Insects and Diseases of Ornamentals

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Learning Objectives

• Common insect pests of ornamentals
• Signs of insect damage
• Causes and symptoms of plant diseases of ornamentals
• Disease prevention and control methods

General IPM Strategies

• Rotate
• Remove Plant Debris or Affected Plants
• Use Registered Pesticides
• Resistant Varieties
• Pruning
• Soil Test
• Insect & Weed Control
• Mulching
• Submit Sample for Laboratory Diagnosis
Solving Plant Problems

- Prevention
- Early Detection
- Correct Identification
- Proper Selection of Control Techniques
- Correct Application Methods
- Use IPM Approach

Prevention

- Soil sterilization
- Clean stock plants
- Weed control
- Follow good cultural practices
- Preventive sprays
- Removal of infested plants or plant parts

Early Detection
Correct Identification

Lady Beetle Larvae

Proper Selection of Control Techniques

Correct Application Methods
Remember the IPM Approach

- Pest resistant plants
  http://www.plant.uga.edu/Extension/Clinics/resistance.htm
- Beneficial vs. the pest insects ("good bug/bad bug")
- Actively conserve beneficial insects

Why use pest-resistant plants?

- Attractive appearance
- Aesthetic value maintained with fewer pesticide inputs
- Economic and environmental savings
- $$$ and sense!

Know Key Beneficial Insects

- Lady beetles
- Ground beetles
- Tiger beetles
- Rove beetles
- Syrphid flies
- Long-legged flies
- Robber flies
- Spined soldier bugs
- Predaceous damsel bugs
- Minute pirate bugs
- Predaceous plant bugs
- Assassin bugs
- Big-eyed bugs
- Green lacewings
- Brown lacewings
- Parasitic wasps
- Parasitic flies
Actively Conserve Beneficials

- Minimize insecticide use unless there is imminent need
- If a spray is needed use lesser impact products or selective pesticides
- Provide for beneficial insects’ needs
  – Protection, pollen, nectar

Insect Pests of Ornamentals

- Aphids
- Mites
- Thrips
- Whiteflies
- Scale and Mealybugs
- Caterpillars (Lepidopteran pests) and sawflies
- Leaf Feeding Beetles
- Wood Borers
- Gall Making Insects
- Leafminers (flies, moths, sawflies and beetles)
- Lace bugs, Plant bugs, Leafhoppers and Spittlebugs

Diagnosing Insect Damage to Ornamental Plants

Symptoms of plant problems caused by insects

- Chewed or ragged foliage or blossoms
- Spotted or discolored leaves
- Twisting or deformed growth
- Death of all or portions of the plant
- Insect or insect-related products
Chewed or Ragged Foliage or Blossoms

- Larvae of moths or butterflies
- Larvae of or adult beetles
- Sawfly larvae
- Grasshoppers
- Snails and slugs

Azalea Caterpillar

Orange Striped Oakworm

Arnold T. Drooz, USDA Forest Service, www.ipmimages.org
Root Weevils

Japanese Beetles

Will eat almost anything.
Favorites:
- Roses
- Crape Myrtle
- Japanese Maples
- Grape vines
- Crabapple

Sawflies

- Rose
- Azalea
- Pine
- Oak
- Conifers
- Ash
- Elm
Snails and Slugs

Spotted or discolored leaves
- Spider mites
- Leafhoppers
- Plant bugs
- Lace bugs
- Thrips
- Aphids
- Whiteflies

Spider mites

Warm weather:
- Two spotted spider mite

Cool weather:
- Spruce spider mite
- Southern Red mite

Two spotted spider mite

Cool weather:
- Spruce spider mite
- Southern Red mite
Lace bugs

Azalea
Lantana
Sycamore
Pyracantha
Willow
Photinia

Thrips

Amaryllis
Azalea
Begonia
Carnation
Chrysanthemum
Croton
Fern
Fuchsia
Geranium
Gladioli
Iris
Roses
Snapdragon

Twisting or deformed growth

- Aphids
- Thrips
- Eriophyid (gall, blister, bud or rust) Mites
- Spittlebugs
- Leafmining flies or caterpillars
Aphids

Two lined spittlebug

Holly Leafminer
Death of all or portions of the plant

- Scale insects
- Moth or beetle larvae that bore into stems, branches or trunks

Euonymus Scale

Wax scale

Japanese holly
Chinese holly
Euonymus
Boxwood
Pyracantha
Spirea
Japanese magnolia
Flowering quince
Asian Ambrosia Beetles

Styrax
Ornamental cherry
Crab apple
Japanese maple
Golden rain tree
Dogwood,
Chinese elm,
Magnolia
Azalea

Insect-related products

• Honeydew and sooty mold
  • Aphids, soft scales, leafhoppers, mealybugs, psyllids, whiteflies
• Dark fecal specks
  • Lacebugs, greenhouse thrips, plant bugs.
• Tents, webs, silken mats
  • Tent caterpillars, webworms, leaf rollers
• Spittle
  • Spittlebugs

Insect-related products

• Cast skins
  • Aphids, leafhoppers, and lace bugs
• Flocculence (cottony waxy material)
  • Adelgids, mealybugs, scales, aphids
• Slime
  • Snails, slugs
Tent caterpillar

Mealybug

Whiteflies
Let’s Take a Break!

Diseases of Ornamental Plants

Identify the Problem
Be a diagnostician
Things a diagnostician must know
1) What does a healthy or normal plant look like
2) What do parts of the plant do in maintaining plant integrity.
Disease Diagnostic Tools

- Scissors or a sharp knife
- Hand lens
- Small, clear glass of water
- Clean sandwich bags, paper towels and rubber bands or twist ties
- Reference books: some to consider—
  APS Compendium
  Pirone’s Diseases and Pests of Ornamental Plants

Study the Situation

- Is there a pattern?
- Part of plant affected
- Sources of pollution in area
- Chemicals used on or nearby
- Known toxicity or sensitivity
- Rate of application
- Fertilizer applied
- Fertility & pH of soil
- Insects or mites present?

Causes of Biotic Plant Disease

- Fungi & Water Molds
- Bacteria
- Nematodes
- Viruses
- Phytoplasmas
Fungi & Plant Diseases

Fungal Leaf Spots and Blights

- Spots usually round
- Dead areas
  - brown, black, tan, red
- May have red or purple border
- May defoliate plant
- Involves twig or stem blight
**Alternaria Leaf Spot**
- Zinnia
- Dianthus
- Impatiens
- Marigold
- Geranium

- Purple spots
- Dry gray centers
- Center may drop out

**Septoria Leaf Spot**
- Dogwood
- Rudbeckia
- Phlox
- Mums

- Spots - small round
- Centers - white, light tan or gray
- Purple or brown border
- May have zone of yellow tissue
- Pimple like structures
- Spots may grow together
Cercospora

- Juniper
- Ligustrum
- Hydrangea
- Pansy
- Azalea

Frogeye

Specks on spot center

Browning progresses up and out
Entomosporium

- Pear
- Photinia
- Indian hawthorn
- Loquat

- Small reddish spots
- Older spots grayish w/ dark purple border
- Spots may join causing leaf blight
- Infected leaves drop prematurely
- Favors cool, wet weather and poor air circulation
Black Spot of Rose

- Sanitation
- Resistant varieties
- Air circulation
- Dry foliage
- Fungicide

Anthracnose

- Maple
- Ash
- Dogwood
- Sycamore

- Leaf brown blotches bordered in purple
- Stem - twig dieback, stem canker and dieback
- Fruiting bodies on dead twigs
- Attached wilted, brown leaves often persist into the next spring
Other Leaf, Flower & Fruit Diseases
Leaf Galls

- Azalea
- Camellia
- Rhododendron

- Leaves: swollen, curled, waxy and leathery
- Light green-later brown or black
- Flowers may be pinkish

Cylindrocladium

- Holly: Leaf spot
- Azalea: Root rot & leaf spot

- Black discoloration and necrosis of roots and lower stems
- Reddish orange structures

Powdery Mildew Disease

- Mums
- Bee balm
- Grape myrtle
- Rose
- Dogwood
- Viburnum
- Native azalea
- Zinnia
- Verbena
- Euonymus
Botrytis - Gray Mold

Begonia, mum, daylily, dahlia, geranium, gladiolus, hosta, impatiens, iris, marigold, petunia, pansy, spiderwort, rudbeckia, zinnia and more.

- High Humidity - Warm Temps
- Stem cankers
- Leaf spots & blights
- Tuber & bulb rots

Azalea Petal Blight

- Azalea
- Rhododendrons

- Round pale spots enlarge to irregular blotches
- Flowers turn brown, limp, and mushy
- High Humidity - flowers covered in a white mold growth
- Affected blooms hang on plants
- Sclerotia produced on the affected blooms

Camellia Flower Blight

- Brown spots on petals
- Entire flower turns brown and drops
- Fungal bodies in the base of flowers
- Favors cool wet weather

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OSU Slide Library
Rust
- Codar
- Malus spp.
- Daylily
- Ornamental Grasses
- Pine
- Yellow, orange, reddish-
or brown pustules
- Often on underside of leaf
- May require intermediate host
- Galls on stems of pine, cedar and hawthorne

Scab
- Crabapple
- Pyracantha
- Small, olive-brown spots on leaf
- Spots have feathery appearance at margins.
- Leaves become distorted, yellow and drop
- Fruits - scabby lesions
Canker Diseases

- Bot Canker
- Phomopsis
- Seridium

Botryosphaeria Canker & Dieback

- Branch Dieback
- Cankers girdle twigs & branches
- Twigs & branches die
- Canker-black fruiting structures

- Rhododendron
- Azalea
- Rose
- Yew
- Leyland cypress
- Thuja
- Redbud
- Dogwood
- Holly
- Crabapple
- Juniper
Phomopsis

- Branch tips turn brown to gray
- Fruiting structures on killed growth
- Cankers sunken, reddish with line between healthy and killed tissue
- Also causes round, rough stem enlargements or galls

Juniper
Eleagnus
Azalea
Rhododendron
Seridium Canker

- Yellowing or browning of top or lateral branches.
- Thin, elongated cankers on stems, branches, and axes.
- Twig and branch dieback
- Cankers slightly sunken - raised margins
- Cankers dark brown to purple
- Cracked bark exudes resin

Vascular Wilt Diseases

- Wilting
- Scorched leaves
- Stunting
- Yellow leaves
- Streaks in wood

Verticillium
Ceratocystis
Fusarium
Root/Stem/Crown Rots

- **Sclerotium Southern Blight**
- **Rhizoctonia** stem rot/damping off, web blight

Infected plants wilt and die
- Woody: may rot at the crown and die back or topple over
- Herbaceous: whole plant may turn black and die
- White hyphae
- Hard seed-like structures

Sclerotium Southern Blight

- Aucuba
- Astilbe
- Ajuga
- Hosta
- Lily
- Daylily
- Peony
- Phlox

Rhizoctonia

- Affects numerous plants
- Japanese holly and Azalea may develop web blight
- No spores - only mycelium and sclerotia
- Brown, dry sunken spots
- Often at soil line or just below
- May have aerial or web blight
Root Rots

- **Pythium**
- **Phytophthora**
- **Rhizoctonia**
- **Sclerotium**
- **Cylindrocladium**
- **Thielaviopsis**

Pythium

- Black lesions
- Sloughing of root cortex
- Wilting
- White mycelium
- Spores stain pink
**Phytophthora**

- Arborvitae, Azalea, Chamaecyparis, Ligustrum, Dogwood, Forsythia, Japanese Holly, Juniper, Pieris, Rhododendron, Taxus

**Symptoms**
- Brown or Black Roots
- Yellow leaves
- Stunting
- Decline

**Black Root Rot**

- Pansy
- Geranium
- Petunia
- Snapdragon
- Vinca
- Holly
  - Japanese
  - Blue (Meserve)
  - Inkberry

**Symptoms**
- Yellowing leaves
- Slow growth
- Leaf Drop
- Lesions/black bands or rings on root
Bacteria

Bacterial Leaf Spots and Blights

- Angular leaf spots
- Water soaked areas
- Yellow or translucent halos

Ivy
Begonia
Geranium

Pseudomonas

- Bacterial canker
- Cherry, Pear, Laurel, Plum, Lilac, Rose
- Leaf Spot: Dianthus, Ferns, Geranium, Holly, Celosia, Impatiens, Chrysanthemums

Dan Dan Pusey, USDA Forest Service, www.ipmimages.org
Shot Hole Diseases

- Prunus spp.
  1. Spots dry up
  2. Fall out
  3. 1/8" holes

Fireblight

- Pear
- Quince
- Cotoneaster
- Pyracantha
- Crabapple
- Photinia

Bacterial Soft Rot

- Iris
- Begonia
- Gladiolus
- Chrysanthemum
- Geranium
- Dahlias

1. Small water soaked, translucent lesions
2. Tissue softens, becomes mushy, slimy masses ooze out
3. Quickly rots, collapses-putrid odor
Bacterial Crown Gall

- Form on roots, crowns or stems
- Can grow up to 10" in diameter

Nematodes

- Root knots
- Root galls
- Root lesions
- Excessive root branching
- Stunted stem growth
- Rapid browning of needles
Viruses

- Camellia
- Rose
- Mums
- Lilies
- Gladiolus
- Tulips
- Impatiens

Mosaic
- Ringspots
- Rosette
- Stem lesions
- Stunting
- Yellows
Phytoplasmas

- Dwarfed leaves
- Yellowing or reddening of leaves
- Witches' brooms
- Green or sterile flowers
- Very short internodes
- Spread by leafhoppers
Reduce Plant Diseases

- **Prevention**
- **Sanitation**
- **Chemical Disease Control**

**Prevention**
- Provide good soil drainage
- Plant in right location
- Reduce overcrowding
- Avoid overwatering
- Reduce overhead watering

**Sanitation**
- Use mulches
- Clean under plants
- Clean tools
- Remove diseased plant materials
Chemical Disease Control

- Costly approach to disease management
- Most products only available for fungal disease
- Use in combination with cultural approaches
- Consult Georgia Pest Management Handbook
- Always read and follow label directions!

Resources

- Georgia Master Gardener Handbook
- UGA Plant Pathology
- [WWW.IPMImages.org](http://www.ipmimages.org)
- [www.insectimages.org](http://www.insectimages.org)

Questions

1. Name 4 general IPM strategies you can use in the landscape. **Answer**
2. What are the basic keys to solving plant problems? **Answer**
3. Which insects would be suspected of causing chewed foliage and flowers on crape myrtles and roses in June? **Answer**
More Questions

4. Leaves on azaleas planted in a sunny location are showing signs of stippling. What might be the cause? Answer

5. Name 4 of the causes of biotic plant diseases. Answer

6. Which disease causes small red spots first on the dogwood flowers then the leaves? Answer

7. What is the primary contributing factor to root rot on ornamental plants? Answer

8. What kind of leaf spots do bacteria cause? Answer

9. How are phytoplasmas spread from plant to plant? Answer

10. What are 3 things you can do to reduce plant diseases? Answer