

March 18, 2003

PP-545

**FEBRUARY PLANT DISEASES FROM THE AUBURN
PLANT DIAGNOSTIC LAB**

**FEBRUARY PLANT DISEASES FROM THE BIRMINGHAM
PLANT DIAGNOSTIC LAB**

DISEASE POSSIBILITIES FOR MARCH

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Auburn Plant Disease Report-February (J. Mullen)

The Auburn lab received 42 plant samples in February. Many (almost 40 percent) of these samples were geranium samples submitted by the Alabama State Department of Agriculture and Industries. See the paragraph below for more information on the geranium samples. Other samples seen included on bacterial leaf spot on dwarf gardenia, downy mildew on snapdragon, *Phytophthora* root rot on boxwood and *Illicium*, *Alternaria* leaf spot on impatiens, scurf on Irish potato, suspect scab on Irish potato, and *Pythium* root rot on English ivy.

Greenhouses throughout the U.S. are being checked for a strain of the bacterial wilt pathogen new in this country. USDA traced the new race, biovar to Goldsmith's Kenya production facility. In December, geranium cuttings infected with race 3 biovar 2 of the bacterial wilt pathogen *Ralstonia solanacearum* were identified in two greenhouses, one in Michigan and one in New Hampshire. These greenhouses subsequently, and unknowingly shipped rooted cuttings of geraniums out to greenhouses in many states. Evidently many cuttings were shipped from Glass Corners Greenhouses - Michigan. USDA and APHIS are concerned with the spread of the new race and strain of *R. solanacearum* because it is especially a severe problem on tomato and Irish potato. In Alabama state agriculture inspectors have sent/brought damaged geranium samples from 16 greenhouses for testing for the presence of *R. solanacearum*. The early symptoms of bacterial wilt - yellowing of lower leaves - could be confused with symptoms of root

damage or other root stress. Later symptoms of this disease - wilt and continued yellowing - could sometimes be confused with another serious bacterial disease called bacterial blight, caused by *Xanthomonas pelargonii*. We have received 24 geranium samples during February and early March. Many of these samples have been checked with visual study, microscopic study, culture and serology (immunostrip testing). Some bacteria were produced in culture and they reacted as *R. solanacearum* would to four preliminary culture tests. These bacteria were sent to a separate lab at Auburn (Plant Pathology research lab dealing with bacterial plant pathogens-Dr. J. Kloepper; Mr. John McInroy) for gas chromatography analysis of bacterial fatty acids to identify the bacteria specifically to genus and species. Gas chromatography results are still not completed for some samples as of March 18. A recently acquired immunostrip test kit (similar in principle to ELISA) is now being used as the main method of diagnosis for this disease. The immunostrip test has given positive results to some samples tested. Positive bacteria and plants must be sent to a Beltsville USDA/APHIS lab for PCR testing to identify the exact *R. solanacearum* race and biovar. More information on this problem is available at the following web sites: <http://www.growertalks.com/ralstonia/>, www.aphis.usda.gov/oa/pubs/sa_phgeraniums.html, www.aphis.usda.gov/ppq/ep/ralstonia/, www.pestalert.org, www.ces.ncsu.edu/depts/ent/clinic/Ralstonia/Ralstonia.html, <http://extlab7.entnem.ufl.edu/PestAlert/tmm-0303.html>.

The bacterial leaf spot on dwarf gardenia appeared as typical for bacterial leaf spot disease. Spots were dark, more obvious on lower leaf surfaces, angular and vein-bound, wet-looking at lesion edges. Microscopic study showed that bacterial streaming was present. Bacterial leaf spots are difficult to control. Damaged plants should be removed. Avoid over-head watering. Copper protective sprays will help protect foliage from new infections.

Downy mildew on snapdragon appeared as yellow blotches on lower leaves. The undersides of the damaged leaves contained a fine gray mold visible with a hand lens. To control downy mildew, remove damaged plants and apply a protective fungicide to near-by healthy plants. See the AL Pest Management Handbook for recommended fungicides.

Phytophthora and Pythium root rot diseases cannot be diagnosed by symptoms. Sometimes microscopy can show diagnostic spore structures but usually culture work and/or ELISA is needed. These two fungi are called water molds because they require free water for growth and development. Control of these diseases involves removal of damaged plants, correcting the water problem, and sometimes protective fungicide drenches are appropriate. See the AL Pest Management Handbook for fungicides labelled on specific plants.

The Alternaria leaf spot on impatiens, originally identified by John Olive, was associated with small (1-3 mm diam.) purple-brown, circular spots. Usual recommendations for Alternaria leaf spots involve sanitation and protective fungicide treatments. Cleary's is labelled on impatiens and would help

control *Alternaria*.

Scurf, caused by *Rhizoctonia solani*, appears as superficial black, crusty spots on the tuber surface. This disease is a surface problem. The actual tuber is not damaged, but the surface is abnormal in appearance. Disease control involves sanitation, crop rotation, and protective fungicide treatments. See the Alabama Pest Management Handbook for fungicides recommended. Also, check with Ed Sikora.

Scab on Irish potato is another surface disease, but this disease is more damaging to the surface layers than is scurf. Scab, caused by the bacteria *Streptomyces scabies*, appears as corky sunken, scabby lesions. Sometimes the sunken nature of the lesion is not apparent due to the corky surface developments. Disease control involves sanitation, crop rotation, and protective fungicide treatments. See the Alabama Pest Management Handbook. Also, check with Ed Sikora. (We were not able to confirm this disease by culture efforts, but symptoms were very characteristic of scab.)

Table 1. February Plant Diseases Received at the Auburn Plant Diagnostic Lab.

<u>Plant</u>	<u>Disease</u>	<u>County</u>
Azalea	Colletotrichum Leaf Spot	*
	Pestalotia Leaf Spot (Secondary)	*
Boxwood	Phytophthora Root Rot	Wilcox
Gardenia, Dwarf	Bacteria Leaf Spot	*
Illicium	Phytophthora Root Rot	*
Impatiens	Alternaria Leaf Spot	*
Irish Potato	Scab (Suspect) (<i>Streptomyces scabies</i>)	Cullman
	Scurf (<i>Rhizoctonia solani</i>)	Cullman
Ivy, English	Pythium Root Rot	Jackson
Geranium	Bacterial Wilt (<i>Ralstonia solanacearum</i>) (Immunostrip method)	*
	Botrytis Leaf Spot	*

	Botrytis Petiole Canker	*
	Fusarium Crown/Root Rot	*
<u>Plant</u>	<u>Disease</u>	<u>County</u>
	Pythium Root Rot	*
Oak	Slime Flux	Russell
Snapdragon	Downy Mildew (<i>Peronospora</i>)	*

*Counties are not reported for greenhouse and nursery samples.

Birmingham Plant Disease Report-February (J. Jacobi)

The lab received 57 samples for the month of February. Some of the problems seen last month included Septoria leaf spot on beard tongue, orange cane blotch on blackberry, cold injury on a number of different plants, and Botrytis gray mold on greenhouse tomato.

Orange cane blotch, or algal spot caused by the parasitic alga (*Cephaleuros* sp.). Symptoms include light green to light orange spots on blackberry canes. Spots can merge to cover entire portions of canes. This parasitic alga does not appear to have a major impact on production. However, very little is known about the effects of this disease on blackberry. Copper sprays, which can be used for other blackberry diseases, should help to control this organism as well. In Louisiana, it has been more common on thornless than thorned-type cultivars. It has also been reported in Georgia and the Carolinas. To my knowledge, this is the first time we have seen it in Alabama.

Botrytis gray mold is a very common and important disease on greenhouse tomatoes. This fungus can infect all plant parts (leaves, flowers, stems, and fruit) and typically enters through wounds (i.e. pruning). The disease is favored by cool, cloudy days and high relative humidity (<90%). Lesions on stems, petioles, and leaves develop a gray moldy growth during periods of high humidity. The cankers that form on stems are commonly responsible for early plant death. No resistant cultivars are available. Exotherm Termil (chlorothalonil) and Botran are registered for Botrytis control in greenhouse tomatoes. Read and follow all label instructions when using any pesticide.

Table 2. 2003 February Problems Seen In The Birmingham Plant Diagnostic Lab.

<u>Plant</u>	<u>Disease</u>	<u>County</u>
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Bermudagrass	Algae	Jefferson
Blackberry	Orange Cane Blotch (<i>Cephaleuros</i> sp.)	Chilton
<u>Plant</u>	<u>Disease</u>	<u>County</u>
Boxwood	Leafminer	Jefferson
	Pythium Root Rot	Jefferson
	Winter Injury	Jefferson(4)
Camelia	Tea Scale	Jefferson
Cypress, Leyland	Botryosphaeria Canker	Jefferson
	Pestalotia Tip Blight	Jefferson
Dogwood, Flowering	Dogwood Club Gall	Shelby
Easter Lily	Fungus Gnats	*
	Pythium Root Rot	*
Gardenia	Cold Injury	Jefferson
Holly, Chinese	Cold Injury	Jefferson
Holly, Hybrid	Tea Scale	Jefferson
Holly, Yaupon	Cold Damage	Jefferson
Liriope Anthracnose (<i>Colletotrichum</i> sp.)		Jefferson
Magnolia, Southern	Algal Leaf Spot	Jefferson
	Black Twig Borer	Jefferson
Pansy	Cold Injury/Black Root Rot	Jefferson

	Pythium Root Rot	Jefferson
Pecan	Hickory Spiral Borer (<i>Agrilus</i> sp.)	Jefferson
Penstemom (Beard Tongue)	Septoria Leaf Spot	*
Plum	Black Knot	Jefferson
<u>Plant</u>	<u>Disease</u>	<u>County</u>
Tomato	Botrytis Gray Mold	*
Yew	Poor Drainage	Shelby

*Counties are not reported for greenhouse and nursery samples.

Disease Possibilities for March

Virus symptoms on wheat and other small grains may be more evident in March. Barley yellow dwarf virus (BYDV), an aphid transmitted virus, causes oats to develop a red coloration which begins at leaf tips of older leaves and progresses down to the leaf base. In addition to the reddening symptom (which sometimes can be confused with cold damage or nutrient deficiency), infected plants become stunted with excessive tillering, and the developing spikes may be white and sterile. With wheat, BYDV infection will often cause the older leaves to become a bright yellow color. Severe plant damage may be caused by BYDV. Another virus to think about is soilborne wheat mosaic (SBWMV). Symptoms include a yellow mosaic pattern which appears as short, narrow yellow lines (dashes) on the otherwise green wheat leaves. Infected plants may become severely stunted. This virus is transmitted and maintained in the soil by the fungus *Polymxa graminis*, and disease occurrence appears to be more prevalent in low wet areas. Symptoms of SBWMV infection become diminished as temperatures warm up in the spring.

Other diseases often reported in early spring include Helminthosporium leaf spots on bermuda and small grains; the beginnings of powdery mildews, rusts, and/or Septoria leaf blotch on small grains; some downy mildews; Botrytis blight; and bacterial leaf spots on greenhouse crops.

The list below includes some common disease problems received in the lab during March and early April of the past few years. Comments on control practices are brief. Refer to the fact sheets, timely informations, 2000 or 2001 spray guides, and the Alabama Pest Management Handbook for details.

Table 3. Disease Descriptions and Brief Control Comments on Some Common Diseases Seen in March.

<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
Alfalfa	Spring Black Stem and Leaf Spot (<i>Phoma</i>)	Numerous black spots on lower leaves, petioles, and stems. Leaf spots often coalesce and become medium or light brown. Spotted leaves become yellow and	Early cutting; proper fertility management.
<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
		fall. Stem and petiole lesions may completely girdle the area and cause death to the foliage beyond. <i>Phoma</i> may also cause a crown and root rot.	
	Stemphyllium Leaf Spot	Leaf spots are oval, sunken, dark brown with light brown centers, and usually surrounded by a yellow halo. Older spots may have concentric rings. This fungus may also cause black areas on stems.	Frequent harvesting.
	White Mold (<i>Sclerotinia</i>)	Lower stems become yellow and limp. Eventually, dying stems and crowns become covered with a white fluffy mass of mycelium which may also spread out over the soil near the infected plants. Hard, black, slightly irregularly-shaped bodies (sclerotia) about 1-2 mm or 1/16-1/8 inch may develop on and in the dying stems and crowns.	Deep plow; 2-3 year rotation from forage legumes.
Apple, Pear	Fireblight (<i>Erwinia</i>)	Flowers, pedicels, and	leaves become black or

dark brown and limp;
canker development.

Sanitation, See AL
Pest Management
Handbook, see ANR-
542.

Azalea

Botryosphaeria Canker

Sunken cracked
lesions on branches.
Often this canker
follows cold injury or
some other type of
wound. Stressed
plants are often
involved.

Sanitation.

PLANT

DISEASE

DESCRIPTION

CONTROL

Botrytis Petal Blight

Large irregular areas of
blossoms turn brown;
brown areas are
covered with a gray
delicate webbing
during humid weather.

See AL Pest Manage-
ment Handbook.

Cercospora Leaf Spot

Roughly circular-
angular brown-black
spots (about 0.5 cm
diam.); spots are
usually associated
with stressed plants.

Sanitation of fallen
leaves. Maintain
proper fertility and
watering schedules.
Protective sprays of
Cleary's 3336 may be
applied.

Colletotrichum Leaf
Spot

Roughly circular
brown-black leaf spots
(about 0.5 cm diam.).
Spots often associated
with stressed plants.

See Cercospora Leaf
Spot.

Exobasidium Gall

Blossoms & leaves
develop green-pink-
white fleshy galls.

Sanitation; See AL
Pest Management
Handbook.

Ovulinia Petal Blight

Small white-brown
spots enlarge to
become large browned
areas on the blossoms.

See AL Pest Manage-
ment Handbook.

Pestalotia Blight
(Secondary)

Gray-white dried
blotches on foliage,
often along leaf edges.

Sanitation.

	Phytophthora Crown & Root Rot	Crowns & roots become brown and water-soaked, then dried.	Sanitation; See AL Pest Management Handbook.
	Rhizoctonia Aerial Blight	Medium-dark brown spots or blotches on lower leaves may involve 50-100% of leaf area. Dead leaves will fall.	See AL Pest Management Handbook.
<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
Begonia	Pythium Crown Rot, Root Rot	Lower stem and roots become a light brown color; tissues are rotted and water-soaked. Outer root cortex easily separates from inner central root stele tissues.	Remove damaged plants. Replace root-associated soil. Reduce water levels in the soil area.
Bentgrass	Pythium Blight	Irregular areas of turf become water-soaked and then pale brown.	See ANR-594.
	Ring Nematode Damage (<i>Criconeoides</i>)	Areas display stunting, yellowing, and dieback.	See ANR-523.
Bermuda	Brown Patch (<i>Rhizoctonia</i>)	Light brown, large, circular patches occur on lawns; grass blades show medium brown lesions and/or crowns show lesions and rot.	See AL Pest Management Handbook. See ANR-492.
Blackberry	Anthracnose (<i>Elsinoe</i>)	Sunken brown-cream colored lesions on canes and foliage.	Sanitation. Liquid Lime Sulfur just prior to bud break or later apply Benlate.
	Orange Rust (<i>Gymnoconia nitens</i>)	Young shoots, leaves are stunted, misshapen. Lower leaf	surfaces become covered with bright orange powdery

blisters. Infected leaves wither and drop.

Sanitation. Improve air circulation.

PLANT

DISEASE

DESCRIPTION

CONTROL

Rosette
(*Cercospora*)

Plants develop an abnormal growth habit with abnormal rosetted shoots developing from vegetative buds. The rosetted or witches broom growths are pale green initially but become bronze later. Infected blossoms are larger than normal with twisted, bunchy petals.

See the AL Pest Management Handbook.

Boxwood

Macrophoma Blight-Stress

During the winter, boxwood may change color and take on a reddish tint. These discolored plants sometimes develop a more serious yellowing and blight with tiny black dots scattered on yellowed leaves; cankers may develop. This is generally a problem of stressed plants.

Pruning; proper maintenance.

Phytophthora Root Rot

Roots become brown, decayed, water-soaked; the outer cortex easily pulls away from the inner tissues.

Sanitation. Check soil water relations and fertilizer levels. Chemical control depends upon plant type.

Volutella Blight

Dieback from branch

and twig cankers.

Leaves also become

blighted. Orange spores of the fungus develop in masses on twigs and leaves when conditions are humid.

Pruning and removal of fallen leaves. Maintain healthy plants. See the AL Pest Management Handbook for fungicides.

<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
Camellia	Algal Leaf Spot (<i>Cephaleuros</i>)	Green or green-red, slightly raised leaf spots with slightly wavy margins. Old spots have white centers.	See the AL Pest Management Handbook.
	Colletotrichum Leaf Spot	Round, light brown, circular spots which may contain brown-white-orange specks that are the spore bodies.	Sanitation. Cleary's 3336 protective sprays.
	Ringspot Virus	Yellow or brown rings develop on leaves. Plants may be stunted.	Maintain plants with proper fertilization and water schedules.
Cedar, Red (Juniper)	Cedar Apple Rust (<i>Gymnosporangium</i>)	Large (1-3 inch diameter), woody galls on stems develop orange, jelly-like projections (one or more inches long) which protrude from the entire surface of the gall.	Remove galls before orange "fingers" develop. Apply protective fungicide sprays to apple and crabapple. See AL Pest Management Handbook.
	Pestalotia Tip Blight	Tips of twigs dieback.	Water & fertilize to promote vigorous plants. Selective pruning.
Centipede	Brown Patch (<i>Rhizoctonia</i>)	Light brown, large, circular patches occur on lawns; grass blades show medium brown	lesions or crowns show lesions & rot.

See AL Pest Management Handbook. See ANR-492.

	Fairy Ring	Circles or arcs of dead grass may be associated with mushrooms.	See ANR-372.
	Lesion Nematode (<i>Pratylenchus sp.</i>)	Areas become yellow, thinned with plant dieback.	See ANR-523.
<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
Cherry Laurel	Bacterial Leaf Spot (<i>Xanthomonas</i>)	Medium to dark-brown circular or slightly irregular spots develop. As spots age, they dry and eventually the whole spot may fall out. Small, faint halos present sometimes.	Sanitation; basic copper sulfate may give protective control. See AL Pest Management Handbook.
	Cercospora Leaf Spot	Irregular brown spots of variable size.	Sanitation of leaves in the fall.
Clematis, Evergreen	Pythium Root Rot	Roots become rotted, light brown and water-soaked.	Remove damaged plants. Also remove root-associated soil. Reduce water levels in the soil.
Cleyera	Anthracnose (<i>Colletotrichum</i>)	Reddish circular-irregularly shaped spots, blotches (about 5 mm diam.) scattered on leaves.	Sanitation. Cleary's 3336 or Domain protective sprays.
	Entomosporium Leaf Spot	Red-black, round-irregular spots develop. Some spots coalesce.	Sanitation. Cleary's 3336 will help some.
Cyclamen	Fusarium Crown Rot	Lower stem tissues develop a dry decay.	Remove damaged plants. Do not plant cyclamen in this soil for many years. In a greenhouse, Cleary's

3336 or Banrot may be used as protective drenches.

Daffodil

Fusarium Bulb Rot

Leaves of bulb develop a dry rot.

Remove damaged bulbs and replace some soil in the area. Crop rotation for several years, if possible.

<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
Daylily	Leaf Streak (<i>Aurobasidium</i>)	Elongated yellow streaks develop on leaves. Eventually streaks become brown.	Damaged foliage should be removed. Do not water overhead. Cleary's 3336 may be applied as protective sprays.
	Pythium Root Rot	Roots become rotted, light brown, and water-soaked.	Remove damaged plants. Also remove root-associated soil. Reduce water levels in the soil.
Rust (<i>Puccinia hemerocallidis</i>)	Yellow small spots develop on leaves; eventually yellow spots may develop rusty spore masses; later leaves turn yellow and brown.	Sanitation. Select non rust susceptible cultivars. Protective fungicide sprays. See Timely Information P P 5 0 6 . For homeowner, Immunox or Fertiloam System Fungicides may be used. For commercial growers, Banner Maxx, Heritage, or Eagle may be used.	
Euonymus	Anthracnose (<i>Elsinoe</i>)	Brown circular-angular lesions on leaves.	Sanitation. See the Alabama Pest Management Handbook.
Fescue, Tall	Net Blotch (<i>Helminthosporium</i>)	Small, elongated, medium-brown or reddish-brown spots (1-2 mm or 1/16-1/8 inch long). Usually spots are abundantly scattered over leaf blades.	See AL Pest Management Handbook or ANR-621.
	Striped Smut	Black, thin stripes of black smut spores along the leaf. Plants may be stunted with yellow streaking of leaves.	Sanitation; fungicide-treated-seed; See A. Hagan.

<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
Gardenia	Pestalotia Leaf Spot	Gray, brown leaf spots.	Remove damaged leaves and leaf debris. Leaf spot often secondary after cold damage.
Garlicvine (<i>Cydista</i>)	Powdery Mildew (<i>Oidium</i>)	White, powdery coating on leaves; some new growth distortions.	Sanitation. Improve air circulation.
Geranium	Bacterial Blight (<i>Xanthomonas campestris</i> pv. <i>pelargonii</i>)	Black, angular, water-soaked spots on leaves and stems; wilt; dieback.	Sanitation; See the AL Pest Management Handbook.
	Botrytis Blight	Brown leaf spots & blight of blossoms and leaves. Stem cankers may develop as brown stem lesions.	See AL Pest Management Handbook.
	Pythium Stem & Root Rot	Lower stems become black and rotted; roots also become brown or black and decayed.	See the AL Pest Management Handbook.
Gomphrena	Tomato Spotted Wilt Virus	New growth is stunted; dark brown/black leaf spots and upper leaf surface bronzing present.	Remove damaged plants. Control thrips.
Greenhouse Crops	Bacterial Leaf Spot	Small-large, irregular, dark, wet-looking spots which often become dry in their centers and may have yellow zones or borders at their outer edges.	Strict sanitation; eliminate overhead irrigation if possible; copper sprays help some. See AL Pest Management Handbook.
	Botrytis Blight	See Azalea.	See AL Pest Management Handbook. Decrease humidity.

<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
	Downy Mildews	Diffuse yellow spots on upper leaf surfaces with corresponding areas on lower leaf surfaces showing darker color, often with tan-gray fungal growth.	See AL Pest Management Handbook for specific controls.
	Phytophthora Root Rot	Roots become, brown, decayed, water-soaked; the outer cortex easily pulls away from the inner tissues.	Sanitation. Check soil water relations and fertilizer levels. Chemical control depends on plant type.
Holly	Botryosphaeria Leaf Spot	Black, circular spots; cankers may develop.	Remove damaged and fallen leaves, if practical. Cleary's 3336 may be used to give protective disease control.
	Colletotrichum Leaf Spot	Brown, circular, small spots.	Sanitation. Cleary's 3336 may help.
	Pestalotia Leaf Spot	Gray, brown irregular blotches.	Sanitation.
Hosta	Pythium Crown Rot	Brown, wet, water-soaked decay at lower stem near the soil line.	Sanitation; improve soil drainage; rotate away from Hosta; Subdue 2E after test treatment.
Indian Hawthorne	Entomosporium Leaf Spot	Reddish spots with black centers.	Sanitation. Protective fungicide sprays.
Iris, Bearded	Heterosporium Leaf Spot	Brown, usually elliptical, sometimes large (1-2 cm) spots.	Sanitation. Protective sprays of Cleary's 3336.

<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
Jerusalem Artichoke	Crown Gall (<i>Agrobacterium tumefaciens</i>)	Hard, woody spherical gall develops at base of stem.	Removal and destruction of plant(s). Rotate area into crown gall resistant plant. See Disease Note ANR-944.
Juniper	Cedar Apple Rust (<i>Gymnosporangium virginianae</i>)	Spherical woody galls develop on twigs and branches; with warm wet weather, orange, jelly-like projections or fingers extend from the galls.	Remove galls before they develop orange spore projections; See ANR-468.
Kumquat	Anthrachnose	Leaf spots brown and sometimes zonate.	Sanitation of all fallen leaves. Water at soil level.
Lavender	Botrytis Blight	Brown leaf spots and foliage blight. Blossoms may also become spotted or blighted.	Remove damaged plant parts. Reduce humidity and water levels if possible.
Leucothoe	Cercospora Leaf Spot	Brown, round or irregular spots on leaves.	Sanitation. Cleary's 3336 could be used to provide protective treatment.
Leyland Cypress	Phomopsis Twig Canker	Sunken circular or elliptical brown lesions on twigs.	Sanitation; protective spray of Cleary's 3336.
	Cercospora Blight (Cercospora) Blight	Blight usually starts on lower inner needles.	Pruning, sanitation, protective sprays of Cleary's 3336.

<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
	Macrophoma , Pestalotia Needle Blight-Secondary	Brown needles with tiny black specks that are the spore bodies of these fungi. Usually occurs on stressed or weakened plants.	Sanitation.
	Macrophoma , Phomopsis Cankers, Maybe Secondary or Weak Pathogens	Small, sunken, brown lesions on twigs and small stems; black specks of spore bodies present on lesion surfaces sometimes.	Sanitation. Cleary's 3336 protective sprays.
	Seiridium Canker	Sunken lesions on twigs and branches; usually sap oozes around the cankers.	Sanitation. Maintain healthy trees. See the AL Pest Management Handbook under Phomopsis.
Ligustrum	Cercospora Leaf Spot	Brown circular or irregularly shaped leaf spots.	Sanitation. Improve air circulation. Apply Cleary's 3336 spray. See AL Pest Management Hand- book.
Lilac	Bacterial Leaf Spot	Black, angular, water- soaked spots.	Sanitation. See AL Pest Management Handbook.
	Pythium Root Rot	Roots are off-color, decayed, water- soaked.	Sanitation; Improve soil drainage; crop rotation.
Magnolia	Phyllosticta Leaf Spot	Small-large (0.5-1 cm) light brown usually circular spots.	See the AL Pest Management Hand- book under 'Leaf Spot'.
Maple, Red	Botryosphaeria Canker	Dry, cracked, dark brown-black branch lesions.	Prune out cankers.

<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
Million Belles	Pythium Root Rot	Roots become light brown and wet-rotted.	Remove damaged plants. Reduce soil water content. Some soil replacement in the landscape could be helpful.
Mondograss	Anthracnose (<i>Colletotrichum</i>)	Brown or reddish-brown blotches on leaf blades. Often blotches are along leaf edges or tips.	See the AL Pest Management Handbook.
Nandina, Dwarf	Phytophthora Root Rot	Roots become water-soaked, brown and eventually dried. Foliage shows, dieback, wilt, poor growth.	Sanitation.
Oak	Botryosphaeria Canker	Lesions are usually sunken with cracked margins.	Pruning.
	Hypoxyton Canker	A thick, black, hard fungus layer develops just under bark.	Prune out cankers.
Oats	Barley Yellow Dwarf Virus	Older foliage becomes yellow-red in color; plants become stunted with excess tillering.	--
	Drechslera Leaf Spot	Small brown, elongated leaf spots. Sometimes spots may appear rectangular in shape.	--

<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
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Pachysandra	Volutella Blight	Brown, sunken, shrivelled lesions on stems. Orange dots (fruiting bodies with spores) may be seen on surface of lesions.	Prune out damaged areas.
Peach	Armillaria Trunk/Root Rot	Trees do not leaf out in the spring or they leaf out and dieback a few weeks later. Black thread-like structures +/- or white thin fungal mats may be present under the bark of trunk near soil line.	Sanitation of infected plants including roots.
	Black Knot	Green or black elongated swellings along branches.	Sanitation. See the AL Pest Management Handbook.
	Crown Gall	Irregular brown, woody swellings at the lower trunk or upper roots.	Sanitation. Crop rotation. See Ed Sikora.
	Botryosphaeria Canker, Gummosis	Usually oval-shaped sunken lesions with cracked edges and oozing of vascular gummy fluid.	Sanitation.
	Leaf Curl (<i>Taphrina</i>)	Leaves become thickened, puckered and sometimes reddish-green.	Sanitation; See the Ala. Pest Management Handbook.
	Phomopsis Twig Blight	Branches show wilt and dieback resulting from branch cankers; cankers are oval or elliptical and sunken; wood discoloration is evident when outer bark is removed.	Sanitation. See Ed Sikora.
<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>

Pear	Entomosporium Leaf Spot	Small (C-¼ inch) black spots on leaves.	Sanitation.
Pear, Bradford	Fireblight (<i>Erwinia</i>)	Black-colored dieback, blossom blight, twig-tips may have a shepherd's crook.	Sanitation; See AL Pest Management Handbook.
Periwinkle	Pythium Root Rot	Roots brown and water-soaked.	Sanitation. See AL Pest Management Handbook.
Petunia	<i>Phytophthora parasitica</i> Crown Rot	Cankers and blight areas develop on foliage.	Sanitation. Daconil, Echo, Thalonil, and Aliette are labelled.
	Pythium Root Rot	See Periwinkle.	
Phlox (and Other Ornamentals)	Powdery Mildews	Buff or white powdery patches on leaves and stems; some distortion of new growth.	Sanitation. Cleary's 3336 may be used.
	Rhizoctonia Blight	Lower leaves become brown blotched with whole leaves and stems sometimes affected.	Sanitation. Cleary's 3336 may be used.
Photinia	Armillaria Root Rot	Decline of plant. Check the lower trunk or roots for a thin, white mycelial layer under the bark. Also look for honey-colored mushrooms.	Sanitation of plant and roots. Crop rotation. See ANR-907.
	Entomosporium Leaf Spot	Dark red spots (usually 3-4 mm or C inch diam.) on upper and lower leaf surfaces. Spots often coalesce.	Pruning; Fungicide treatment; See Cir. ANR-392 or AL Pest Management Handbook.

PLANT

DISEASE

DESCRIPTION

CONTROL

Pine, Loblolly	Fusiforme Rust (<i>Cronartium quercuum</i> f. <i>sp. fusiforme</i>)	Rusty, powdery coating appears on the surface of fusiform (elliptical-shaped) swellings on branches and trunks. (Near-by oaks will develop small black leaf spots in late spring).	Sanitation in landscape settings; protective fungicide sprays available for nursery situations. See the AL Pest Management Handbook.
	Needle Rust (<i>Coleosporium</i>)	Cream-colored pustules (2-3 mm or 1/8 inch wide and high) develop along the edges of needles.	Sanitation.
Pine Seedlings, Long Leaf	Rhizoctonia Root Rot	Brown lesions, often shrivelled, on roots.	Sanitation.
Pine, Virginia	Fusarium Pitch Canker	Sunken, elliptical lesions on branches and trunks covered with pine resin.	Sanitation.
	Needle Rust (<i>Coleosporium</i>)	Cream-colored pustules (2-3 mm or 1/8 inch wide and high) develop along the edges of needles.	Sanitation.
	Rhizosphaeria Needle Cast (<i>Coleosporium</i>)	Small brown spots on needles. Needles fall when disease severe.	Sanitation of fallen needles if possible. See the AL Pest Management Handbook for fungicides under 'Needlecast and Other Needle Diseases'.

PLANT

DISEASE

DESCRIPTION

CONTROL

Plum	Black Knot (<i>Plowrightia</i>)	In early spring, green swollen, elongated galls & cankers develop. As spring and summer progresses, galls become black.	Pruning; See ANR-1055 (Disease Note) for more information. In late winter, apply a dormant spray of liquid lime sulfur. At green tip stage, apply Captan.
Privet	Cercospora Leaf Spot	Large (¼ - ½ inch diam.), medium brown circular or irregular spots.	See AL Pest Management Handbook; Sanitation.
Quince	Fireblight (<i>Erwinia amylovora</i>)	Blossom blight followed by rapid dieback.	Severe pruning.
Red Cedar	Phomopsis Dieback	Tips of twigs are brown. The dieback will extend further down the twig as time progresses; canker.	Sanitation; See AL Pest Management Handbook.
Rhododendron Azalea	Botryosphaeria Canker	Elongated, elliptical, sunken, brown cankers with margins that are often cracked.	Sanitation.
Rhododendron	Cercospora Leaf Spot	Brown spots (5-10 mm or ¼-½ inch diam.) usually circular.	Protective sprays of Cleary's 3336 or Domain. Sanitation.
	Pestalotia Leaf Spot	Gray-brown blotches on leaves, often develop on winter stressed or injured leaves.	Sanitation.
Rose	Black Spot (<i>Diplocarpon rosa</i>)	Black, circular spots with feathery edges.	See ANR-505 & AL Pest Management Handbook.
	Brown Canker (<i>Diaporthe umbrina</i>)	Elongated, brown, sunken lesions (cankers) on canes.	Sanitation - pruning. Apply protective fungicides labelled for black spot control.

PLANT

<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>	
	Coniothyrium Canker	A brown oval or roughly oval sunken lesion on rose canes. Microscopic exam usually required to distinguish this canker from some others.	Sanitation. Apply protective fungicides labelled for black spot control.
	Powdery Mildew (<i>Sphaerotheca spp.</i>)	White powdery coating on leaves/stems.	See ANR-407 & AL Pest Management Handbook.
Rose, Hybrid Tea	Nectria Canker	Sunken cane lesions with some callus production around lesion edges.	Sanitation. Protective fungicides labelled for black spot.
	Rust (<i>Phragmidium</i>)	Yellow spots first develop; later orange, powdery spore masses cover leaf spots; eventually spots become brown and leaves fall.	Sanitation; Dithane, Fore, Protect, Eagle, Systhane may be used for protection.
Rosemary	Botrytis Blight	Brown-gray blight areas and leaf spots.	Sanitation. Reduce humidity.
Ryegrass	Pythium Blight	Leaves develop large, brown, water-soaked spots/lesions.	See ANR-594 & the AL Pest Management Handbook.
Satsuma	Anthrachnose (<i>Colletotrichum sp.</i>)	Brown circular leaf spots, sometimes zonate.	Sanitation. Improve air circulation.
Snapdragon	Anthrachnose	Small, brown, round leaf spots.	Sanitation. See AL Pest Management Handbook.
	Pythium Irregular Crown & Root Rot	Roots become light-brown and water-soaked. Foliage may become yellow (especially lower foliage) with wilt and dieback.	Remove damaged plants. Reduce water levels of soil. Replacement of some soil may be helpful. Improve soil drainage.

<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>
St. Augustinegrass	Brown Patch	Light brown, large, circular patches occur on lawns; grass blades show medium brown lesions and/or crowns show lesions and rot.	See AL Pest Management Handbook. See ANR-492.
	Take-All Patch (<i>Gaeumannomyces</i>)	Patch areas thin out with individual plants dying out.	Keep the soil pH about 5.5-6.0 and use ammonium (not nitrate) forms of nitrogen.
Strawberry	Anthracnose Fruit Rot (<i>Colletotrichum</i>)	Brown-black rotting develops on fruit. Spots initially are circular. Older spots may become orange due to spore production.	See the AL Pest Management Handbook or Spray Guide Bulletin for Small Fruit.
	Bacterial Leaf Spot	Black, angular, water-soaked edged leaf spots.	Sanitation; do not water over-head; copper protective sprays. See the AL Pest Management Handbook.
	Botrytis Fruit Rot	Gray-brown rotted areas often covered with gray fluffy mycelium.	Sanitation. See AL Pest Management Handbook or Spray Guide Bulletin for Small Fruit.
	Mycosphaerella Leaf Spot	Symptoms vary with temperature and strawberry species. In many situations, leaf spots appear as small, circular spots (2-3 mm or 1/8 inch diam.) with light centers and purple margins. Numerous spots may coalesce and cause total leaf death. On some cultivars, spots	See AL Pest Management Handbook or the Spray Guide Bulletin for Small Fruit.
<u>PLANT</u>	<u>DISEASE</u>	<u>DESCRIPTION</u>	<u>CONTROL</u>

		become very large, involving a good portion of the leaf area.	
	Phytophthora Crown & Petiole Rot	Reddish discoloration of inner crown section of plant. Petioles become brown and decayed.	Sanitation. Reduce irrigation and/or improve soil drainage. See AL Pest Management Handbook.
Sweet Potato	Black Rot (<i>Ceratocystic fimbriata</i>)	Black, firm rot on root surface does not extend beyond the vascular system, about 1/8 inch.	Sanitation. See AL Pest Management Handbook for a commercial crop.
Thrift (<i>Phlox subulatus</i>)	Anthrachnose (<i>Colletotrichum</i>)	Brown or reddish-brown spots, blotches (1-3 mm diam.) develop. Spot coalescence.	Sanitation; protective sprays of Cleary's 3336 or Domain may help.
Tomato	Bacterial Leaf Spot (<i>Xanthomonas axonopodis</i>)	Black, circular, water-soaked spots.	See ANR-71 and the AL Pest Management Handbook.
	Late Blight (<i>Phytophthora infestans</i>)	Brown, wet-looking blight, spots, and cankers develop; dieback.	Sanitation; protective fungicides. See AL Pest Management Handbook; crop rotation.
	Pythium Root Rot	Roots slightly discolored, water-soaked.	Sanitation. See AL Pest Management Handbook.
	Rhizoctonia Crown Rot	The stem (crown) at the soil-line becomes brown, dried, and rotted.	Crop rotation; possibly soil solarization.

PLANT

DISEASE

DESCRIPTION

CONTROL

Torenia	Pythium Blight	Roots become light brown and show a wet rot. Foliage wilts and shows dieback. Lower foliage may become yellow, then wilt with dieback.	Remove damaged plants. Reduce water levels of soil. Replacement of some soil may be helpful. Improve soil drainage.
Tulip	Fusarium and Penicillium Bulb Rots	Bulbs develop sunken brown-gray dried lesions. Penicillium sporulation may occur as a blue-gray mold on the surface of the sunken rotted area.	Sanitation. Bulb dips. See the AL Pest Management Handbook.
Turnip	Cercospora Leaf Spot	Brown or tan or cream-colored irregular spots (.2-1 cm diam.) develop on foliage.	Sanitation; See the AL Pest Management Handbook or Spray Guide Bulletin for Vegetables.
Vinca, Annual	Rhizoctonia Stem Rot	Dark brown, dried, sunken lesion(s) on stems. Dieback of affected stems.	Sanitation; remove damaged plants; Chipco 26019, Cleary's 3336, or Domain protective sprays; See AL Pest Management Handbook.
Wax Myrtle	Botryosphaeria Canker	Dark, cracked, slightly sunken lesions on branches. Often follows cold injury.	Pruning.
Wheat	Bacterial Blight (Black Chaff) (<i>Xanthomonas</i>)	Early in the season blackish elongated lesions may develop on foliage. Later, glumes will become spotted with brown-black lesions which may be confused with <i>Septoria</i> glume blotch.	No control except to deep plow or crop rotation.

PLANT

DISEASE

DESCRIPTION

CONTROL

	Barley Yellow Dwarf Virus	Yellowing and reddening of older leaves; excessive tillering; stunting.	No control except to control aphids, if possible.
	Leaf Rust (<i>Puccinia</i>)	Orange-red dots and patches of spore masses on leaves.	See Ala. Spray Guide.
	Powdery Mildew (<i>Erysiphe</i>)	Gray-white or buff colored powdery blotches usually on leaf blades.	See Ala. Spray Guide.
	Septoria Blotch	Yellow flecks on lower leaves enlarge into irregular, elongated lesions (1-5 x 4-15 mm or 1/16-C x C-1/2 inches) that become brownish with some spots developing gray centers.	Generally no control needed.
	Take-all (<i>Gaeumannomyces</i>)	Lower stem and roots at the soil line become blackened and decayed.	Crop rotation to oats, corn, or legumes for 1 year.
	Wheat Soilborne Mosaic Virus	Older leaves show a yellow-green mosaic of short, thin, yellow lesions (usually about C inch long). Plants become stunted.	Crop rotation.
Zinnia	Botrytis Canker	Brown, dry, sunken lesions; a gray, thin, mold may develop on the surface when conditions humid and in 70s.	Sanitation. See the AL Pest Management Handbook.

PLANT

DISEASE

DESCRIPTION

CONTROL

Zoysia

Brown Patch
(*Rhizoctonia*)

Small or large circular brown patches on lawn; grass blades show medium brown lesions or crowns show lesions and rot.

See ANR- 492; see AL Pest Management Handbook.