



PLANT PATHOLOGY SERIES

# TIMELY INFORMATION

## Agriculture & Natural Resources

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PP-504

### APRIL PLANT DISEASES FROM THE AUBURN PLANT DIAGNOSTIC LAB

### APRIL PLANT DISEASES FROM THE BIRMINGHAM PLANT DIAGNOSTIC LAB

### DISEASE POSSIBILITIES FOR MAY

### LAB NOTES

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#### Auburn Plant Disease Report-April (J. Mullen)

April was a good month for seasonal spring temperatures and adequate rainfall in much of the state with the exception of some southern sections of the state. Our sample numbers in the lab increased dramatically from March with abiotic problems outnumbering the biotic diseases at a 4:1 ratio! Many of the abiotic problems involved diebacks we believe relate to drought situations of last summer and fall.

Azalea diseases seen included *Phytophthora* foliage blight, *Colletotrichum* leaf spot and powdery mildew. *Phytophthora* foliage blight appears as leaf spots/blight and dieback. Positive confirmation of *Phytophthora* usually requires culture work or ELISA testing. Disease control involves sanitation (removal of infected plants). Protective fungicide treatments are recommended in nursery situations. See ANR-571 or the Alabama Pest Management Handbook for specific fungicide recommendations. *Phytophthora* may develop as

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crown/root disease or foliage disease, depending upon the specific species involved and the plant situation. Phytophthora may be a problem when conditions have been wet for a prolonged period of time. Colletotrichum leaf spot on azalea develops as circular dark brown or black spots, about 2-3mm diameter. This disease is controlled by removal of all fallen leaves and application of protective fungicide treatments. See the Alabama Pest Management Handbook for current fungicides available. Powdery mildew on azalea usually develops in the spring or fall when moderate temperatures and high humidity conditions exist. In many situations disease does not develop to a significant extent. If disease continues to develop and humidity levels remain high in the foliage canopy, protective fungicides may be used.

Black rot on crabapple was diagnosed on the basis of the presence of *Botryosphaeria obtusa* fruiting bodies developing on cankers. In the spring, spores from the cankers and fruit mummies will infect developing leaves and fruit with leaf spots and fruit rot developing in May and June-July. Pruning of cankers in early spring is recommended, making cuts 3-5 inches beyond the canker margins. All fallen leaf debris and fruit mummies should be removed from the area before spring growth begins. If disease has been a problem in the past, protective fungicide sprays may be applied throughout the growing season. See the Alabama Pest Management Handbook, Vol. 1 (commercial) or ANR-50 (homeowner) for current recommendations.

Fireblight, caused by the bacterium *Erwinia amylovora*, is a problem on pears and apples every spring. When a late cold event occurs, fireblight is often more of a problem as the bacteria will enter cold-damaged plant tissues. Bacteria overwinter in cankers of infected trees, and insects and splashing rain will move bacteria to blossoms where most infection takes place. Streptomycin sprays on healthy blossoms will prevent blossom infections. Once the bacteria become established in the flowers, disease will spread into branches causing dieback that develops quickly. Once trees become infected, severe pruning is the only control method available. Pruning cuts should be made 10-14 inches beyond the canker margin.

Entomosporium leaf spot on photinia is typically a serious disease. Red-black leaf spots develop profusely on upper and lower leaf surfaces when temperatures are between 55°F and 80° and leaf surfaces are wet. Severe pruning, clean-up of all fallen leaves, and regular fungicide sprays during spring and fall will help control this disease. Spotted leaves will drop. Shrub replacement is often the most practical recommendation.

Downy mildew of rose usually begins with yellow spots with indefinite margins. When conditions are cool and humid, the thin gray fungal growth of downy mildew will develop on lower leaf surfaces of the spots. As spots age, they become dark brown. Downy mildew may be difficult to confirm sometimes as it is an obligate parasite (We are not able to grow it out in culture.).

Cercospora leaf spots are common on turnips and other related plants during March and April. Spots are typically a light brown, cream, or white with irregular shapes. Spores of the

fungus are usually observable with microscopic study. Sanitation and crop rotation will usually help control this disease. See the Alabama Pest Management Handbook for fungicide recommendations.

Brown patch has been diagnosed in several situations on centipede and St. Augustine grass this past month. Cultural modifications (nitrogen and thatch) and application of protective fungicide treatments are usually necessary for control of this disease. Fungicide treatments should be applied 3-4 times, according to label directions, for good disease control. See the Alabama Pest Management Handbook and ANR-492 for specific fungicides.

The take-all fungus was observed on several St. Augustine samples and on one centipede sample. See ANR-823. The relationship of this fungus disease to environmental stress is not completely understood. Preliminary attempts to reproduce take-all patch in a greenhouse situation have not been successful. Recommendations remain as they have been described in ANR-823. Long term control requires soil pH be kept about 6.0. Higher pH levels will stimulate fungal development. Also, nitrate fertilizers should be avoided since they are known to encourage fungal development. A third environment factor known to stimulate fungal activity is moisture. Frequent, short showers or irrigations are known to cause increased disease development. Fungicides recommended to control take-all are expensive, and their use is not practical for many homeowner situations. Reports indicate that these fungicides may not always provide 100% disease control.

A rust disease caused by *Puccinia hemerocallidis*, new to the U.S., was found on daylilies in some southeastern nurseries last summer. USDA and APHIS pathologists and mycologists and state agriculture pathologists and inspectors are watching for more occurrences of this disease this year. The rust has been confirmed in nurseries in Alabama, Florida, Georgia, and South Carolina. Foliage is severely damaged by the infection. The characteristic rust pustules develop and leaves will then become necrotic. The rust has been reported on the following varieties of daylily: Pardon Me, Gertrude Condon, Starstruck, Stella D'Oro, Joan Senior, Colonel Scarborough, Crystal Tide, Imperial Guard, Double Buttercup, and Attribution. Pardon Me is reported to be the most susceptible. If you think you may have seen this disease, send a sample for confirmation to the Plant Diagnostic Lab at Auburn or Birmingham. If the sample appears to be rust, we will send it on to USDA mycologists in Beltsville, MD for confirmation. The alternate host for this rust disease is the perennial *Patrinia spp.* which is grown in the U.S. as an ornamental. So far rust disease has not been detected on this plant.

Table 1. 2001 April Plant Diseases Seen In The Plant Diagnostic Lab at Auburn.

<u>Plant</u>	<u>Diagnosis</u>	<u>County</u>
Azalea	Colletotrichum Leaf Spot	DeKalb

<u>Plant</u>	<u>Diagnosis</u>	<u>County</u>
	Phytophthora Foliage Blight	*
	Powdery Mildew	Montgomery
Amaryllis	Stagnospora Leaf Spot	Geneva, Montgomery
Bermuda	Bipolaris Blight & Crown Rot	Chilton
	Pythium Blight	Jefferson
Centipede	Brown Patch ( <i>Rhizoctonia</i> )	Clarke
	Take-All Patch ( <i>Gaeumannomyces</i> )	Houston
Crabapple	Black Rot ( <i>Botryosphaeria</i> )	Montgomery
Dianthus	Alternaria Leaf Spot	Escambia
Dogwood	Botrytis Blossom Blight	Montgomery
Impatiens	Colletotrichum Leaf Spot	DeKalb
Liriope	Fusarium Root Decay	Calhoun
Pear	Fireblight ( <i>Erwinia</i> )	Geneva
Photinia	Entomosporium Leaf Spot	Lee
Rose	Downy Mildew ( <i>Peronospora</i> )	*
	Virus	Calhoun
St. Augustine	Brown Patch ( <i>Rhizoctonia</i> )	Butler, Pike, Elmore
	Take-All Patch ( <i>Gaeumannomyces</i> )	Clarke, Conecuh, Montgomery, Pike, Tuscaloosa

<u>Plant</u>	<u>Diagnosis</u>	<u>County</u>
Turnip	Cercospora Leaf Spot	Conecuh

\*County locations for nursery/greenhouse problems are not reported.

### Birmingham Plant Disease Report-April (J. Jacobi)

The Birmingham lab had its busiest month since opening last year. We logged in 81 samples last month, compared with 29 in April 2000. Brown patch was the most common disease on turfgrass, with several samples on zoysiagrass and two samples from hybrid bermudagrass (less common). The patches on the bermudagrass ranged in size from 3 feet to nearly 20 feet in diameter. Refer to ANR-472, "Controlling Brown Patch on Warm-Season Turfgrasses in Home Lawns", for a detailed description on controlling brown patch. One of the more interesting diseases seen last month was an unidentified fungal leaf spot (possibly *Cercospora* spp.) on the perennial Gaillardia.

Table 2. 2001 April Plant Problems Seen In the Birmingham Plant Diagnostic Lab.

<u>Plant</u>	<u>Disease/Insect Problem</u>	<u>County</u>
Arugula	Pythium Root Rot	Jefferson
Azalea	Pythium Root Rot	Jefferson
	Phomopsis Dieback	Jefferson
	Phytophthora Root Rot	Jefferson
	Azalea Petal Blight	Jefferson
Bermudagrass	White Grubs (Japanese Beetle)	Jefferson
	Brown Patch (2)	Jefferson
	Spring Dead Spot	Jefferson
Boxwood, American	Volutella Blight	Jefferson
	Phytophthora Root Rot	Jefferson

<u>Plant</u>	<u>Disease/Insect Problem</u>	<u>County</u>
Boxwood, English	Macrophoma Blight (2) Boxwood Leaf Miner	Jefferson
	Volutella Blight	Jefferson
Camellia, Sasanqua	Dieback/Anthracnose	Jefferson
Dianthus	Alternaria Leaf Spot	Jefferson
Gaillardia	Fungal Leaf Spot	Jefferson
Holly, Japanese 'Compacta'	Black Root Rot ( <i>Thielaviopsis</i> spp.)	Jefferson
Indian Hawthorne	Entomosporium Leaf Spot	Jefferson
Juniper, Blue Pacific	Phytophthora Root Rot	Jefferson
Maple, Florida	Anthracnose	St. Clair
Maple, Japanese	Anthracnose	Shelby
Muscadine Grape	Ambrosia Beetle	Jefferson
Oak, Black	Hypoxyton Canker	Shelby
Pansy	Pythium Root and Crown Rot	Jefferson
Pear	Fire Blight	Henry
Poinsettia	Powdery Mildew	Jefferson
Privet, variegated	Privet Rust Mite	Jefferson
St. Augustinegrass	Brown Patch	Jefferson
	Take-All Root Rot	Jefferson
Sycamore	Anthracnose	Jefferson

<u>Plant</u>	<u>Disease/Insect Problem</u>	<u>County</u>
Zoysiagrass	Brown Patch	Coosa
	Brown Patch	Shelby
	Brown Patch (2)	Jefferson

### Disease Possibilities For May

May has begun, as it typically does, with an abundance of turf samples. We've seen brown patch on centipede, and St. Augustine grass with take-all patch. We have also seen tomato spotted wilt virus on Gomphrena earlier this year.

The list below includes some common disease problems received in the lab during May of the past few years. Comments on control practices are brief. Refer to the Ala. Pest Management Handbook or appropriate fact sheet or disease notes publications for details on disease control.

Table 3. Brief Disease Descriptions and Control Recommendations for Diseases Often Seen in May.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
Any	Slime Mold	Not actually a disease; gray, black, pink, or yellow slimy or powdery masses on plants or soil; plasmodium or slime stage may be a mass of paper-thin ruffled 'sheets' the consistently of a thinnish layer of 'Jello'; the spore stage is often powdery with the coloration of black, pink, yellow or orange from spore production.	Wash off with a strong stream of water; physical removal.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
Apple	Armillaria Root Rot	Dieback; thin, white mycelial layer just under bark, appressed to wood.	Removal of tree and roots; maintain healthy trees.
	Cedar-Apple Rust ( <i>Gymnosporangium</i> )	Bright yellow leaf spots (up to ¼ or ½" diam.).	Protective fungicide sprays; Removal of junipers. See ANR-468.
	Fire blight ( <i>Erwinia</i> )	Brown irregular blotches beginning on blossoms or at leaf margins; leaf blight; longitudinal, sunken, cracked cankers; twig blight.	Sanitation. Agri-strep at blossoming stage. See the Ala. Pest Management Handbook.
	Frogeye Leaf Spot ( <i>Botryosphaeria</i> )	Small (¼" diam.) circular-irregular spots with purple margins and brown centers.	Sanitation in the fall; protective sprays during growing season.
	Powdery Mildew ( <i>Podosphaera</i> )	Whitish powdery dusting on foliage; leaf deformity; blight.	Sanitation in the fall; protective fungicide sprays.
Armaryllis	Stagnospora Leaf Spot	Fairly large (¼-½ inch long) oval or elliptical or irregularly shaped red spots.	Sanitation. Protective sprays of Cleary's 3336 or Domain.
Ash	Anthrachnose ( <i>Discula</i> )	Brown irregular spots blotches.	Sanitation of fallen leaves.
Azalea	Aerial Blight ( <i>Rhizoctonia</i> )	Mostly seen in greenhouse-nursery situations; lower leaves become blighted and fall.	Sanitation; protective fungicide sprays.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Exobasidium Gall	Swollen blossom, leaf, and shoot galls. From mid April - mid May, galls change from a green to a white or pink-white color.	Sanitation; removal of galls while they are still green. Protective fungicide application may be made.
	Phytophthora Root Rot	Roots brown and water-soaked.	Sanitation. Protective fungicide drenches in nursery situations.
Bean, Garden	Alternaria Leaf Spot	Dark brown angular-circular spots (about 5 mm diam.) scattered on leaf surfaces.	Bravo 720 should control this problem.
	Bacterial Blight	Greasy, dark green irregular spots (1/4" diam.) become black and papery with wet looking margins sometimes surrounded by a yellow zone.	Protective sprays. See the Ala. Pesticide Handbook.
	Mosaic Viruses	Distinct pattern of dark green & light green or yellow on leaves.	Control weeds; control beetles and aphids; Do not save seed; remove diseased plants.
	Pythium Root Rot	Roots are soft, brown, water soaked.	Avoid wet conditions.
	Rhizoctonia Soreshin	Dark reddish-brown sunken lesion(s) on lower stem.	See Ala. Pest Management Handbook for a before-planting soil treatment.
Bee Balm	Powdery Mildew	Powdery white dusting on leaves; blight; distorted new growth.	Cleary's 3336; sanitation.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
Begonia	Bacterial Leaf Spot ( <i>Xanthomonas</i> )	Dark brown angular spots (about 5 mm diam. or less). Outer edges of spots may appear wet (water-soaked); centers of spots may dry and crack. Spots may coalesce.	See the Ala. Pest Management Handbook; Sanitation.
Bentgrass	<i>Bipolaris cyanodontis</i> Leaf Spot	Small, elliptical brown spots; spots may coalesce into blighted grass blades.	Sanitation of cut grass blades; good fertility practices; see Alabama Pest Management Handbook for recommended fungicides.
	Pythium Blight	Wet-looking blight of foliage.	See the AL Pest Management Handbook; decrease irrigation.
Bermuda	Exserohilum Blight	Smallish (½ inch or less) elongated brown spots on grass blades. Spots may coalesce.	See Ala. Pest Management Handbook for recommendations under Helminthosporium melting-out.
	Brown Patch ( <i>Rhizoctonia</i> )	Circular-irregular patches in lawn become brown. Brown lesions present on individual grass blades.	Reduce nitrogen fertilization. Sanitation. Protective fungicide treatments.
	Dollar Spot ( <i>Sclerotinia homeocarpa</i> )	Small pale yellow spots the size of a silver dollar are characteristic; spots often coalesce; leaves show characteristic cream-colored spots with dark brown borders.	Improve fertilization and provide adequate irrigation. In some situations, protective fungicide treatments are needed. See ANR-493 and the Pest Management Handbook.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Spring Dead Spot ( <i>Gaeumannomyces graminis</i> pv. <i>graminis</i> )	Large circular areas fail to green-up in the spring.	See the Ala. Pest Management Handbook.
Blackberry	Anthrachnose ( <i>Colletotrichum</i> )	Irregularly-shaped brown spots & blotches on leaves and canes.	See Ala. Pest Management Handbook.
	Double Blossom ( <i>Cercospora</i> )	Floral canes develop abnormal flowers with thickened petals. Internodes are shortened. Leaf development at nodes is abnormally abundant.	Sanitation as soon as abnormality is discovered. Protective fungicide treatment.
	Phoma Cane Blight	Large brown lesions on canes; dieback.	Sanitation.
	Septoria Leaf Spot	Small (usually ¼ inch) angular brown spots.	See fungicide recommendations under anthracnose.
Blueberry	Botryosphaeria Blight	Somewhat inconspicuous sunken cankers develop along branches or on lower trunk areas. Dieback results. (Sometimes this condition is associated with soils excessive in phosphorus & calcium.)	Sanitation. Benlate protective sprays.
	Botrytis Blossom Blight and Stem Canker	Blossoms become brown; stems develop sunken lesions.	Sanitation; Benlate protective sprays.
Boxwood	Volutella Blight	Sunken cankers on stems and branches. Surface areas of cankers may be covered with orange spore masses of the fungus.	Pruning of cankered stems. After pruning operations are complete, a protective spray treatment of Cleary's 3336 may be helpful.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
			Avoid stressful situations.
Broccoli	Downy Mildew ( <i>Pseudoperonospora</i> )	Light yellow spots/blotches on upper leaf surfaces; gray spots on corresponding lower leaf areas.	See the Ala. Pest Management Handbook.
Buddleia	<i>Sclerotium rolfsii</i> Crown Rot	Brown decay at soil line. Brown, mustard seed-like structures of fungus may be present at soil line.	Sanitation. See A. Hagan.
Butter Beans	Anthracnose ( <i>Colletotrichum</i> )	Dark brown irregular-circular sunken spots on foliage, pods. Spots become covered with rusty-colored spores.	See Ala. Pest Management Handbook.
	Cercospora Leaf Spot	Medium-light brown irregular spots.	See Ala. Pest Management Handbook under Anthracnose.
Camellia	Exobasidium Gall	See azalea.	Sanitation.
Cantaloupe	Bacterial Wilt ( <i>Erwinia</i> )	Individual leaves wilt, then lateral shoots also wilt. Eventually whole plant wilts and dies.	Sanitation; use insecticide to control cucumber beetles.
	Gummy Stem ( <i>Mycosphaerella</i> )	Brown, elongated, cracked lesions with a gummy exudate.	See the AL Pest Management Handbook.
Centipede	Brown Patch ( <i>Rhizoctonia</i> )	Browning patches or rings of grass. Brown, irregular leaf spots may also occur.	Fungicide sprays; collect clippings; avoid excess nitrogen application.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Take-All Patch ( <i>Gaeumannomyces</i> ) (Possibly a secondary occurrence or weak pathogen.)	Individual plants yellow and thin out. Stolons and roots develop black lesions.	See PP-312. Bayleton is labelled.
Cherry	Peach Leaf Curl & Plum Pockets ( <i>Taphrina spp.</i> )	Firm irregular galls or concave-convex gall-swelling on leaves.	Fungicide applications in late winter before bud-swell, and at budbreak.
	Phomopsis Canker	Gray-brown, sunken, elliptical lesions on twigs, small branches.	Sanitation.
	Septoria Leaf Spot	Brown, irregularly shaped spots (1/4- 1/2 inch diam.) on leaves.	Sanitation.
Cleyera	Phytophthora Root Rot	Dieback, wilt; roots become water-soaked & rotted.	Sanitation. Reduce irrigation &/or improve soil drainage.
Coleus	Phytophthora Root Rot	Roots are brown and water-soaked. Tops collapse.	Sanitation. Avoid poorly drained sites.
	Pythium Root Rot	Plants show poor growth, dieback; roots are discolored to a light brown; root cortex separates easily from the central cylinder.	Sanitation; Improve soil drainage.
Corn	Bacterial Stalk Rot	Brown lesions cause collapse of stem.	Sanitation.
	Fusarium Crown Rot	Crown develops dry, reddish-brown rot; tops wilt and dieback.	Sanitation; crop rotation.
	Smut ( <i>Ustilago maydis</i> )	Black powdery galls form on ears, tassels, stalks.	Sanitation, crop rotation, resistant hybrids and varieties.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Ring Nematode ( <i>Criconemoides</i> )	Plants become stunted; may appear nutrient deficient.	Crop rotation; consult with Ed Sikora.
Cotton	Fusarium Seedling Disease	Red-brown lesions on lower stem near soil line.	Seed Treatment.
	Pythium Root Rot	Roots become brown and water-soaked. Foliage becomes yellowed, wilted and browned.	Seed Treatment.
	Rhizoctonia Seedling Disease	Medium-dark brown lesions on lower stem near soil line.	Seed Treatment.
	Thielaviopsis Root Rot	Black spots/lesions along roots.	---
Crabapple	Botryosphaeria Canker and Frogeye Leaf Spot	Brown circular-irregular leaf spots with dark margins; sunken brown lesions on twigs, branches.	Sanitation; Cleary's 3336, Domain, or a benomyl labeled for ornamentals may help.
	Cedar Apple Rust ( <i>Gymnosporangium</i> )	Bright yellow circular spots (1/4-1/2 inch diam.) on leaves; orange spore masses (circular projections) develop on leaves (lower leaf surfaces) and fruit.	Remove junipers or apply protective fungicide sprays to crabapples. See Ala. Pest Management Handbook.
	Scab ( <i>Venturia inaequalis</i> )	Olive, slightly raised small spots develop on leaves and fruit.	Sanitation. See the Ala. Pest Management Handbook for fungicides.
Cucumber	Bacterial Wilt ( <i>Erwinia</i> )	Individual leaves become wilted, yellowed and finally brown. Eventually, whole stem sections wilt and die.	Control cucumber beetles.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Cercospora Leaf Spot	Cream-colored, angular spots.	See the Ala. Pest Management Handbook.
	Pythium Root Rot	Roots become brown and water-soaked; outer cortex slides easily away from root central cylinder.	Sanitation.
Daisy, Gerbera	Powdery Mildew	White powdery dusting on leaf and blossom surfaces; blight.	See the Ala. Pest Management Handbook.
Dogwood	Anthracnose ( <i>Discula</i> )	Large brown circular-irregular spots (¼-½ inch diam.) with dark brown-purple borders develop first on foliage of lower branches. Leaf spots merge. Dieback will result. Cankers develop.	Sanitation. Protective fungicide sprays.
	Botrytis Blight	Foliage shows grey-brown blotches, spots.	See Ala. Pest Management Handbook under spot anthracnose.
	Phyllosticta Leaf Spot	Small (¼ inch or less) circular brown spots with dark brown margins.	Sanitation of fallen leaves in the fall. See the Ala. Pest Management Handbook under Septoria.
	Phytophthora Crown & Root Rot	Crown and root rot tissues brown discolored and water soaked.	Sanitation. See the Ala. Pest Management Handbook for fungicide recommendations.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Spot Anthracnose ( <i>Elsinoe</i> )	Small (1/16 inch or less diam.) circular reddish spots develop on bracts; spots on leaves are similar in size but brownish red in color and some leaf spots may be irregular in shape.	Sanitation in the fall. Protective fungicide sprays recommended only for specimen trees.
Elm	Powdery Mildew ( <i>Phyllactinia</i> )	White powdery patches develop on leaves; some leaf deformity.	Sanitation of fallen leaves. See the Ala. Pest Management Handbook.
Fescue	Net Blotch ( <i>Drechslera</i> )	Brown, irregularly pigmented rectangular shaped blotches (1/2 inch or less diam.) on leaf blades. Spots may merge to cover large areas.	See Ala. Pest Management Handbook under Helminthosporium melting out.
Forsythia	Crown Gall ( <i>Agrobacterium tumefaciens</i> )	Irregular, rough, somewhat spherical galls on branches and lower trunk.	Sanitation; crop rotation.
Geranium	Bacterial Blight ( <i>Xanthomonas</i> )	Black leaf spots and stem rot lesions. Yellow-brown wedges may develop in spotted areas of leaves. Lower leaves may wilt and die due to systemic infections.	Sanitation. Bordeaux Mixture.
Gerbera Daisy	Powdery Mildew	White, powdery dusting on upper leaf surfaces.	Sanitation. See the Ala. Pest Management Handbook.
Ginseng	Fusarium Root Rot	Plants wilt and dieback or show poor growth.	Crop rotation.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
Grape	Black Rot ( <i>Guignardia</i> )	Medium-dark brown circular spots (1/4 inch) on leaves and fruit.	Protective fungicide sprays; sanitation.
Greenhouse Crops	Tomato Spotted Wilt Virus	Symptoms are variable but include gray-black leaf spots/blotches, yellow ringspot patterns, stunted growth malformed stunted and/or spotted new growth, and wilt.	Sanitation; control thrips.
Hawthorne, Indian	Entomosporium Leaf Spot	Black, red bordered, circular spots.	See Ala. Pest Management Handbook.
Holly	Phytophthora Root Rot	Dieback; roots become water-soaked & rotted.	Sanitation. Reduce irrigation &/or improve soil drainage. See the Ala. Pest Management Handbook.
Hosta	Anthracnose ( <i>Colletotrichum</i> ) Leaf Spot	Brown, irregularly-shaped leaf spots.	Sanitation; Cleary's 3336 or Domain protective sprays.
Hydrangea	Botrytis Blossom Blight	Irregular brown spots and blotches on flowers.	Sanitation; Cleary's 3336, Domain, or benomyl product.
	Colletotrichum Blossom Blight	Irregular brown spots blotches on flowers, sometimes orange patches of spores are present.	Sanitation; Cleary's 3336 or Domain, or benomyl.
	Phyllosticta Leaf Spot	Brown circular spots, sometimes with dark border.	Sanitation; Cleary's 3336 or Domain or benomyl product.
Impatiens	Impatiens Necrotic Spot Virus	Irregularly shaped black spots/blotches (1/4 inch diam.- usually) which may be confused with	Control thrips. Sanitation.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	bacterial infection. Black ring spots may be present.		
	Rhizoctonia Stem Rot	Lower stems develop brown sunken lesions; plants dieback.	Sanitation; Cleary's protective sprays; crop rotation.
Iris	Heterosporium Leaf Spot	Small-large (¼-½ inch long), elliptical or oval shaped medium brown leaf spots.	Sanitation. See Ala. Pest Management Handbook.
	Rust ( <i>Puccinia</i> )	Small, red-orange, powdery, raised spots.	Sanitation.
Ivy, English	Anthrachnose ( <i>Colletotrichum</i> )	Irregularly-shaped brown leaf spots.	Sanitation; See the Alabama Pest Management Handbook.
Juniper	Kabatinia Tip Blight	Juniper twigs dieback; appears similar to Phomopsis tip blight.	Sanitation; refer to fungicides listed for control of Phomopsis tip blight.
	Pestalotiopsis Blight	Blight of inner foliage of stressed plants.	Sanitation. See the Ala. Pest Management Handbook under Phomopsis Twig Blight for protective fungicides.
	Phomopsis Blight	Tips of twigs on lower branches become brown. The blight spreads down the twig and upward in the plant.	Sanitation. See the Ala. Pest Management Handbook.
	Phytophthora Root Rot	Roots brown, water-soaked.	See Ala. Pest Management Handbook.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
Leyland Cypress	Botryosphaeria Canker	Elongate sunken trunk and branch brown lesions.	Sanitation.
	Seiridium Canker	Elongate sunken trunk and branch brown lesions.	Sanitation.
	Pestalotiopsis Canker	Elongate sunken trunk and branch brown lesions.	Sanitation.
Ligustrum	Cercospora Leaf Spot	Medium brown, irregularly shaped spots (¼-½ inch long).	Sanitation. See the Ala. Pest Management Handbook.
Lupin	Rhizoctonia Crown Rot	Brown dried lesions on stems near the soil line.	--
Magnolia, Southern	Algal Leaf Spot ( <i>Cephaleuros</i> )	Usually circular, greenish, slightly raised spots. Spot edges slightly more raised than spot center. Edges are irregular.	Sanitation. See the Ala. Pest Management Handbook.
	Bacterial Leaf Spot	Small, angular, water-soaked spots.	Sanitation. Kocide 101 or bordeaux mixture.
	Black Mildew ( <i>Meliola</i> )	Black surface mold on lower leaf surface.	--.
Maple	Anthracnose ( <i>Kabatella</i> )	Brown-black spots/blotches which often follow along leaf veins; sometimes blotchy areas occur along leaf edges.	Sanitation. See Ala. Pest Management Handbook, for small trees.
	Purple Eye Spot ( <i>Phyllosticta</i> )	Purple circular spots (about ¼ inch diam.) with dark purple, black border.	Sanitation. See the Ala. Pesticide Handbook.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Tar Spot ( <i>Rhytisma</i> )	Black irregularly-shaped spots.	Sanitation of fallen leaves this fall. See the Ala. Pest Management Handbook.
Maple, Japanese	Phyllosticta Leaf Spot	Brown circular spots with dark brown or purple margins.	Sanitation of fallen leaves this fall. See the Ala. Pest Management Handbook.
Marigold	Anthracnose ( <i>Colletotrichum</i> )	Circular, cream-colored spots (1-3mm diameter) on leaves.	Sanitation. Cleary's 3336 would control anthracnose and it is labeled on marigold. Sanitation. Rotate away from marigolds for 10-16 years.
	Fusarium Wilt	Lower leaves wilt and turn yellow. Yellowing and wilt slowly progress up the plant. Vascular tissues burn brown.	
	Pythium Root Rot	Roots become light brown, water-soaked, and tissues pull apart easily.	
Mondograss	Anthracnose ( <i>Colletotrichum</i> )	Gray-brown spots, blotches, often at leaf tips, margins.	Sanitation. Cleary's or Domain.
Muscadine	Black Rot ( <i>Guignardia</i> )	See Grape.	See Ala. Pest Management Handbook.
Nectarine	Brown Rot	See Peach.	
Oak	Anthracnose ( <i>Apiognomonina</i> )	Medium-brown blotches along leaf veins, in interveinal areas and along leaf margins.	Sanitation. See Ala. Pest Management Handbook for small trees.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Oak Leaf Blister ( <i>Taphrina</i> )	Concave-convex spot areas that are slightly swollen and slightly discolored.	Sanitation. See Ala. Pest Management Handbook.
Oats	Loose Smut ( <i>Ustilago avenae</i> )	Plants shorter than normal; the grain is replaced by dark-brown to black powdery masses of smut spores. Usually all the grain on an infected plant is smutted.	Treated seed with fungicide.
	Rust (Crown or leaf) { <i>Puccinia coronata</i> }	Bright orange-yellow round or oblong powdery pustules on leaves, sheaths, stems, panicles. Plants are weakened when infection is severe.	Deep plow.
Oxalis	Kuehneola Rust	Orange powdery pustules on leaves.	Sanitation.
Peach	Bacterial Leaf Spot ( <i>Xanthomonas</i> )	Small (2-6 mm diam.) circular, brown-black spots with wet-looking margins and dry-sometimes shot-hole centers. Older spots often have reddish margins. Spots may be surrounded with a yellow zone or halo.	Sanitation; protective bactericide sprays for commercial growers.
	Brown Rot ( <i>Monilinia</i> )	Twig blight; canker; fruit rot develops as fruits mature.	Protective fungicide sprays. Sanitation.
	Peach Tree Short Life	Dieback of limbs. Poor growth.	Tree removal. Fumigation.
	Root-Knot Nematode ( <i>Meloidogyne</i> )	Trees, unthrifty, poor growth; roots have galls.	See Ala. Pest Management Handbook.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Twig Blight ( <i>Phomopsis</i> )	Twig dieback with brown-black cankers (Some cankers have a zonate pattern.)	Sanitation.
Pear	Entomosporium Leaf Spot ( <i>Fabraea</i> )	Roughly circular brownish-black spots (½ inch wide).	Sanitation. Spray schedule as described in the Ala. Pest Management Handbook.
	Fire blight ( <i>Erwinia amylovora</i> )	Black discoloration dieback; often infection begins in the blossoms and moves down into the branch. Blighted branch tips often curve downward. Sunken cankers develop on branches.	Sanitation. See ANR-542 or Ala. Pest Management Handbook.
	Frogeye Leaf Spot ( <i>Botryosphaeria</i> )	Brown, circular spots with dark borders.	Sanitation. See the Ala. Pest Management Handbook.
Peanut	Rhizoctonia Seedling Disease & Root Rot	Dry, brown lesions on roots and stems.	Soil or seed treatment before planting.
Pea, Southern	Anthracoise ( <i>Colletotrichum</i> )	Gray, brown circular-oval spots on leaves and stems.	See the Alabama Pest Management Handbook.
	Fusarium Crown Rot	Lower stems & crowns become reddish-brown and dry rotted.	Sanitation; crop rotation.
	Rhizoctonia Seedling Disease; Lower Stem Rot	Medium-dark brown blotches or elongated lesions on lower stem near the soil line.	Fungicide treatment prior to planting.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
Pecan	Scab ( <i>Cladosporium</i> )	Dark olive-green to brown to dark brown slightly raised spots on leaves and nut shucks. Defoliation where disease is severe.	See the Ala. Pest Management Handbook. Sanitation.
Peony	Anthracnose	Circular, light brown spots (2-3mm diam.) on leaves.	Sanitation. See the Ala. Pest Management Handbook.
Pepper	Bacterial Leaf Spot ( <i>Xanthomonas</i> )	Dark, angular green-black, water-soaked spots ( $\frac{1}{4}$ inch diam.); older spots become dry and white; leaf drop.	Sanitation; protective sprays.
	Cucumber Mosaic Virus	Leaves are malformed and distorted, sometimes shoestring-shaped. Leaves sometimes show yellow patterns.	Sanitation. Control aphids.
	<i>Phytophthora capsici</i> Crown/Root Rot	Brown lesions on lower stems, crowns mostly; some root rot.	Sanitation; Ridomil.
	Pythium Root Rot	Brown, water-soaked lesions.	Sanitation; improved soil drainage; See Ala. Pest Management Handbook.
Petunia	Phytophthora Aerial Blight	Brown lesions on leaves and stems; dieback.	See the Ala. Pest Management Handbook.
	Phytophthora Root Rot	Roots brown, wet, easily pulled apart.	Sanitation. Avoid wet soils.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
Phlox	Alternaria Leaf Spot	Dark brown irregularly-shaped spots.	Sanitation; Cleary's 3336 or Domain or an ornamental benomyl product.
Photinia	Entomosporium Leaf Spot	Red-black circular-irregularly shaped spots which often coalesce; leaf drop.	Sanitation. Protective fungicide sprays.
Pine	Needlecast Diseases	Older needles turn brown, drop.	See Ala. Pesticide Handbook.
	Needle Rust ( <i>Coleosporium</i> )	Cream-orange-colored pustules up to 1/8" or 2-3 mm in size occur on needles only of pine.	Remove asters from the area.
	Pitch Canker	Sunken, cracked lesions on branches, trunks where resinosis is common.	Sanitation. See the Ala. Pest Management Handbook for comments.
Plum	Bacterial Leaf Spot ( <i>Xanthomonas</i> )	See Peach Bacterial Leaf Spot.	See Peach.
	Black Knot ( <i>Dibotryon</i> )	Rough elongated branch galls which begin as greenish swellings but soon develop into hard black elongated branch swellings or galls.	Sanitation; protective sprays of Captan in early spring.
	Botryosphaeria Canker	Dry, sunken, brown lesions that are often cracked around the edges; dieback.	Sanitation.
Potato, Irish	Bacterial Wilt ( <i>Pseudomonas</i> )	Green plants wilt suddenly. Vascular system is brown in the lower stem area. Outer vascular ring of tubers may be discolored.	Rotation away from potato, peppers, tomato and eggplant for several (4-5 yrs.) years or fumigation.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Blackleg ( <i>Erwinia</i> )	Large areas of stems become black and water-soaked. Plants wilt and die. Tubers are also rotted.	Use disease-free seed pieces; treat seed pieces; clean equipment with solutions of bleach or formaldehyde or allow for good suberization before planting in well-drained areas; crop rotation 2-3 years; control seed corn maggots with insecticides. See the Ala. Pest Management Handbook.
	Early Blight ( <i>Alternaria</i> )	Black, zonate, roughly circular or oval spots (4-10 mm or ¼-½ inch diam.). Spots may also develop on stems & tubers.	Follow spray schedule recommended.
	Late Blight ( <i>Phytophthora infestans</i> )	Brown blotches on leaves and stems; eventually whole leaves and stem sections become severely decayed.	See the Ala. Pest Management Handbook. See Ed Sikora for commercial plantings.
	Rhizoctonia Stem Rot	Lower stem shows sunken, brown rotted areas.	Sanitation; See Ala. Pest Management Handbook.
	Scab ( <i>Streptomyces scabies</i> )	Slightly raised, scabby circular or circular-irregular lesions on surface of tubers.	It may help to keep soil slightly acid; crop rotation; see Ed Sikora.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
Rhododendron	Exobasidium Gall	Fleshy, swellings of leaves, flowers. Swellings initially are green but become white or pink when spore production occurs.	Sanitation; Bayleton in some circumstances. See Ala. Pest Management Handbook.
Rose	Black Spot ( <i>Diplocarpon</i> )	Black spots (¼ inch diam., 4-8 mm) with feathery margins.	Follow a regular spray schedule; sanitation.
	Botrytis Blossom Blight	Blossoms develop small-large brown blotches. A gray delicate webbing of the fungal mycelium and spores may develop over blotches.	Sanitation. Protective fungicide sprays.
	Brand Canker ( <i>Coniothyrium</i> )	Gray, cracked, irregular canker on canes.	Sanitation; fungicides that are recommended for black spot will help.
	Mosaic	Distinct pattern of dark green & light green or yellow on leaves.	Control weeds; control insects; remove diseased plants.
	Powdery Mildew ( <i>Sphaerotheca</i> )	White powdery patches on foliage; some leaf deformity may occur on new growth.	See the Ala. Pest Management Handbook.
	Tobacco Ringspot Virus	Plants stunted, mottled.	Sanitation; Control nematodes.
Spirea	Powdery Mildew	White, powdery dusting on surface of leaves; some leaf distortion; leaf blight.	Sanitation; Cleary's 3336.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
Squash	Choanephora Wet Rot	Large sections of fruit become wet rotted sometimes with black spore structures covering the fruit surface.	Decrease humidity.
	Mosaic Virus	Distinct pattern of dark green and light green or yellow on leaves.	Control weeds; control insects; remove diseased plants; do not save seed.
	Pythium Seedling Disease	Roots become brown and watersoaked.	---
Squash, Yellow	Watermelon Mosaic Virus	Patterned patches of light and darker green or yellow pigmentation on leaves.	Sanitation; control aphids.
St. Augustine	Brown Patch ( <i>Rhizoctonia</i> )	Leaf blades develop brown blotches; whole leaves become browned.	See the Ala. Pest Management Handbook.
	Gray Leaf Spot	Gray-brown spots on foliage. Disease may be severe.	See ANR-492 or Pest Management Handbook.
	Take-All ( <i>Gaeumannomyces</i> )	Individual plants yellow and areas thin out. Black lesions occurs on roots, stolons.	See PP-312 or Ala. Pest Management Handbook.
Strawberry	Angular Leaf Spot ( <i>Xanthomonas</i> )	Angular, black spots in interveinal areas. Spotting may be severe.	See the Ala. Pest Management Handbook.
	Anthracnose-Crown Rot ( <i>Colletotrichum</i> )	Lower stems and crowns become brown, and rotted.	Use healthy transplants. Sanitation. See Ed Sikora.
	Mycosphaerella Leaf Spot	Small (1/8 inch) red-brown circular spots.	See Ala. Pest Management Handbook.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
Sweet Potato	Black Rot ( <i>Ceratocystis fimbriata</i> )	Black lesions on root surface which extend to but not beyond the vascular ring. Secondary bacteria will sometimes invade tissues and cause rotting beyond the vascular system.	Sanitation. See the Ala. Pest Management Handbook.
Sycamore	Anthracnose ( <i>Apiognomonina</i> )	Gray-brown blotches on leaves; sometimes blotches follow leaf veins or leaf margins.	Sanitation. Protective fungicide sprays for small trees.
	Scorch ( <i>Xylella</i> )	Leaves become brown and dried at the margins; dieback during summer months.	Tree pruning or removal.
Tomato	Bacterial Canker ( <i>Clavibacter</i> )	Dark brown, black, slightly sunken, large lesions (1-4 cm or larger) develop on stems.	See the Ala. Pest Management Handbook.
	Bacterial Spot ( <i>Xanthomonas</i> )	Small, dark green or black, wet-looking, angular spots.	Sanitation. Protective sprays.
	Bacterial Wilt ( <i>Ralstonia solanacearum</i> )	Plants wilt suddenly while still green. Lower stem areas are black (decayed) beneath the green outer layers.	Rotate the area away from tomato, potato, eggplant and pepper for 4-5 years or fumigate the soil.
	Blossom End Rot	Black, hard, circular, slightly sunken spots at stem end of fruit.	See Ala. Pest Management Handbook.
	Cucumber Mosaic Virus	Plants become stunted with mis-shaped leaves (often strap shaped) that may be puckered and show a mosaic pattern.	Sanitation; Aphid control.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Early Blight ( <i>Alternaria</i> )	Black or brown spots (¼-½ inch diam. or 4-10 mm diam.) on leaves, stems, fruit. Spots often have a concentric pattern.	Fungicide sprays; sanitation.
	Fusarium Wilt	Lower leaves turn yellow and wilt. Yellowing progresses up the plant.	Crop rotate away from tomatoes 10-16 years on resistant varieties.
	Late Blight ( <i>Phytophthora infestan</i> )	See Irish Potato.	See the Ala. Pest Management Handbook.
	Pythium Root Rot	Roots develop brown-colored, soft rot.	Sanitation. Do not irrigate excessively; provide well-drained soil area. See Ala. Pest Management Handbook.
	Root-Knot Nematode ( <i>Meloidogyne</i> )	Irregular root galls which involve the whole root circumference. Gall size varies from small (2-3 mm diam.) to large (1-1.5 cm diam.).	Soil fumigation (commercial) or rotation to dwarf French marigold or pasture grasses.
	Septoria Leaf Spot	Small (¼ inch diam.) roughly circular gray-brown spots.	Protective fungicide sprays. See Ala. Pest Management Handbook.
	Southern Blight ( <i>Sclerotium rolfsii</i> )	A wet, brown rot develops at the soil line; with humid conditions, a thick white mold may develop, often with hard, brown, spherical sclerotia (over-wintering bodies) present.	Sanitation; see Disease Note ANR-863.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Tomato Pith Necrosis ( <i>Pseudomonas corrugata</i> )	Sections of stem may show a black discoloration; plant parts above the lesion wilt and die; inside the stem, hollow 'chambers' are delimited by 'strands' of pith tissue.	Sanitation.
	Tomato Spotted Wilt Virus	Bronzing of newest growth; spots and ring patterns on older leaves and fruit; wilt; plants stunted.	Sanitation; control thrips.
Vegetables	Seedling Diseases ( <i>Fusarium</i> , <i>Rhizoctonia</i> , <i>Pythium</i> )	Seedlings fall over at the soil line; small stems are weak and limp; brown discoloration may be evident.	Soil treatments (in some situations) or seed treatments before planting. See Ed Sikora.
	Alternaria Leaf Spot	Circular-angular dark brown-black spots.	Sanitation. Cleary's 3336 or Domain should give protective control.
	Phytophthora Stem Rot	Sections of stems become brown, wet, and collapsed, shrivelled.	Sanitation. In some cases Aliette WDG may be used as a protective treatment. See Ala. Pest Management Handbook.
	Rhizoctonia Aerial Blight	Dark brown dried cankers on stems. Tops dieback.	Sanitation. Cleary's 3336 may be used in some situations. See the Ala. Pest Management Handbook.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
Watermelon	Anthracnose ( <i>Colletotrichum</i> )	Foliage spots begin as small yellow or water-soaked irregular areas which become larger and eventually black. Whole leaf areas may become covered with the coalesced spotting/blotches. On the fruit, small water-soaked spots become dark green and then brown-black sunken spots (1/4-2 inches x 1/2 inch deep). With high humidity the spots may become covered with gelatinous masses of orange spores.	See the Ala. Pest Management Handbook.
	Fusarium Root Rot	Roots become dry, rotted; wilt, dieback.	Crop rotate for 10-16 years.
	Fusarium Wilt	Lower leaves turn yellow and wilt slowly develops.	Rotation; resistant varieties.
	Gummy Stem ( <i>Mycosphaerella</i> )	Brown, black spots occur interveinally in the lobes of leaves. Usually older leaves near the center of the hill are affected initially. As the season progresses, elongated, water-soaked, light-brown to gray lesions occur on vines, often near the crown of the plant. As lesions age, cracking occurs and a reddish-yellow gummy substance	See the Alabama Pest Management Handbook.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Pythium Root Rot	oozes around the crack. Plants gradually yellow and turn brown. Roots become brown-colored and soft rotted.	Sanitation. Avoid wet conditions, especially with poorly draining soil. Contact Ed Sikora if you have questions.
	Rhizoctonia Seedling Blight	Brown lesions on lower stems; seedlings collapse.	Sanitation. Crop rotation.
	Suspect Ozone Damage	Older leaves with whitish, nitted interveinal areas of upper leaf surfaces. Old damage may become black.	---
Wheat	Bipolaris Leaf Spot	Brown irregular spots.	Fungicides in some situations; refer to Bill Gazaway.
	Black Chaff ( <i>Xanthomonas</i> )	Gray-brown-black discoloration of seed heads and leaves. Discoloration starts at tip of seed.	Use healthy seed.
	Fusarium Scab (Head Blight)	Head blight with a pinkish cast due to presence of spores.	Use healthy seed. Deep plowing, crop rotation of one year. Some cultivar differences in disease susceptibility have been noted.
	Leaf Rust ( <i>Puccinia</i> sp.)	Orange powdery spots.	Fungicides in some situations; refer to Bill Gazaway.
	Powdery Mildew ( <i>Erysiphe</i> sp.)	Buff-colored spots and patches.	Fungicides in some situations; refer to Bill Gazaway.

<u>Plant</u>	<u>Disease</u>	<u>Description</u>	<u>Control</u>
	Septoria Glume Blotch/Leaf Spot	Gray-brown patches of discoloration on glumes; gray-brown leaf spots (1/4- inch diam.).	--
	Take-All ( <i>Gaeumannomyces sp.</i> )	Stem at the soil-line becomes black. Plants die.	Rotation.
Willow	Leaf Rust ( <i>Melampsora</i> )	Yellow orange pustules on leaves.	Sanitation.
Zoysia	Brown Patch ( <i>Rhizoctonia</i> )	See Centipede.	See Centipede.
	Rust ( <i>Puccinia</i> )	Areas of turf become yellow-brown with tiny spots of orange powdery spores.	See the Ala. Pest Management Handbook or ANR-621.
	Take-All Patch ( <i>Gaeumannomyces sp.</i> )	Individual plants turn yellow and die. Roots show dark brown or black lesions.	See PP-312 and the Ala. Pest Management Handbook.

### Lab Notes

As we move into our busiest time of year, please take care when filling out the blue sheet or when advising clients in filling out the information. Soil analysis (pH, minerals) results will come back to the client more quickly if sent directly. If the client would like us to forward soil to the Soil Test Lab--if we believe a soil problem exists--he/she must indicate yes on the form. We will not forward soil when a charge is involved unless the client gives approval. Also, please indicate whether the sample is a client charge or an educational (ACES) charge by checking the appropriate blank in the box at the top of the form. Thanks!