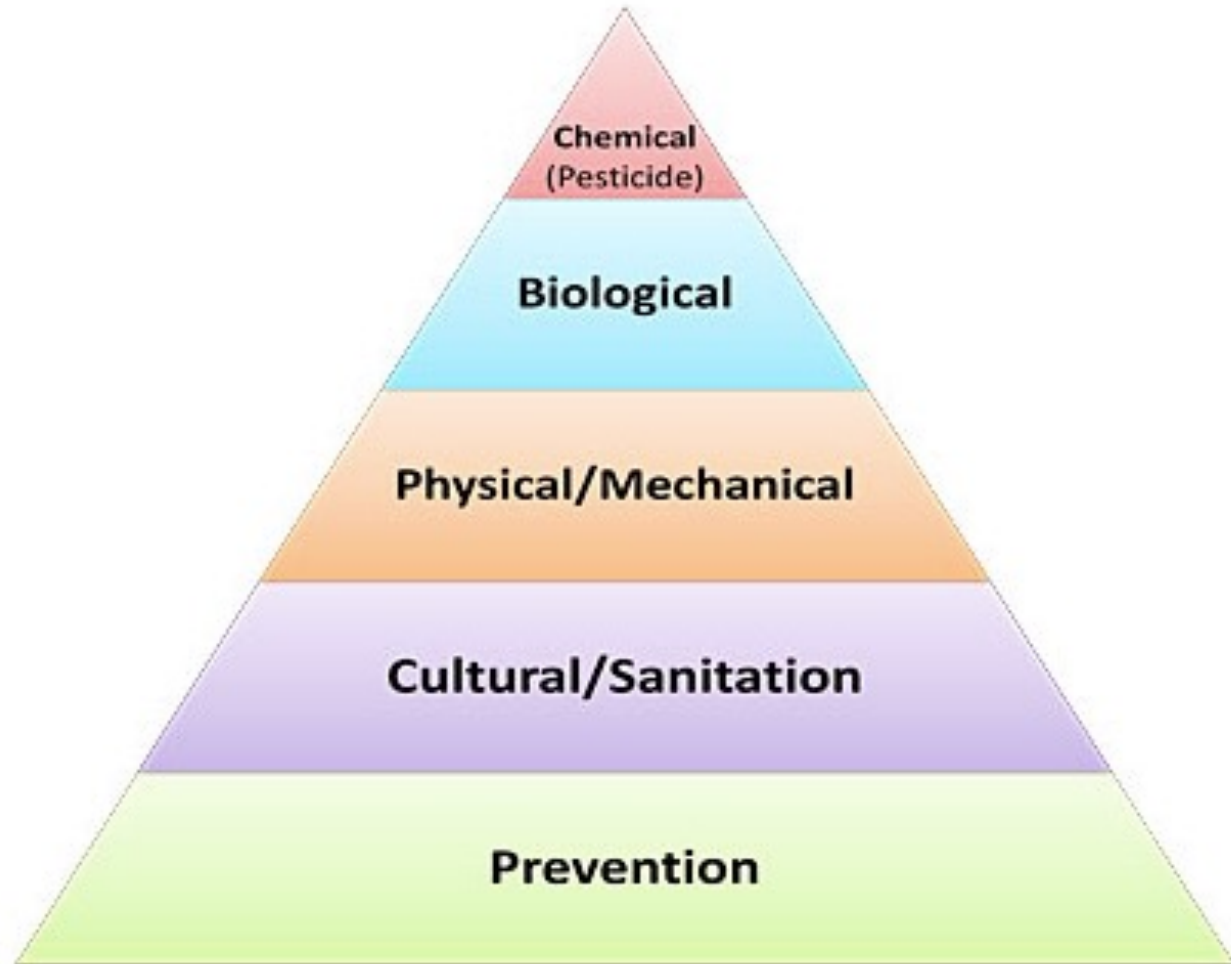


Figure 17–28. Cutworm collars constructed out of foil to protect cabbage seedlings.



Karen Jevsevar [CC BY 2.0](#)

Figure 17–25. A strong spray of water can dislodge many plant pests.

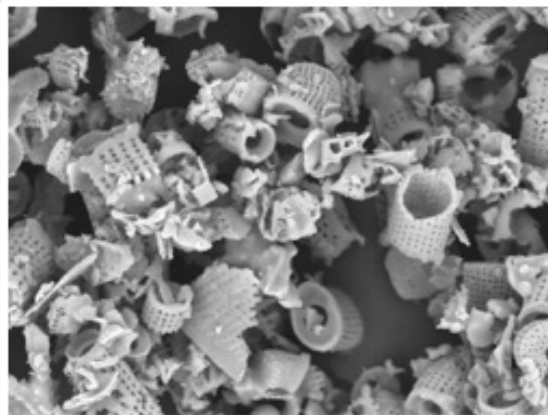


Gloria Polakof [CC BY 2.0](#)

Figure 17-26. A floating row cover can protect crops from flying insects.



Aaron Baugher [CC BY 2.0](#)



30 um

Figure 17-29. A scanning electron microscope image of diatomaceous earth showing the sharp edges that get in between insects exoskeleton and cause them to dry out and die.

Dawid Siodlak, Wiki
Commons [CC BY-SA 4.0](#)

Figure 17-33. This squash plant has its stem wrapped in nylon stockings and foil to protect from vine borers.



Karen Jevsevar [CC BY 2.0](#)

Basic Organic Pesticides: An Introduction

Pesticide/ Brands	How It Works	Pros	Cons
Insecticidal Soap: Safer, Bonide, Nature's Care, homemade	Suffocates Removes Waxes	Low impact to beneficials Effective on soft bodied insects	Must come in direct contact No residual effect Don't use in high temps
Neem Oil: Bonide, Monterey, Natria	Reduces feeding Affects insect growth and reproduction. Acts as a repellent.	Low impact to beneficials Safe for use on edibles	Takes 3-4 days to work Must be reapplied
Pyrethrins: Dr. Earth	Affects the nervous system	Quick knock-down	Unsafe for beneficial pollinators, aquatic life and cats
Spinosad: Captain Jack's Deadbug Brew	Affects the nervous system	Effective on caterpillars and thrips	Toxic to all caterpillars! Toxic to bees when wet
Bacillus thuringiensis kurstaki (Btk)	Creates toxins in larvae and caterpillar digestive systems	Non-toxic to beneficials	Very target-specific
Horticultural Oil	Suffocates	Only effective when wet	Timing is key Toxic to fish and bees



**The Label
is the Law!**



Insecticidal Soap Recipe

- 2.5 Tablespoons pure soap (such as Dr. Bronner's)
- 2.5 neutral vegetable oil
- Mix with one gallon warm water
- Mix only what's needed
- Do not use if temperatures are above 90°F

Organic Treatments: Soft-Bodied Insects

Insect	Method	Treatment (s)
All	Cultural	Weekly inspections! Companion Plants: marigolds, etc.
Aphids	Mechanical	water hose blast
	Biologic	Lady Beetles, Lacewings, Syrphid Flies
	Chemical	insecticidal soap, neem oil, pyrethrins
Kudzu Bugs	Mechanical	Knock into soapy water or rubbing alcohol
Scale & Mealybug	Mechanical	hand pick, prune infected branches
	Biologic	Lady Beetles, Lacewings
	Chemical	horticultural oil
Whitefly	Mechanical	yellow sticky-traps, water hose
	Chemical*	insecticidal soap, neem oil
Thrips	Chemical	neem oil, spinosad





Gerald Holmes, California Polytechnic State University at
San Luis Obispo, Bugwood.org



Clemson University - USDA Cooperative
Extension Slide Series, Bugwood.org

Spotted Squash Lady Beetle

Mexican Bean Beetle



Whitney Cranshaw, Colorado State University, Bugwood.org

Flea Beetles

Controlling Mexican Bean Beetles/ Squash Beetles/Flea Beetles

- Daily inspection is best!!!
- **Sanitation: Get rid of badly infected plants and plant debris at end of season**
- Cultural: Interplant with nasturtium, garlic, potatoes
- Mechanical: hand pick with gloved hands and drop in soapy water or rubbing alcohol. Smash egg clusters.
- Chemical: Spray with neem – especially on undersides of leaves. Use spinosad as a last resort.



James Castner, University of Florida



Lyle J. Buss, University of Florida

Squash Vine Borer

Controlling Squash Vine Borers

- Prevention: Inspect for adults. Use yellow bowl with soapy water to attract and kill.
- Cultural: Plant resistant types such as butternut squash
- Sanitation: Remove and dispose of affected plants and plants that have finished producing ASAP!!!
- Mechanical: Use floating row covers to prevent adults from laying eggs on the soil
- Mechanical: Wrap seedling stems with aluminum foil or paper
- Mechanical: Remove larvae ASAP and cover stem with soil/water regularly



UGA Extension

Japanese Beetles

Controlling Japanese Beetles

- Prevention/Mechanical: Inspect plants for adults. Hand pick and drop in a jar of soapy water or rubbing alcohol.
- Prevention: Inspect lawn for signs of grubs. Treat with biologic or organic pesticides (milky spore).
- Chemical: Insecticidal soap, neem
- Don't use Japanese Beetle traps!!!

Tomato Hornworm



Whitney Cranshaw, Colorado State University, Bugwood.org



Michigan State University Extension



Michigan State University Extension



Michigan State University Extension

Tomato Fruitworm



UGA143515

Clemson University, Bugwood.org



bugwood.org



bugwood.org



bugwood.org

Controlling Tomato Worms

- Cultural: **Remove and dispose of affected fruit**
- Cultural: Regularly inspect leaves for eggs and destroy
- Mechanical: Hand-pick and dispose of hornworms (unless they're parasitized)
- Biologic/Chemical: bT, neem oil, or pyrethrins



Ward Upham, Kansas State University, Bugwood.org



John L. Capinera, University of Florida



University of Minnesota Extension

Cabbage Looper



Whitney Cranshaw, Colorado State University, Bugwood.org



James Castner, University of Florida

Cabbage Worm

Controlling Cabbage Worms

- Prevention: Remove all old plant material at the end of the growing season and closely monitor plants for eggs or signs of caterpillars (frass)
- Cultural: Plant in different areas each year
- Physical: Use floating row covers to prevent adult moths from laying eggs
- Biological: *Bacillus thuringiensis kurstaki* (Btk)

Slugs



Missouri Botanical Garden



Missouri Botanical Garden



Garden Myths - Robert Pavlis

2 and 4-Legged Pest Control

- **P**revention: Eliminate the habitat and remove food source
- **E**xclusion: Create physical barriers
- **R**epel: Create a 'hostile' environment: scents, predators
- **C**ontrol: trap and relocate

Fungus/Bacteria Control

- Rotate planting areas
- Ensure proper air circulation
- Plant in sterilized pots with fresh soil
- Plant disease-resistant hybrids
- Trim bottom leaves and any diseased leaves (sterilize tools)
- Use ground covers (landscape fabric, newspaper) to prevent backsplash
- Spray with organic fungicides: neem, copper



University of Missouri Extension



Rebecca A. Melanson, Mississippi State University Extension,
Bugwood.org



Early Blight on Tomatoes (Alternaria)



Biologic Control

Active ingredient:
**Bacillus
amyloliquifaciens**

Preventive treatment
for fungal and
bacterial diseases

Foliar spray and soil
drench





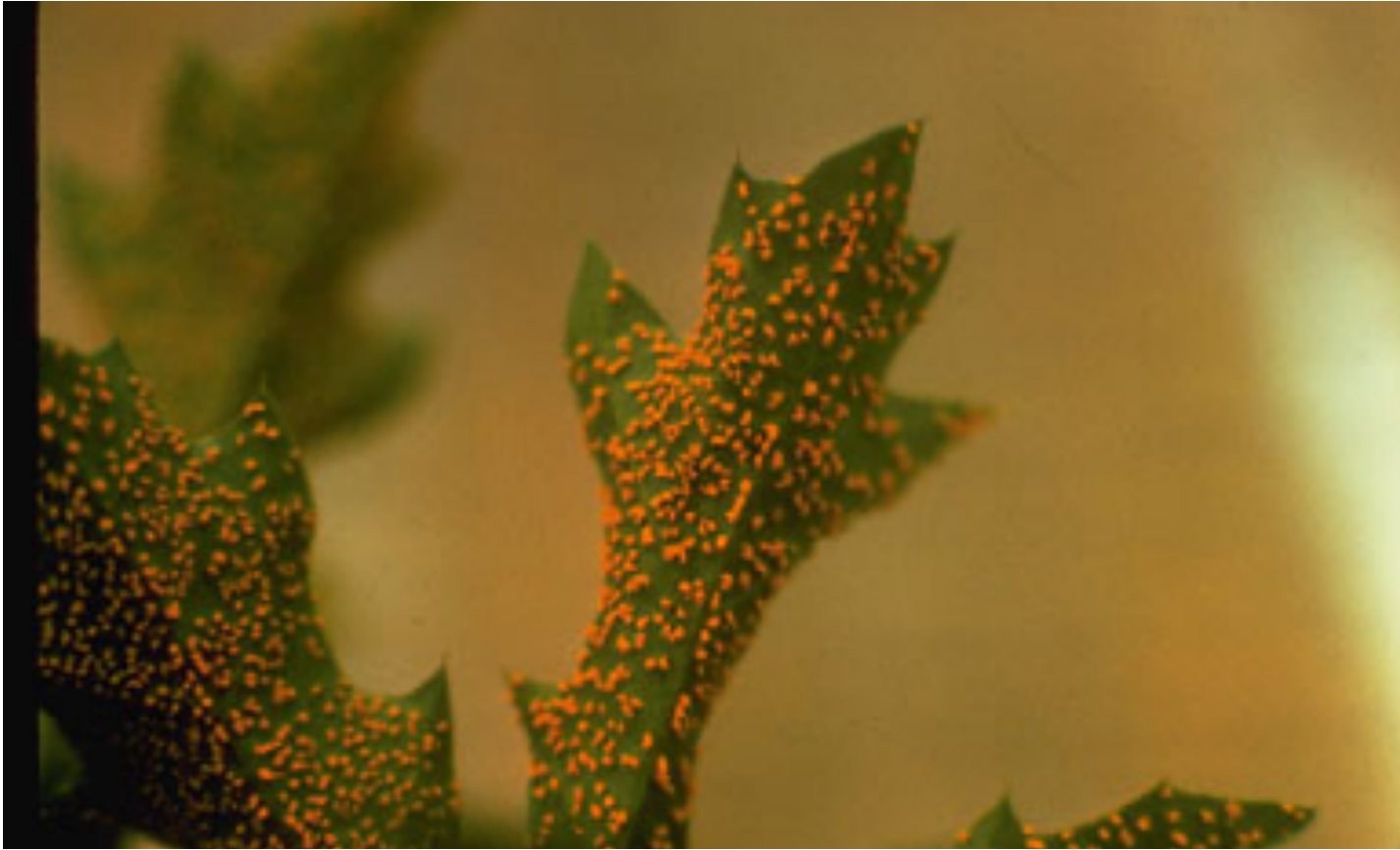
Colorado State University Extension

Powdery Mildew



John Hartman, University of Kentucky, Bugwood.org

Black Spot



Robert L. Anderson, USDA Forest Service, Bugwood.org

Rust

May be treated with neem, sulfur or copper

When a problem
isn't a pest...



Brenda Kennedy, University of Kentucky, bugwood.org

Blossom End Rot

Calcium Issue
Uneven/inadequate watering



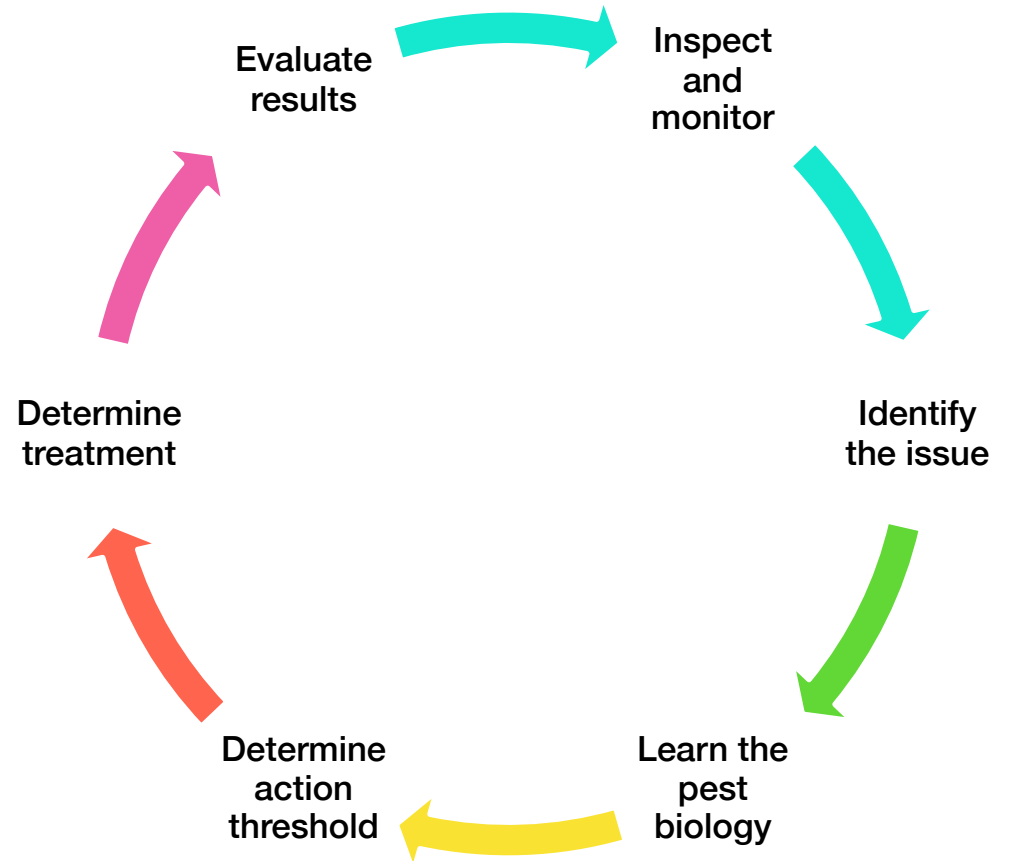
Catfacing

Excessive Nitrogen, Excess Water



Poor/incomplete pollination
Extreme heat
Not enough water

Integrated Pest Management (IPM)



Resources

- University of Minnesota Extension: unm.extension.edu > Solve a Problem > Insects
- “Organic Strategies for the Garden and Home Landscape”, UGA Extension (extension.uga.edu)
- The Organic Gardener’s Handbook of Natural Disease and Pest Control (a Rodale Organic Gardening Book)
- Good Bug Bad Bug, Jessica Walliser
- Arbico Organics (arbico-organics.com)