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OVER-VIEW OF THE 2003 ALABAMA PLANT DISEASES AS SEEN AT THE AUBURN AND BIRMINGHAM PLANT DIAGNOSTIC LABS

The Plant Diagnostic Lab at Auburn University receives plant problem/disease samples for diagnosis and soil samples for nematode analysis from all sections of the state. The Plant Diagnostic Lab at Birmingham receives predominantly horticultural samples for disease/problem diagnosis from Jefferson County and the five adjoining counties. Records from both labs are often used to document plant disease occurrences in Alabama. The following summaries were prepared from records of the ACES Plant Diagnostic Labs at Auburn and Birmingham with supplement field and survey information from Extension Plant Pathologists and other Extension Specialists.

Copies of the 2003 Annual Reports of the Auburn and Birmingham labs are available upon request. You may request reports by phone, email, or mail. (Contact information for the Auburn Lab: phone 334-844-5508; email jmullen@acesag.auburn.edu; mailing address - Auburn Plant Diagnostic Lab, ALFA Agricultural Services Bldg., 961 S. Donahue Drive, Auburn University, Auburn, AL 36849-5624. Contact information for the Birmingham Lab: phone 205-879-6964; email jjacobi@acesag.auburn.edu; mailing address - C. Beaty Hanna Horticulture and Environmental Center, 2612 Lane Park Road, Birmingham, AL 35223-1802. The www addresses for the Auburn and Birmingham labs are as follows; Auburn lab: http://www.aces.edu/dept/plantdiagnosticlab; Birmingham lab: http://www.aces.edu/plantlabbham/.

Disease occurrences on plants often depend upon weather conditions favorable for development of the particular disease agent. With fungal and bacterial diseases, moisture is a critical factor. Last year rainfall was generally abundant-adequate. In the fall, some areas were dry. In general, most of our common diseases were present in scattered locations, but widespread, damaging epidemics were not present in 2003.

If you wish to submit a plant, soil, or insect sample to the Plant Diagnostic Lab at Auburn, be sure the sample is accompanied by the correct information sheet (Form ANR-89, for plant problems; Form ANR-F7, for soil nematode samples; Insect Identification Record, for insect samples). These forms are available from your County Extension Office, the internet at Auburn University's Entomology and Plant Pathology Department home page (http://www.ag.auburn.edu/dept/ent), the ACES home page at http://www.aces.auburn.edu, the Plant Diagnostic Lab home page at

http://www.aces.auburn.edu/department/plantdiagnosticlab/main.htm), or the Plant Diagnostic Lab. If you have questions on collecting samples, consult the fact sheet ANR-450 for plant and soil samples or the internet addresses given above. Send or bring the sample(s) to the Plant Diagnostic Lab, 164 ALFA Agricultural Services and Research Building, 961 South Donahue Drive, Auburn University, AL 36849-5624. For soil nematode samples, please enclose a check or money order ($10) made payable to the Plant Diagnostic Lab. The invoice for the plant problem/disease sample will be mailed to you along with the diagnostic response. (Copies of client response letters are also sent by electronic mail to the local county Extension agent--when the agent is involved with the sample.) If you reside in Jefferson or adjoining counties, you may bring or send your plant disease or plant problem sample to the Plant Diagnostic Lab in Birmingham, which is located at C. Beaty Hanna Horticulture and Environment Center, Birmingham Botanical Gardens, 2612 Lane Park Road, Birmingham, AL 35223-1802. The service charge for plant sample diagnosis at the Auburn or Birmingham Lab was $10 or $15 in 2003. As of January 1, 2004 service charges for plant and insect samples increased. See Table below for 2004 Service charges.

2003 Service Charges At The ACES Plant Diagnostic Labs

Soil Nematode Analysis	$10
Plant Problem/Disease Diagnosis	$10 or 15
Plant or Insect Identification	No Charge

2004 Service Charges At The ACES Plant Diagnostic Labs

Soil Nematode Analysis	$10
Homeowner Plant Disease Diagnosis	$10 or $15
Commercial Plant Disease Diagnosis	$20 or $25
Samples Requiring Specific Advanced Molecular Analysis	$30
Routine Insect Identification	$5
Insect Identification With Microscopic Study of Slide Mounts	$10
Commercial/Industrial Insect Samples	$20

DISEASES REPORTED FROM THE AUBURN PLANT DIAGNOSTIC LAB

Field Crops. With cotton, reniform nematode appeared to be more of a problem this past year. This may have resulted from cold, wet conditions early in the growing season. This unfavorable weather resulted in smaller root systems that could not sustain the plants when nematode feeding damage occurred (Monks, Lawrence). In September, there was a scattered incidence of Botryodiplodia pod decay. The weakened root system probably increased the cotton susceptibility to Botryodiplodia.

Leaf spot diseases of peanuts (early leaf spot - *Cercospora*; late leaf spot- *Cercosporella*) were more of a problem last year due to the abundant rainfall. Some areas had a serious problem with only early leaf spot. In some areas, early and late leaf spots caused severe damage. If noticeable defoliation was present, major yield reduction followed due to early drop-off of pods in the field during harvest. If fields were not rotated, disease control depended on scheduled fungicide spray treatments. If rains prevented fungicide applications, leaf spot diseases became severe quickly. In fields where a 2 or 3 year crop rotation with corn and cotton was practiced, leaf spot diseases were significantly reduced. Excessive rains in some areas caused reduced yield due to flooding. This was especially true in Baldwin County (A. Hagan).

White mold (*Sclerotium rolfsii*) was not a serious problem last year. It is suspected that the abundant rains plus lower temperatures and possible micro-organisms in the soil could have caused the reduced white mold (K. Bowen, A. Hagan).

Cylindrocladium black rot was present on the Wiregrass Substation, and it is suspect that it was present and contributing to the peanut problems in other area fields. Folicur or Abound fungicides seem to suppress symptoms but they do not bring about disease control (A. Hagan).

Peanut rust (*Puccinia arachides*) was a problem on some plants in isolated fields in Baldwin County. Infected plants died. Fungicide sprays for leaf spot control are also effective on rust (A. Hagan).

Rhizoctonia limb rot was a problem in tractor traffic areas where some stress and injuries had occurred. Previous studies have shown that Lorsban treatment (a soil insecticide) is related to an increased occurrence of Rhizoctonia limb rot (A. Hagan).

Early plantings of peanuts developed considerable symptoms of tomato spotted wilt virus. Later plantings did not develop as much virus symptom evidence. It has been noted that the variety 'Georgia Green', which was considered partially resistant to TSWV, no longer exhibits any resistance. See A. Hagan for more information.

Last years moisture was favorable for nematode developments. Some fields tested showed 3000 peanut root-knot (race 2) nematode larvae per 100cc soil.

Despite above comments on disease developments in localized areas, data indicate that Alabama may have had a record yield per acre at approximately 2900-3000 lbs. per acre (A. Hagan).

Field corn produced a good crop this past year. There were isolated problems with gray leaf spot and rust in areas of West Central Alabama. Northern corn leaf blight (*B*. *turcicum*) and southern corn leaf blight (*B*. *maydis*) were present in some areas.

Wheat was observed with a yellowing and dieback, where discoloration begins at the leaf tips and progresses downward into the plant. Early in the spring, it was difficult to determine whether the yellowing damage was nutrient related, a virus such as barley yellow dwarf virus (BYDV) or some other problem. ELISA tests gave negative results but ELISA testing in December-March often produces false negative results due to a low titer (concentration) of virus in the plant. Nutrient analysis can sometimes help resolve the question of barley yellow dwarf virus but nutrient deficiency did not appear to be the problem with the early spring yellowing. More suspect barley yellow dwarf virus was seen in oats in April. ELISA tests did not confirm our suspicions.

Soybeans this past year showed problems with frogeye leaf spot (*Cercospora*), pod and stem blight (*Diaportha*), anthracnose, stem canker, 3-cornered-alfalfa hopper, and green stem syndrome. Frogeye leaf spot caused significant damage. Pod and stem blight was often associated with later developing anthracnose. These diseases and accompanying damage appeared to be associated with earlier maturing varieties (maturity group 4 which matures in early to mid August; we grow 4, 5, 6, and 7 maturity groups; maturity groups 5 and 7 did not appear to have disease problems.) Quadris sprays may be applied to control pod and stem blight but it is not cost effective for small farm operations (E. Sikora).

Stem canker was a common problem last year on earlier maturing varieties. Resistant varieties have been used for stem canker control but some of these varieties failed to show resistance to stem canker in Mississippi. See more information on soybean stem canker in TI #554 by Ed Sikora.

Green stem syndrome was a problem during late season when plants were drying down. Plants did not mature normally and consequently, green seeds among the dried seeds in the combine caused mechanical problems with the combine. This problem is believed to be caused by stink bugs or bean pod mottle virus (BPMV) or other factors. ELISA tests for BPMV showed there was a low incidence of the virus. Stinkbugs were not found in the test plots. The virus is vectored by bean leaf beetles. (For more information, check with Ed Sikora.)

Fruits, Nuts, and Vegetables. Anthracnose fruit rot was a significant problem on u-pick strawberry operations for the past two years. Botrytis gray mold was also a common problem. In September, anthracnose spores were found in culture isolations from crowns of strawberry plants in a greenhouse/nursery setting. Second samples all tested negative for anthracnose which can cause dieback, collapse and plant death when it occurs as a crown rot. Cyliindrocladium crown rot was detected in one sample last year.

Peach samples suspected of having phony peach disease, caused by a xylem inhabiting bacteria called *Xylella fastidiosa*, showed phony symptoms of stunting and poor leaf cover. ELISA tests were run on leaf petioles. This method of testing is often effective in detection of *Xylella* in plants. (With some trees, root testing for *Xylella* is more effective.) Samples tested (using the Agdia ELISA kits) showed that *Xylella* was present in the peach petioles (S. Burchett).

The red spot fruit blemish on peach was observed last year as it was the previous year. The cause of the problem still is unknown.

Bacterial leaf spot (*Xanthomonas pruni*) and brown rot of peach were common problems.

Melanose, caused by the fungus *Diaporthe citri* (also known as *Phomopsis citri*), was identified as a disease on satsuma. Disease developed as yellow leaf spots on upper leaf surfaces with brown, scabby spots on corresponding lower leaf surfaces. Symptoms of this disease may be confused with greasy spot caused by the fungus *Mycosphaerella citri* (also called *Cercospora citri-grisea*) or a physiological problem called edema. Culture results confirmed Phomopsis and Melanose. Reports indicate that copper materials are most effective for protective disease control. Check with Ed Sikora for details.

Pecan scab, caused by *Cladosporium caryigenum*, was a common problem last year.

Downy mildew and Alternaria leaf spots were observed on pumpkin. The downy mildew appeared as irregular, blotchy, yellow-brown, faded spotting on upper leaf surfaces. The Alternaria leaf spots were dark brown, irregular, relatively large (¼ to ½ inch wide) spots. Bravo or Maneb may be used to provide protective disease control in a homeowner situation. See fungicide lists on page 321, Vol. 1 of the Pest Management Handbook, for commercial situations. Other pumpkin diseases seen were Plectosporium scab, powdery mildew and watermelon mosaic virus.

Irish potatoes were observed with Fusarium root rot, secondary bacterial soft rot, and Rhizopus rot. We suspect the initial damage was caused by the Fusarium. Both the Fusarium, bacteria, and Rhizopus usually enter the plant tubers through wounds. Disease control recommendations include (1) careful handling to avoid wounding, (2)

high humidity and good ventilation during storage, (3) seed tuber treatment with fungicide before storage, (4) warming seed tubers for a week at 20-25°C before planting, (5) planting seed immediately after cutting in warm, moist soil which promotes good sprout development and good wound healing, (6) spraying or dipping seed tubers with fungicide before planting, and (7) handling treated seed with clean containers and equipment. Reports indicate that good sprouts and plants may develop from tubers showing low levels of Fusarium rot if temperatures are warm enough to encourage rapid sprout growth. Cool weather will favor good Fusarium growth and slow sprout growth. Bacterial soft rot and Rhizopus rot develop when conditions are warm and moist.

Scurf, caused by *Rhizoctonia solani*, appeared as superficial black, crusty spots on Irish potato tuber surfaces. 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.)

Ornamentals. As usual, ornamental diseases composed a large portion of the plant samples submitted for diagnosis. In 2003, 158 different types of ornamental plants were submitted and a total of 379 biotic diseases were diagnosed. Many of these diseases were caused by fungal agents. Azaleas were especially common plants seen with diseases. Fungal leaf spots, dieback, cankers, Phytophthora aerial blight and root rots, and Pythium root rots were commonly noted. Rust (*Puccinia hemerocallidis*) was seen on daylily as a fairly common problem.

There seemed to be an increase in the number of landscape shrubs with root decay and dieback this summer and fall. Many of the shrubs showed extensive root death and with some, Phytophthora root damage was present. This past October, holly and ivy samples were received with severe dieback and Phytophthora root decay. Phone reports indicated boxwoods in several areas were dying. We suspect that much of this state-wide damage related to the abnormally wet conditions of last spring and early summer. Heavy soils would have increased the root damage, as soils would have remained wet for a longer period of time. By the time significant foliage dieback occurs resulting from root damage, the root damage is usually extensive. These plants will probably not recover next spring. If root disease is not involved and root damage is not too severe, some plant recovery may take place in the spring. If root disease is present, root recovery is unlikely. See the paragraph below for comments specifically on

Phytophthora and Pythium root disease.

Phytophthora root decay was diagnosed on dogwood, boxwood, bald cypress, compacta holly, oak, Fatsia, Leyland cypress, rose, strawberry, and Eleagnus. The wet conditions of last spring and early summer were very favorable for Phytophthora root rot development. With landscape situations, control typically involves removal of damaged plants; improving water drainage conditions, if appropriate; reducing irrigation schedules, if appropriate. Protective fungicide drenches are typically recommended only for greenhouse, nurseries, or other commercial situations involving crops of high market value. See the AL Pest Management Handbook for Phytophthora root disease fungicide treatment under specific crops.

Pythium root rot was detected on anise, cotton, Helleri holly, Rudbeckia, *Vinca minor*, ivy, Jasmine, nandina, and periwinkle. Wet landscape conditions must have existed in order for Phytophthora or Pythium to be a problem. Plant removal and correcting the wet condition problem are the usual recommendations in a landscape. If large numbers of plants are involved, a protective fungicide drench program is sometimes recommended. See the Alabama Pest Management Handbook for fungicides labeled on specific plants.

Phytophthora and Pythium will cause root decay of a wide range of plants when soil conditions are kept continually wet for a prolonged period of time. Of the two fungi, Phytophthora is considered to be the more damaging and aggressive pathogen. Pythium often develops only on previously weakened/damaged plants. Plants with root rot usually show lower limb dieback with yellowing and browning as initial symptoms. Gradually the browning of limbs will move upward through the tree or shrub. In some situations, upper canopy sections show damage also. Damaged plants should be removed. Water levels in the soil should be reduced. Drainage improvements may be needed. It is a good idea to remove soil attached to damaged roots since the fungal spores will develop in the soil closely associated with the infected roots. Plant replacement with a different plant or cultivar less susceptible to Phytophthora infection is a good practice. Protective fungicide drenches may be used with particular plants in some situations of nurseries/greenhouses or large landscape plantings. See the AL Pest Management Handbook regarding recommendations for specific plants.

Southern blight (*Sclerotium rolfsii*) was diagnosed on Japanese holly, Catharanthus, Rudbeckia and Hosta which often become infected with this fungus when conditions are hot and humid/moist. *S. rolfsii* has a wide host range and is capable of causing crown rot disease on many ornamentals, vegetables, and field crops. As a soil borne fungus, it is difficult to control. In some situations of small garden areas in sunny locations, solarization may be used as a control treatment. Crop rotation is not usually practical because so many plants are susceptible to *S. rolfsii*. Deep turning under of root zone layer soil or replacement of root zone layer soil is (unpractical in many situations) another control option. The fungicides Heritage, Contrast, and PCNB type fungicides (Defend, Revere, or Terraclor) are labeled for use on some plants to provide protective disease control. These fungicides are mostly

intended for the commercial market. Terraclor is labeled for use on some vegetables and is available for homeowner use.

Greenhouses throughout the U.S. were checked last February, March, and April for a strain of the bacterial wilt pathogen new in this country. USDA traced the new race, and 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. Many cuttings were shipped from Glass Corners Greenhouses - Michigan. USDA and APHIS were concerned with the spread of the new race and strain of *R. solanacearum* because it is an especially severe problem on tomato and Irish potato. In Alabama state agriculture inspectors 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 received 24 geranium samples during February and early March. Many of these samples were checked with visual study, microscopic study, culture and serology (immunostrip testing). Culturing the bacteria proved to be difficult. A recently developed immunostrip test kit (similar in principle to ELISA) was used as the main method of diagnosis for this disease. The immunostrip test produced positive results to some samples tested. Positive bacteria and plants were sent to the Beltsville USDA/APHIS lab for PCR (Polymerized Chain Reaction) 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.

More information on the *Ralstonia* geranium problem: R. s. Race 1 Biovar 1 has been present in the U.S. for many years and causes bacterial wilt of tomato and other solanaceous plants. Southern bacterial wilt of geranium was identified in North Carolina in 1981. R. s. Race 1 Biovar 1 was identified in Florida in geraniums in 2001. The R. s. Race 3 Biovar 2 was detected in Europe in the 1990s and is known to be especially damaging to Irish potatoes and other plants. It was introduced to the U.S. in 1999 and was reported in 2002 on geraniums in Wisconsin, S. Dakota, New Jersey, New York, and Pennsylvania (V. S. Malek, USDA-APHIS-PPQ, ISPM http://www.aphis.usda.gov/ppq/15pm/potato/ralstonia/). This new outbreak in 2003 was traced back to the Kenya geranium cuttings (See http://extlab7.ufl.edu/PestAlert/usdaralstoniaactionplan_ve.pdf, USDA, APHIS, PPQ Action Plan, February 27, 2003). *R. solanacearum* Race 3 is listed on the USDA Agricultural Bioterrorism Act of 2002, as a serious pathogen of potatoes and other plants. (USDA has indicated that this particular introduction into the U.S. is considered to be an accidental event, not linked to bioterrorism.) The host range of this pathogen (Race 3 Biovar 2) is mainly potato,

tomato, other solanaceous plants (including weeds), geranium, stinging nettle, and other plants. Infected plants, contaminated irrigation or surface water, and contaminated soil or potting mixtures could be sources of inoculum. Early symptoms on geraniums involve leaf yellowing or leaf edge yellowing of lower leaves, possible leaf edge scorch of lower leaves. Later, wilt and dieback of the plant will occur. In advanced stages of disease, the cut lower stem placed into a jar of tepid water will produce a thin milky white 'thread' of ooze that will be visible in the water below the stem cut surface. Lengthwise slices of lower stem tissues will reveal dark brown discoloration of vascular and associated inner tissues. Other web sites providing additional information on this disease are: 1) University of Florida Pest Alert, T. Momal, J. Jones, S. Olson, http://extlab7.entnem.ufl.edu/PestAlert/tmm-0303.htm; Disease Alert: *Ralstonia solanacearum* by M. Daughtrey, Cornell University http://www.growertalks.com/ralstonia/ralstonial.asp; *Ralstonia solanacearum*, Race 3 Biovar 2 found in U.S. Greenhouses by A. Hammer and K. Rane, Purdue University, http://www.ppdl.purdue.edu/ppdl/hot03/02-24.html; Update on *Ralstonia* Race 3, Biovar 2 from North Carolina State University, Plant Disease and Insect Clinic. http://www.ces.ncsu.edu/depts/ent/clinic/ralstonia.htm. (Much of the information in this paragraph was obtained from the Tim Momal web site.)

Summarization of geranium sample testing at the Auburn lab: The early geranium samples we received were tested with preliminary culture work. Those plants that produced culture isolates questionable for *R. s*. were mailed to the Beltsville lab for further testing. By mid March our lab was able to obtain a serology (immunostrip test kit from Agdia, Inc.) test for rapid detection of the bacteria *R. s*. in plant tissue. Plants received mid March and later were tested and only sent on to Beltsville for Race and Biovar testing if we obtained positive serology identification of *R. s*. The Beltsville lab was overloaded with samples and it was not until April 10-14 when we received word (through the State Department of Agriculture & Industries) as to the results of tests on samples sent. Some greenhouse facilities in Alabama (and many other states) were confirmed to have *R. s*. Race 3 Biovar 2 present in their geraniums. Dr. T. Johnson at the AL State Department of Agriculture and Industries explained that "USDA protocol states all geraniums that tested positive must be destroyed. Additionally, any plants that were shipped with the geraniums, any plants commingled with the geraniums, any plants within one meter of the geraniums in the greenhouse, and any plants in the greenhouse sitting below hanging geraniums must be destroyed." It was an unfortunate situation for the growers that race/biovar testing could not have been completed more quickly.

Last year several problems were observed on oak including anthracnose, Actinopelte leaf spot, Inonotus root rot, and dieback. Dieback is often difficult to diagnose on a large tree. With oaks, dieback may be caused by a variety of factors including canker diseases, root rot diseases, and trunk wood rot fungal diseases. These problems often occur on previously stressed trees. With oaks, two common stress factors are drought and fluctuating water tables. Either one of these situations could cause oak dieback with no involvement of fungal disease. But, these stressed

trees do often become infected with stress-dependent fungal cankers, root rots, or wood rot diseases. The stress- diseases we often see on oaks include Hypoxylon canker, Botryosphaeria canker, Inonotus wood rot, Armillaria root rot, Ganoderma wood and/or crown (butt) rot. Bacterial scorch (*Xylella fastidiosa*) or oak wilt (*Ceratocytis* (*Ophiostoma*) *fagacearum*) will also occur as dieback symptoms. The bacterial scorch typically will develop with initial scorch showing up on older leaves first. Oak wilt initially develops as branch wilt with interveinal yellowing of leaves on affected branches. Many of the trunk canker and wood rotting agents gain entrance to the trees via wounds. The bacterial scorch and oak wilt pathogens enter leaves or twigs usually via leaf hopper feeding and bark beetle feeding, respectively.

Exobasidium was a common disease of azalea and camellia in April. Leaves and twigs may develop green swollen areas or galls. Eventually the galls become white or pinkish in color due to the development of a surface powdery layer of the fungus. Fungal spores produced will be carried by wind to nearby azalea foliage where infection occurs. These new infections will remain inactive until next spring when galls will develop. Control of this disease may be achieved by removing all galls before they become white. Removal of white galls is still desired, but these galls have already released spores capable of causing some new infections. If desired, protective sprays of Bayleton may be applied in the early-mid spring to prevent infections.

Botrytis is a common problem in the greenhouse, nursery, landscape, and field when temperatures are in the 60s-70s and humidity/water availability is high. Disease control may be achieved by pruning to open up the foliage canopy so that relative humidity levels will drop. Increased spacing of plants would also cause decreased relative humidity. Increased temperatures into the 80s usually causes a reduced development of disease. In addition, there are many fungicides labelled to provide protective control of Botrytis blight on a large number of plants. See the AL Pest Management Handbook.

We have seen and had reports of Bradford pear dieback and early leaf color change from varying sections of the state, including northern, southern, and east central sections in late summer. Some of the tree samples contain Botryosphaeria cankers. We suspect the trees have developed root stress damage from excessive moisture earlier this summer. Poor soil drainage would have caused increased damage to the roots. Botryosphaeria cankers are often a problem on stressed trees. There is not much that can be done to remedy tree root problems. Following good horticultural practices (fertilizing appropriately in the spring; watering when conditions are dry) is about all that can be done for the roots. Cankered and dieback areas should be pruned out making cuts three-four inches beyond the edge of the dead areas. Dip shears into alcohol or a 20% solution of bleach between cuts.

Cercosporidium (formerly called Cercospora) blight was a common problem on Leyland cypress this fall. Usually the blight began in the lowest limbs and gradually spread to higher-up foliage. If foliage only was blighted, the branches may produce new

foliage growth at branch tips next spring. If branch tips were blighted and killed, then no new foliage will develop on these damaged branches next spring. If disease is detected early in a landscape situation, protective sprays of Halt may be applied to prevent disease spread. For other fungicides labelled to control Cercosporidium in commercial settings, see the AL Pest Management Handbook.

The common pansy diseases - Thielaviopsis black root rot, Myrothecium crown rot, Cercospora leaf spot, and anthracnose leaf spot - were seen in October. With black root rot, plants are stunted, older leaves become yellowed, and roots develop black lesions. When disease is well established, the whole root system may become black. Diseased plants should be removed. Several fungicides are available for protective disease control in greenhouse/nursery situations. See the AL Pest Management Handbook. Myrothecium crown rot is caused by fungal infection at the lower stem at the soil level. Crown tissues become soft rotted and plants wilt and collapse. Small black fruiting bodies may be seen on the soft rotted crown tissues when a hand lens or magnifying glass is used. Infected plants should be removed. Daconil sprays-drenches may be applied as a chemical protective method. Cercospora leaf spots develop as black, patchy, irregular spots about 0.5-1 cm diameter. Heritage is labeled for disease control. Daconil or Cleary's 3336 will also control Cercospora. Anthracnose leaf spots are usually white and circular. Several fungicides (including Cleary's 3336, Halt, and Daconil) are labeled to control anthracnose on pansy. See the AL Pest Management Handbook.

Phomopsis tip blight of junipers (including red cedar, and related evergreens) is typically a summer (warm weather) disease. Shoot tips become yellow and later brown. Lower foliage is often affected first, and then blight spreads inward into the foliage and upward. Twig cankers develop which are the cause of the dieback. Planting of resistant juniper cultivars is the best control strategy. Planting junipers in areas of good sunlight, good soil drainage and good air circulation are other good practices. Damaged shoots should be pruned out, making cuts 3 inches beyond the damaged margins. When disease has been a problem, protective fungicide use should be considered. See the AL Pest Management Handbook. Cleary's 3336, Halt, Dithane, Fore, or Zyban may be used.

Turf Grasses. After tomatoes, the warm-season turf grasses were the most numerous samples submitted. The number of centipede samples submitted was 79. Numbers of bermuda grass samples were 55; St. Augustine grass, 53; and zoysia grass, 45. Common diseases seen were brown patch, and Bipolaris leaf spot. Take-all patch was commonly seen on St. Augustine.

During late September and early October, we saw crown rots of bermuda and zoysia caused by Helminthosporium-type (Exserohilum and Drechslera) fungi. These fungi are often associated with nutrient deficient or otherwise stressed bermudagrass. Soil testing is recommended when Helminthosporium diseases develop. When disease is severe, fungicides may be recommended. See ANR-621 and the Pest Management Handbook for more information.

DISEASES REPORTED FROM THE BIRMINGHAM PLANT DIAGNOSTIC LAB

Vegetables. Garden tomatoes were the most common vegetable brought to the Birmingham lab; early blight and bacterial spot were the most common diseases. Bacterial spot was also common on green pepper. In general, viral problems (CMV, and tomato spotted wilt) on tomatoes and other vegetables were uncommon in 2003.

Ornamentals. A total of 624 woody and herbaceous ornamental plants (56 % of total samples) were submitted for insect and disease identification. With the mild temperatures and frequent spring and summer rains foliage, stem and root diseases were common problems. Phytophthora root rot was reported on the following plants: aucuba, azalea, blueberry, boxwood, cleyera, Leyland cypress, winter daphne, dogwood, forsythia, oak leaf hydrangea, ivy, juniper, Japanese anise, Japanese barberry, Japanese maple, rhododendron, rose, rosemary, and sourwood. Pythium root rot was reported on amaryllis, boxwood, chrysanthemum, Japanese holly, Japanese maple, pansy, Lenten rose, Easter lily, mondograss, and upright wild ginger. Armillaria root rot was reported on oak leaf hydrangea, rose, and peach. Black root rot was reported on Japanese holly, pansy, and petunia. Nematode problems of note included root knot nematode on coleus and begonia, and foliar nematodes on hosta.

Zonate or bulls-eye leaf spot was very common on red maple and caused significant defoliation in some cases. Hickory was also affected by zonate leaf spot, and in at least one case, the disease caused the tree to completely defoliate by late July. Bacterial leaf scorch was reported on pin and red oak samples.

New disease reports for 2003 included leaf and twig blight on Japanese kerria, downy mildew on redbud, and southern blight on pratia.

Turfgrass. A total 260 turf samples (23% of total samples) were received at the Birmingham lab. Pythium root rot was the most common disease on bentgrass, but anthracnose was also common. The first two samples of anthracnose arrived in the lab in late May. On Bermudagrass, dollar spot, Helminosporium diseases, and spring dead spot were the most common disease problems. Brown patch was the most common fungal disease on centipedegrass. On St. Augustinegrass brown patch and gray leaf spot were the most common disease problems. By far the most common turfgrass brought to the lab was zoysiagrass, with 167 samples received last year. Common disease problems on zoysiagrass were brown patch, dollar spot, and leaf rust. However, the most common problem with zoysiagrass was delayed green-up of newly established turfgrass (1-3 years old). In most cases, the zoysiagrass had been installed in 2002 and failed to green-up in 2003. The affected yards typically did green-up and return to normal growth by late July, 2003. The problem was almost exclusively on 'Emerald' zoysiagrass. Other zoysiagrass cultivars did not have the same difficulty coming out of winter dormancy. We did not find any consistent disease or insect pest to explain the late green-up of these lawns. Research was undertaken last summer to try and determine the cause of this problem.

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