

TIMELY INFORMATION

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OVER-VIEW OF THE 2007 ALABAMA PLANT DISEASES AND INSECTS AS SEEN AT THE AUBURN & BIRMINGHAM PLANT DIAGNOSTIC LABS

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The Plant Diagnostic Lab at Auburn University receives plant problem/disease samples and insect specimens 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 (W. Gazaway, A. Hagan, & E. Sikora).

Copies of the 2007 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@aces.edu; mailing address - Auburn Plant Diagnostic Lab, ALFA Agricultural Services Bldg., 961 S. Donahue Drive, Auburn University, AL 36849-5624. Contact information for the Birmingham Lab: phone 205-879-6964; email jjacobi@aces.edu; mailing address - C. Beaty Hanna Horticulture and Environmental Center, 2612 Lane Park Road, Birmingham, AL 35223-1802. The www address for the Auburn and Birmingham labs are as follows: Auburn lab - <http://www.aces.edu/dept/plantdiagnosticlab>; Birmingham Lab - <http://www.aces.edu/plantlabbbham/>).

If you wish to submit a plant, soil, or insect sample to the Plant Diagnostic Lab at Auburn, or Birmingham, consult the web sites for information and for downloading the appropriate questionnaire.

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
Commercial/Industrial Insect Samples	\$20

SOME NOTEWORTHY DISEASES REPORTED FROM THE AUBURN LAB
IN 2007

The Plant Diagnostic Lab at Auburn University receives plant problem/disease samples and insect specimens for diagnosis and soil samples for nematode analysis from all sections of the state. Lab records are often used to document plant disease and insect occurrences in Alabama. The following summaries were prepared from records of the Auburn Plant Diagnostic Lab with supplement field and survey information from Extension Plant Pathologists and other Extension Specialists (A. Hagan, E. Sikora, W. Gazaway, D. Delaney, D. Monks, & W. Goodman).

Last year, the growing season was unusually dry. Many areas of field crops died as a result of drought. Corn and soybeans were especially damaged. Much of the northern half of the state experienced very dry conditions March-October. The southern half of the state also experienced dry conditions, but some moisture was available during the summer months and early fall. Vegetables, fruits, turf, and ornamentals also suffered from drought. Irrigation was critical, especially in the northern half of the state. In addition to the drought, a freeze event in April in North Alabama and severely high late summer temperatures caused problems. See the Birmingham Lab Report (p. 5) for more information on weather damage in 2007.

Field Crops: Dry conditions during spring and summer caused reduced yields with field crops in some areas, especially northern county areas. However, some areas did receive adequate rain at critical times and so crop yield was normal in these areas (W. Goodman). Small grains yields varied, depending on the rainfall locations in the spring. Corn and soybean crops were severely damaged by drought. With peanuts, average yield was about 20% lower than was expected. The Southwest areas received more rain than the Southeast areas so Southwest yields were higher than Southeast yields (A. Hagan). Cotton also suffered from the dry conditions, especially in the northern half of the state. Calculations indicate that an average of 15-18% loss was due to disease (W. Gazaway).

K. Burch rated the small grain trials mid season. Disease incidence was very low. For more information see <http://www.ag.auburn.edu/aaes/communications/agronomy/ay669smgrvar07.pdf/>.

Two interesting and uncommon diseases seen in the lab on small grains in early spring were halo blight (*Pseudomonas coronafaciens*) on oats (from Bullock County) and tan spot on wheat (*Drechslera tritici-repentis*) (from Marengo County).

Dry land corn (Most of the corn is not irrigated.) was severely damaged from drought. Some areas of Baldwin County produced a corn crop. Some southern rust (*Puccinia polysora*) was seen in southern areas (A Hagan).

The average soybean yield (in bushels per acre in harvested acres) was about 71% of the average yield during the past 5 years, which included some drought years. Yields along the coast (Baldwin & Mobile Counties) were better than inland, and Sand Mountain did better than Tennessee Valley. Early planted beans were damaged severely from drought. Some late-planted beans (which received rain) produced better. In the southern part of the state root knot nematode (*Meloidogyne* spp.), white mold (*Scerotium rolfsii*), frogeye leaf spot (*Cercospora sojina*), Cercospora blight (*C. kikuchii*), and bacterial pustule (*Xanthomonas campestris* pv. *glycines*) were present in some areas. Frogeye was controlled by the fungicides applied for rust (D. Delaney & E. Sikora).

Asian soybean rust (*Phakopsora pachyrhizi*) was detected on kudzu in January in Houston, Geneva, Baldwin, Mobile & Montgomery Counties. In March, rust was seen on kudzu in Montgomery, Houston, Baldwin, and Mobile counties. Asian soybean rust was first detected on soybean in a Baldwin County sentinel plot on June 26. Disease was not detected again until August-December. See below for details. Stem canker on soybean was noted in September on beans from Morgan County.

For the total year of 2007, soybean rust was identified in 40 counties. For 25 counties, the rust was found on soybean. The following counties had rust reported on soybean: Baldwin, Barbour, Clarke, Coffee, Dallas, Escambia, Elmore, Fayette, Franklin, Geneva, Houston, Henry, Lamar, Lee, Lowndes, Marengo, Marion, Mobile, Monroe, Pickens, Pike, Sumter, Pickens, Talladega, & Washington. In 27 counties, rust was identified on kudzu and wild legumes. The following counties contained rust on kudzu or wild legumes: Autauga, Bibb, Bullock, Butler, Chambers, Choctaw, Chilton, Clay, Coffee, Conecuh, Coosa, Crenshaw, Covington, Dale, Dallas, Greene, Hale, Jefferson, Macon, Mobile, Perry, Randolph, Russell, St. Clair, Talladega, Tallapoosa, & Wilcox. (Data available from the www.sbrusa.net website, E. Sikora, and M. Delaney.)

Cotton was damaged by drought in some areas. Overall, diseases and nematode damage were reduced. Calculations made by the Cotton Disease Loss Estimate Committee for Alabama indicate the following diseases and their percentage loss: Fusarium wilt-0.5%; Verticillium wilt-0.5%, bacterial blight (*Xanthomonas malvacearum*)-trace %, seedling diseases (*Fusarium* & *Rhizoctonia*)-4.5%, Ascochyta blight (*A. gossypii*)-0.4%, nematode damage from root knot nematode and reniform-9%. In the Black Belt area, potassium deficiency (possibly from drought) caused early defoliation from leaf spot fungal diseases. Fungi involved were *Phomopsis*, *Stemphyllium*, and *Alternaria*. Boll lock (noted in some areas) appeared to be the result of drought and not boll diseases. (W. Gazaway)

Peanut yields were about 20% lower than anticipated yields. The damage was mostly due to drought. Tomato spotted wilt virus was present in some areas but damage was minimal. Very little leaf spot damage was present. White mold (*Sclerotium rolfsii*) was present and caused damage in some southern areas of the state. *Cylindrocladium* black rot was present in scattered locations in the southern most areas. Nematode problems (almost entirely peanut root knot-*Meloidogyne*) were present in some areas (A. Hagan).

A clover sample in August from Bullock County showed dieback with *Rhizoctonia solani* & *Sclerotium rolfsii* isolated from the damaged lower stems.

Fruits, Nuts, Vegetables. As usual, tomatoes were our most frequently seen vegetable sample. With tomatoes, we saw the following problems: Fusarium wilt, target spot (*Corynespora cassiicola*), bacterial stem rot (*Pectobacterium carotovora* pv. *carotovora*; formerly *Erwinia carotovora*), tomato spotted wilt virus, bacterial canker, anthracnose fruit rot, and southern blight. TSWV was first noted on tomato in mid April in Dallas County. In July: TSWV was common and severe on tomato and pepper; bacterial wilt was seen on tomato; southern blight was seen on pepper. In August, TSWV was especially severe on a pepper sample sent to the lab from Lee County. In August-September the following diseases were seen: bacterial leaf spot on tomato; gummy stem blight on watermelon and cantaloup; and Fusarium wilt on pepper. Hypoxylon canker was seen on pecan in early fall. In September, *Alternaria tenuissima* fruit spot was seen on pepper. White spot on turnips & other crucifers (*Cercospora brassicae*) was common in December.

Ornamentals. In 2007, our lab received 398 ornamental samples. The types of samples were diverse. 163 ornamental plant samples were received from the Alabama State Department of Agriculture. Many of these samples were azalea, camellia, rhododendron, cherry laurel, & southern magnolia nursery stock submitted to be tested for the quarantined disease called *Phytophthora ramorum* blight or Sudden Oak Death. We received 137 such samples. While 33 samples tested positive for *Phytophthora* using an ELISA test, none of the *Phytophthora* positive plants gave positive results for *P. ramorum* (using a PCR method performed on extracted DNA at the USDA molecular diagnostic lab in Beltsville, MD). The plants that contained non-*ramorum* *Phytophthora* leaf spots were: cherry laurel, magnolia, rhododendron, and azalea.

Some of the diseases seen on herbaceous ornamentals included: tomato spotted wilt virus on impatiens; Botrytis & Fusarium root rot on petunia; Heterosporium leaf spot on iris; TSWV on zinnia; Fusarium & Pythium isolated from crown/root rot of sea oats. Diseases seen on woody ornamentals included anthracnose on camellia as a common problem; *Cercospora sequoia* foliage blight on Leyland Cypress; Seiridium canker on Leyland Cypress; limb blight (*Corticium salmonicolor*) on dogwood; cedar apple rust on crabapple in April and May; *Cristulariella* leaf spot on tulip poplar; fireblight on Bradford pear in May; cedar quince rust on flowering quince; *Rhizoctonia* aerial blight of fig and azalea; Hypoxylon canker on oak. By October, many small non-irrigated trees & shrubs had died in northern sections of the state. Many Leyland cypress & junipers died from drought. Recently planted trees and shrubs were especially damaged. Downy mildew was seen on rose and Botryosphaeria canker was noted on Eleagnus.

Phytophthora sp. leaf spots were seen on cherry laurel, rhododendron, azalea, southern magnolia, & flowering quince. Except for the flowering quince, these plants were submitted by the AL State Department of Agriculture. *Phytophthora nicotiana* caused aerial blight on periwinkle & petunia. *Phytophthora* root rot was diagnosed on azalea, gardenia, juniper, Leyland cypress, Loropetalum, cryptomeria, rhododendron, red buckeye, clematis, cleyera, hydrangea, ligustrum, flowering quince, lantana, apple, mondograss, cotoneaster, ajuga, & hydrangea. *Pythium* root rot was seen on dianthus, petunia, begonia, hydrangea & clematis.

In October we received azaleas which were diagnosed with *Phytophthora* root rot, *Pythium* root rot, and also planting too deep. These are problems we see on woody shrubs at least 5-6 times per year. The real and primary problem is that the shrubs were planted too deep. When the lower trunk is covered with soil, the tissues in this area do not receive adequate oxygen. The shrub (or tree) will develop adventitious roots in the lower trunk area covered with soil. If the area is kept wet, the roots will become increasingly susceptible to *Phytophthora* root rot, *Pythium* root rot, and other root stresses. Root rot and plant death will follow. On woody plants, *Phytophthora* is a more aggressive root disease agent than *Pythium*, which often develops on previously damaged roots in wet situations. The *Pythium* may contribute to the decline of the previously damaged or weakened roots. However, some *Pythium* species have been shown to be primary disease agents of small, feeder roots of some woody plants. Small nursery tree seedlings or small shrubs are more susceptible to *Pythium* damage. Trees and shrubs should be planted so the top of the root ball of a container plant is flush with the soil level. Once root disease develops, the plants should be removed. Removal of some root-associated soil may be helpful since the *Phytophthora* or *Pythium* spores may remain active in the soil for 1-2 years. Wet conditions are necessary for these two fungal-like organisms to be active.

Turf Grasses. A variety of problems were detected on turf grass samples submitted. Fewer than normal disease problems were seen last year, due to the dry conditions. St. Augustine grass was the most commonly seen grass last year. We received 73 St. Augustine grass samples, 67 centipede samples, 32 bermuda grass samples, and 50 zoysia samples. Brown patch was seen in almost 25% of the centipede samples submitted. Many cases of brown patch were seen in April & May. Brown patch seen on the other grasses was less common. A significant percentage of the centipede samples (19%) contained the take-all patch fungus along with other problems. Most (90%) of the St. Augustine grass samples contained take-all patch, sometimes along with other identified problems.

We received a few reports of blackened zoysia grass in August. The black coloration on dying/dead zoysia grass was caused by masses of *Curvularia* spores on the leaf surfaces. This fungus is usually considered to be secondary, developing only on previously damaged plants. It is reported to cause a leaf blight in high temperature situations or after high temperature stress. *Curvularia* is controlled by methods used to control *Bipolaris* (*Helminthosporium*).

SOME NOTEWORTHY DISEASES REPORTED FROM THE BIRMINGHAM LAB IN 2007

Weather. We had two big weather issues during last year. First, and by far the most important, was the record breaking drought. Second, was the late spring freeze event (April 8-

10) that caused severe damage to fruit crops, trees and ornamental plants throughout North Alabama.

Several reporting stations in Central Alabama had their driest year on record in 2007. In Birmingham, the total rainfall was 28.86 inches, which broke the record of 36.14 inches in 1931 (NOAA, 2008). The average rainfall for Birmingham is 53.99 inches of precipitation. See the graphs in Figure 1 and 2 for a comparison of the recorded precipitation during the last 10-years and the monthly totals for 2007 as compared with the average rainfall during each month. Montgomery had their third driest year on record with 36.75 inches of rainfall. The driest year in Montgomery remains 1954 when 28.82 inches of rain fell (NOAA, 2008).

Besides being the driest in recorded history. 2007 was the 2nd warmest on record in Birmingham. Extreme heat affected Central Alabama during the month of August. All of the reporting stations in the Central Alabama area recorded at least 10 consecutive days of 100+ degree temperatures. During this time period of 100+ degree days, Birmingham set record high temperatures for 8 consecutive days. The average high temperature in Birmingham during August 2007 was 98.4 F. Some reporting stations recorded all time high temperatures for any time of the year (NOAA, 2008). Because of the hot, dry conditions we saw a sharp increase in the number of abiotic and stress related problems on both turfgrass and landscape plants. Most common fungal diseases were rare or reduced compared with a normal year.

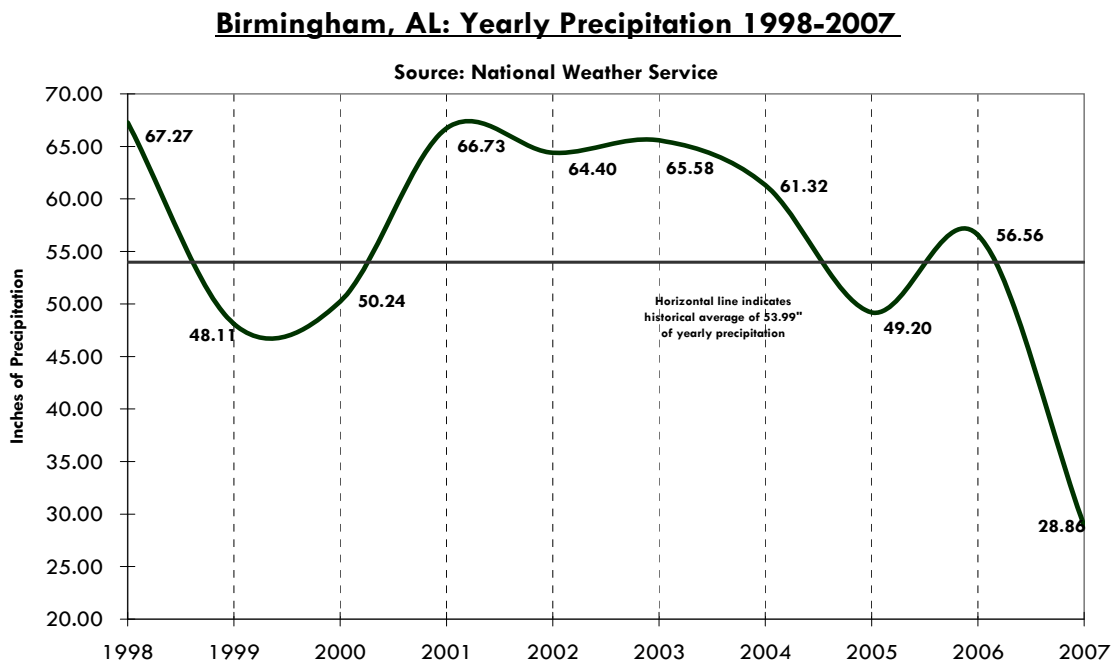


Fig 1. Total yearly precipitation for Birmingham, AL from 1998-2007. Horizontal line indicates historical average of 53.99 inches/year.

Birmingham, AL - 2007 Precipitation & Historical Average

Source: National Weather Service

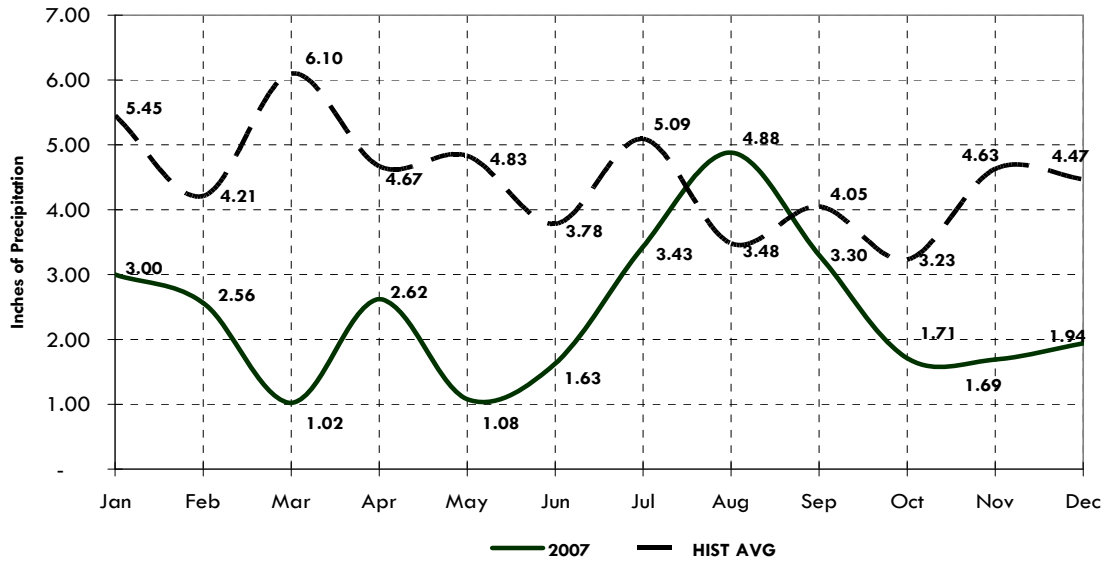


Fig. 2. Monthly precipitation totals for Birmingham, AL. Dashed line indicates historical average and solid line is data from 2007.

The following is a brief overview of the major crop groups and problems seen during 2007.

Fruit Diseases.

No new or unusual disease or insect pests were observed in 2007.

Vegetable Diseases.

Tomatoes.

Virus problems were extremely prevalent on tomatoes and cucurbits last year. Tomato spotted wilt (TSWV) was the most common problem on tomatoes. The number of samples with TSWV were nearly twice as many samples in 2007 (19 sample) as compared to 2006 (8 samples). This was nearly as widespread a TSWV epidemic as we saw in 2004, when 15 samples with TSWV were brought to the lab. As can be expected with the hot, dry conditions blossom end rot was also prevalent.

Virus diseases were also prevalent in cucurbits, two commercial pumpkin samples tested positive for the potyvirus group test.

Landscape Plant Diseases.

A total of 556 woody and herbaceous ornamental plants (64 % of total samples) were submitted for problem identification. Boxwoods were the most common plant brought to the lab; accounting for 8.4% of our ornamental plant samples. Azaleas were a close second with

6.8% of the samples. Canker and dieback diseases were very common last year. Especially hard hit were Leyland cypress.

Black root rot (*Thielaviopsis*) is a common problem on pansy and Japanese holly, but was found last year on common boxwood for the first time in our lab.

We saw an unusually large number of samples with damage from voles and sapsucker injury in the spring of 2007 on a wide range of woody ornamentals. Sapsucker damage was most common on Chinese holly cultivars and hybrids, especially 'Nellie R. Stevens' holly. In these cases, the bark was stripped in rectangular sections and the main stems or branches were girdled.

Camphor shoot beetle was seen for the first time in central Alabama causing dieback and death of a Japanese maple.

Turfgrass Diseases.

A total 125 turf samples (16.2% of total samples) were received at the Birmingham lab, which was about the same as 2006 (118 turf samples). We received 19 bentgrass samples and observed 14 different problems. Pythium diseases were the most common fungal disease, but were much less common than previous years. We only saw seven bermudagrass samples in 2007 and none of the problems were new or unusual. St. Augustinegrass and Zoysiagrass were the most common turfgrass brought to the lab (65% of turfgrass samples). Most of the damage to St. Augustinegrass samples was due to chinch bug damage. Cultural and environmental stresses were the most frequently observed problems on zoysiagrass last year.

NOTEWORTHY INSECT PROBLEMS AS SEEN AT THE AUBURN PLANT DIAGNOSTIC LAB

The most important highlight of 2007 was the appearance of the False Chinch Bug (*Nysius raphanus*) as a pest across the entire state. Crops affected included cotton, vegetable crops and cut flowers. The insects were also nuisance pests in homes and businesses. The False Chinch Bug is normally a pest in western states and their sudden increase in numbers may be result of the severe drought Alabama endured.

Bordered Plant Bugs (*Largus succinctus*) were also present in unusually large numbers. It shares two characteristics with False Chinch Bugs that may have contributed to its increase presence: eggs are laid in soil and the insects feed on a wide variety of weedy and landscape plants. The drought could have reduced densities of soil fungi which may attack eggs. Fortunately the Bordered Plant Bug did not feed on crops or damage ornamentals.

The Brown Widow Spider (*Latrodectus geometricus*) was found in Covington, Lee, Elmore, Autauga, Montgomery, and Madison Counties, often in large numbers. Prior to 2007, it was believed its range was restricted to the southernmost counties of Alabama.

The Bedbug (*Cimex lectularis*) was submitted from Escambia, Elmore, and Lee Counties and reports were received of their presence in several others. This reflects a national trend of bedbug reappearance.

The Sweet Potato Weevil (*Cylas formicarius*) also appeared to be extending its range northward. Specimens were identified from Butler, Montgomery, and Elmore Counties.

The Multicolored Asian Lady Beetle (*Harmonia axyridis*) was exceptionally abundant in the central part of the state with numerous submittals, phone calls and email questions about this insect.

At least 2 counties submitted specimens of *Cinara* aphids on North Carolina Christmas trees being sold at retail establishments. These aphids are host specific and are primarily a nuisance pest in homes.

Two new pestiferous scale insects were identified for the first time from Alabama. The Cycad Aulacaspis Scale (*Aulacaspis yasumatsui*) was identified from Sago Palms in Baldwin County. The Sugar Cane Scale (*Aspidiella sacchari*) was identified from centipede turfgrass from Mobile County. Both scales can be economically important but are tropical in origin and are not expected to spread extensively in Alabama.