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# Insects and Diseases of Ornamentals

**Compiled**  
from information by  
Dr. Kris Braman, Dr. Beverly Sparks,  
Dr. Jean Williams-Woodward  
and Ms. Mila Pearce



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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



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## 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



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## Solving Plant Problems

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



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## Prevention

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



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## Early Detection



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## Correct Identification



Clemson University - USDA Cooperative Extension Slide Series  
www.insectimages.org



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## Proper Selection of Control Techniques



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## Correct Application Methods



James H. Miller, USDA Forest Service, www.insectimages.org

UGA0016374



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## 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



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## Why use pest-resistant plants?

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



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## 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



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## 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



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## 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



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## 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



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## Chewed or Ragged Foliage or Blossoms

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



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## Azalea Caterpillar

Azaleas



UGA4060004  
Arnold T. Drooz, USDA Forest Service, www.ipmimages.org



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## Orange Striped Oakworm



Oak  
Hickory  
Birch



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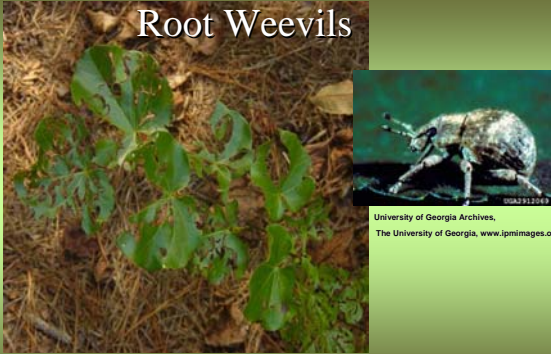
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## Root Weevils



University of Georgia Archives,  
The University of Georgia, [www.ipmimages.org](http://www.ipmimages.org)

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## Japanese Beetles

Will eat almost anything.

**Favorites:**

- Roses
- Crape Myrtle
- Japanese Maples
- Grape vines
- Crabapple



UGA0177037

M.G. Klein, USDA Agricultural Research Service, [www.ipmimages.org](http://www.ipmimages.org)

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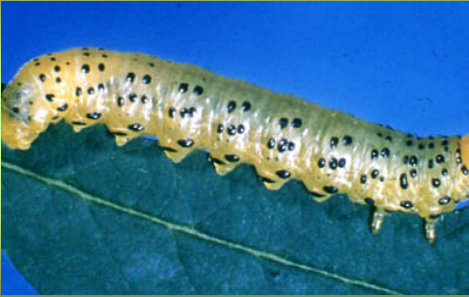
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## Sawflies

- Rose
- Azalea
- Pine
- Oak
- Conifers
- Ash
- Elm




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## Snails and Slugs



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## Spotted or discolored leaves

- Spider mites
- Leafhoppers
- Plant bugs
- Lace bugs
- Thrips
- Aphids
- Whiteflies



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## Spider mites



- Warm weather:  
Two spotted spider mite
- Cool weather:  
Spruce spider mite  
Southern Red mite



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## Lace bugs



- Azalea
- Lantana
- Sycamore
- Pyracantha
- Willow
- Photinia

Clemson University - USDA Cooperative Extension Slide Series - www.ipmimages.org



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## Thrips



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

Whitney Granzhaw, Colorado State University, www.ipmimages.org



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## Twisting or deformed growth

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



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# Aphids



Clemson University - USDA Cooperative Extension  
Slide Series, www.ipmimages.org

John A. Weldhaas, Virginia Polytechnic Institute and State  
University, www.ipmimages.org



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# Two lined spittlebug



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# Holly Leafminer



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## Death of all or portions of the plant

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



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## Euonymus Scale



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## Wax scale



- Japanese holly
- Chinese holly
- Euonymus
- Boxwood
- Pyracantha
- Spirea
- Japanese magnolia
- Flowering quince



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## Asian Ambrosia Beetles



**Styrax**  
**Ornamental cherry**  
**Crape myrtle**  
**Japanese maple**  
**Golden rain tree**  
**Dogwood,**  
**Chinese elm,**  
**Magnolia**  
**Azalea**

Byron Rhodes, The University of Georgia, www.ipmimages.org



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## 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](#)



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## Insect-related products

- Cast skins
  - [Aphids](#), leafhoppers, and [lace bugs](#)
- Flocculence (cottony waxy material)
  - Adelgids, mealybugs, scales, aphids
- Slime
  - [Snails](#), [slugs](#)



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## Tent caterpillar



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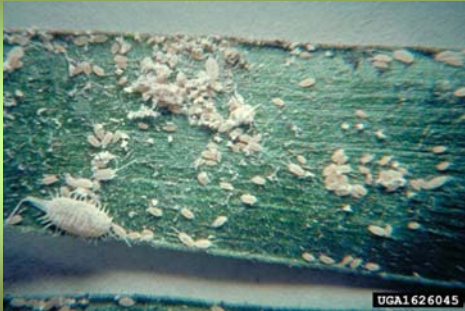
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## Mealybug



John A. Weidhass, Virginia Polytechnic Institute and State University,  
[www.ipmimages.org](http://www.ipmimages.org)

UGA1.626045



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## Whiteflies



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Let's Take a Break!



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Diseases of Ornamental Plants



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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.



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## 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



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## 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?



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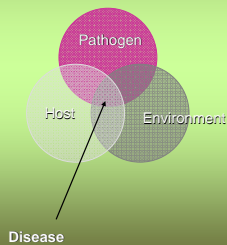
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## Causes of Biotic Plant Disease

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



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## Fungi & Plant Diseases



Fungal spores



oomycete

University of Wisconsin

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## Fungal Leaf Spots and Blights F

- Spots usually round
- Dead areas
  - brown, black, tan, red
- May have red or purple border
- May defoliate plant
- Involves twig or stem
  - blight



Clemson University - USDA Cooperative Extension Slide Series  
www.ipmimages.org

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## *Alternaria Leaf Spot*



- Zinnia
- Dianthus
- Impatiens
- Marigold
- Geranium

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

NC Cooperative Extension

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## *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

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*Cercospora* 

- Juniper
- Ligustrum
- Hydrangea
- Pansy
- Azalea

- Frogeye
- Specks on spot center
- Browning progresses up and out




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## *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




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## Black Spot of Rose F



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

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## Anthracnose F



- Maple
- Ash
- Oak
- Dogwood
- Sycamore

- Leaf-brown blotches bordered in purple
- Stem - twig dieback, stem cankering and dieback
- Fruiting bodies on dead twigs
- Attached wilted, brown leaves often persist into the next spring

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## Leaf Galls



- Azalea
- Camellia
- Rhododendron

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



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## *Cylindrocladium*



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



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

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## Powdery Mildew Disease





- Mums
- Bee balm
- Crape myrtle
- Rose
- Dogwood
- Viburnum
- Native azalea
- Zinnia
- Verbena
- Euonymus

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## Botrytis -Gray Mold



University of Minnesota

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

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## 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

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## Camellia Flower Blight



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



OSU Slide Library

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## Rust



USA - EXT. PLANT PATHOLOGY

- Cedar
- 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

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## Scab



- Crabapple
- Pyracantha

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

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## Canker Diseases

- Bot Canker
- Phomopsis
- Seridium




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## *Botryosphaeria* Canker & Dieback



- Rhododendron
- Azalea
- Rose
- Yew
- Leyland cypress
- Thuja

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

- Redbud
- Dogwood
- Holly
- Crabapple
- Juniper



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*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

Robert L. Anderson, USDA Forest Service, [www.forestryimages.org](http://www.forestryimages.org)

- Juniper
- Eleagnus
- Azalea
- ~~Rhododendron~~

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## Seridium Canker F





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

- Juniper
- Leyland cypress

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## Vascular Wilt Diseases F

**Verticillium**  
**Ceratocystis**  
**Fusarium**



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

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## Root/Stem/Crown Rots

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



Edward L. Barnard, Florida Department of Agriculture and Consumer Services,  
www.forestryimages.org

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## *Sclerotium* Southern Blight F

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



- 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

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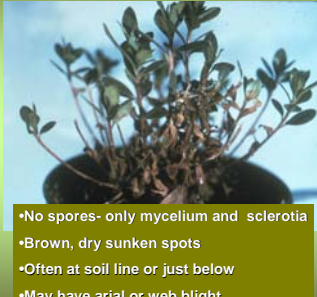

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## *Rhizoctonia* F

- No spores- only mycelium and sclerotia
- Brown, dry sunken spots
- Often at soil line or just below
- May have arial or web blight

Affects numerous plants- Japanese holly and Azalea may develop web blight

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### Root Rots

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



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### *Pythium*



USA - Ext. Plant Pathology

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



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## Phytophthora




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

**Symptoms**

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

USA - Est. Plant Pathology

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## Black Root Rot

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



Mix Pearce UGA Plant Pathology

**Symptoms**

- Yellowing leaves
- Slow growth
- Leaf Drop
- Lesions=black bands or rings on root

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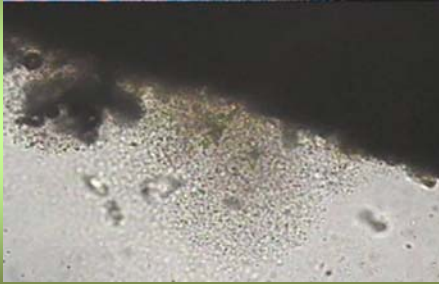
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## Bacteria



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## Bacterial Leaf Spots and Blights **B**



- Ivy
- Begonia
- Geranium

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

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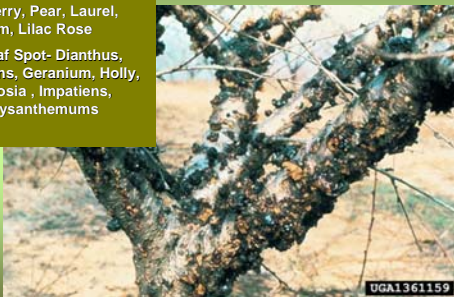
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## *Pseudomonas* **B**

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



Dan Pussey, USDA Forest Service, [www.ipmimages.org](http://www.ipmimages.org)

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## Shot Hole Diseases

**BF**

Prunus spp



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



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## Fireblight

**B**

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



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## Bacterial Soft Rot

**B**



- 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



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## Bacterial Crown Gall B

Roses  
Euonymus  
Hibiscus  
Flowering peach  
Privet  
Viburnum  
Willow



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

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## Nematodes



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

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# Viruses

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



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

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### Phytoplasmas

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



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## Reduce Plant Diseases

- Prevention
- Sanitation
- Chemical Disease Control



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## Prevention

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



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## Sanitation

- Use mulches
- Clean under plants
- Clean tools
- Remove diseased plant materials



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## 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
  - <http://pubs.caes.uga.edu/caespubs/PM-Handbook.htm>
- Always read and follow label directions!



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## Resources

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



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## 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](#)



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## 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](#)



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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](#)



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