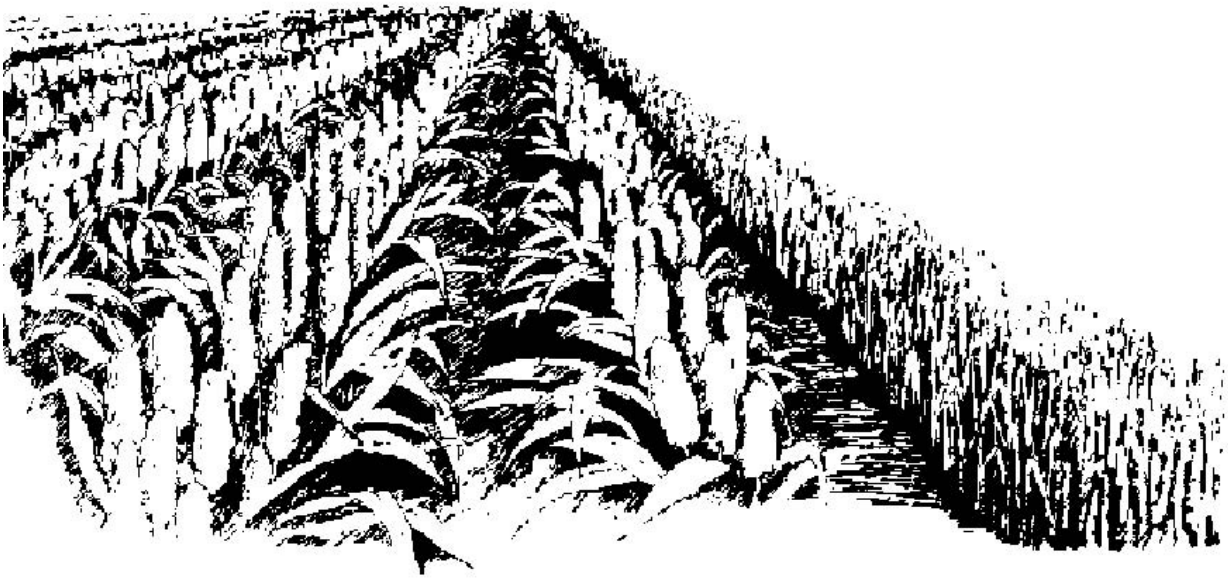
THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION
College of Agricultural and Environmental Sciences
College of Family and Consumer Sciences

2008
Georgia Plant Disease Loss Estimates



Compiled by
David B. Langston, Jr.
Extension Plant Pathologist

It is estimated that losses due to plant diseases in Georgia in 2008 amounted to $612.06 million. These losses include actual losses in yield and quality as well as costs of disease control measures. The value of these crops was approximately $4,846.05 million, which resulted in a 12.03% total disease loss for crops grown in 2008.

The estimated values for most crops used to compute these disease losses were taken from the Georgia Agricultural Statistics Service Farm Report for 2008 and the 2008 Georgia Farm Gate Value Report. Actual disease estimates are made by specialists assigned to each crop and are based on reports and observations made each year.

The information in this publication was compiled by David Langston, Extension vegetable pathologist. The following members of the University of Georgia department of Plant Pathology made direct contributions to this publication.

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2008 PLANT DISEASE CLINICS ANNUAL SUMMARY

Holly Thornton

Extension Plant Pathology maintains two plant disease clinics as educational resources for county Extension agricultural faculty to use to aid their clients in diagnosing and correcting disease-related plant problems. The Athens Plant Disease Clinic, which includes the Homeowner IPM plant disease clinic, was operated by Holly Thornton. The following plant disease samples are processed in Athens: commercial fruit, ornamentals and turf; Christmas trees and forestry; all homeowner samples; legume forages and small grains; urban ornamental landscapes; and mushrooms and wood rots. There is a $10 processing fee for all physical homeowner samples submitted to the diagnostic clinic in Athens.

In Tifton, the Plant Disease Clinic is run by Jason Brock in the Horticulture Building on the main Tifton Campus - Room 116, 4604 Research Way. Diagnoses of and control recommendations for commercial samples of field crops, grain forages, pecans and vegetables are handled at this location.

Sample numbers continue to increase each year (1530 samples in 2007). This increase was seen in both homeowner and commercial sample submission, with the greatest increases occurring in commercial fruit sample submission and both homeowner and commercial turf submission. Last year was a very dry year and many of the problems seen were not disease-related but rather environmental or cultural-type plant problems.

Diagnoses and educational recommendations are returned to the county faculty. The clinics maintain a computerized database of samples and their diagnoses through the DDDI system, as well as a reference library for use by Extension agents, specialists, researchers and students. Monthly homeowner reports are also available via our departmental clinic homepage (http://www.plant.uga.edu/Extension/Clinics/PDC.htm).

CLINIC SUMMARIES: 2008 PLANT SAMPLE SUBMISSION

Crop	Commercial Samples	Homeowner IPM Samples	Total
Field Crops	237	0	237
Vegetables	296	60	356
Fruits & Nuts	165	40	205
Herbaceous Ornamentals	102	38	140
Woody Ornamentals	128	107	235
Trees	71	110	181
Turf	434	241	675
Miscellaneous	7	15	22
Total	**1440**	**611**	**2051**

APPLE

This was one of the driest years on record for north Georgia. As a result, disease losses were minimal for apple production. Due to extreme drought conditions, fire blight and summer rot diseases had a minimal impact. Absolutely no disease was recorded in untreated research apples at the Blairsville substation. Overall disease pressure was very low in apples. There is still a strong need for more efficacious fungicides for control of bitter rot and other summer rot diseases. In addition, though not yet observed, we are concerned that streptomycin antibiotic resistance may yet become an issue; currently, streptomycin is the only effective antibiotic for fire blight. If we lose this antibiotic due to resistance, apple production will be much more difficult. Cost of control included pesticide usage for fire blight, pruning costs and summer rot control measures.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Fire Blight	0.0	0.0	70.0	70.0
Bitter Rot	1.0	45.3	100.0	145.3
Bot Rot	0.0	0.0	52.0	52.0
Black Rot	0.0	0.0	33.0	33.0
Alternaria Leaf Spot	0.0	0.0	0.0	0.0
Powdery Mildew	0.1	4.5	11.5	16.0
Sooty Blotch	0.0	0.0	0.0	0.0
Fly Speck	0.0	0.0	0.0	0.0
Cedar Apple Rust	0.1	4.5	0.0	4.5
Scab	0.0	0.0	0.0	0.0
Other Diseases	0.1	2.3	1.0	3.3
Total	**1.3**	**56.6**	**267.5**	**324.1**
*Controlled with fungicides applied for other diseases.				
Estimated by Phil Brannen, Extension Plant Pathologist				

BLUEBERRY

Blueberry production in 2008 was generally good to excellent. Due to extreme drought conditions, very few fungal diseases were observed. Powdery mildew was one of the few exceptions, and this was the first time in recent memory in which this disease was extensively observed. Rust was also prevalent in some locations, and Exobasidium leaf and fruit spot were identified in one or two locations as well. Bacterial leaf scorch, a newly identified bacterial disease of southern highbush blueberries, was observed in numerous locations throughout the blueberry belt, and it is now causing extensive losses on several varieties. Also, the viral disease red ring spot was identified at several sites, as well as yet another newly identified disease, necrotic ring blotch. Necrotic ring blotch is likely caused by a virus, but ongoing research has not yet firmly established the cause. It is becoming firmly established among some southern highbush varieties, where it results in early and complete defoliation. Until recently, blueberry viruses had been occasionally-observed curiosities, but they are rapidly becoming established threats to the industry.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Mummy Berry	0.1	70.6	1277.5	1348.1
Botrytis Blight	0.0	0.0	511.0	511.0
Foliar Disease	0.1	70.6	383.3	453.9
Rots	0.1	70.6	127.8	198.4
Bacterial Scorch	0.1	70.6	0.0	70.6
Dieback	0.1	70.6	127.8	198.4
Phytophthora Root Rot	0.1	70.6	127.8	198.4
Total	**0.6**	**423.6**	**2555.0**	**2978.6**
Estimate by Phil Brannen, Extension Plant Pathologist				

BUNCH GRAPE

Grape diseases were radically reduced by extreme drought. With the exception of powdery mildew, a dry weather fungal pathogen, disease pressure from fungi was virtually nonexistent, largely as a result of a dry year. Powdery mildew was prevalent in some locations, especially where poor fungicide programs were utilized. North Georgia is on the southern edge of the region where one can effectively grow wine grapes, and this is related to Pierce's disease, a bacterial disease which is vectored by an insect, the glassy-winged sharpshooter. Cold winter temperatures either kill the insect, which transmits the disease, or the temperatures may actually prevent the bacteria from surviving, but the verdict is still out on which is most important. However, we do know that cold temperatures allow for production of Vinifera wine grapes, and we do not recommend that producers plant these at elevations below 1,300 feet. As a result of warmer winters, we have observed substantial increases in vine death, even at higher elevations and longitudes. In some cases, producers have gone from losing less than10 vines per year to losses of several hundred vines, as observed in 2006 and 2007. Pierce's disease losses were once again extensive in 2008; however, the colder winter of 2007/2008, combined with more aggressive insect management for Pierce's disease vectors, likely resulted in reduced losses as compared to the previous two years. Crown gall, another bacterial disease associated with plant injury, increased due to freeze damage observed in 2007.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Botrytis	0.1	2.1	40.0	42.1
Downy Mildew	0.1	2.1	70.0	72.1
Black Rot	0.1	2.1	70.0	72.1
Powdery Mildew	2.0	41.1	20.0	61.1
Phomopsis Cane Blight	1.0	20.6	35.0	55.6
Crown Gall	0.2	4.1	5.0	9.1
Pierce's Disease	0.5	10.3	30.0	40.3
Total	**4.0**	**82.3**	**270.0**	**352.3**
Estimate by Phil Brannen, Extension Plant Pathologist				

CORN

In 2008, corn for grain was planted on 370,000 acres and was harvested from 310,000 acres in Georgia with an average yield of 140 bu/A. The 2008 crop was valued at $199.64 million. Southern rust (*Puccinia polysora*) was a significant problem for many corn growers in 2008 and was especially damaging to the corn crop planted after harvest of wheat. Additionally, a second virulent race of *P. polysora* was confirmed in Georgia in 2008 to overcome the resistance to southern rust in hybrids (the rpp9 gene). Rainfall was less abundant during the 2005 and 2006 growing seasons than in 2003 and 2004. In addition to southern corn rust, northern corn leaf blight (*Exserohilum turcicum*) was also quite severe in many fields. The 2008 season was the first time in recent years that this disease was observed with such severity and widespread incidence. Use of fungicides, especially strobilurin chemistries, was common in 2008.

The true importance of damage from nematodes (e.g. sting, stubby root and southern root-knot nematodes) is becoming more apparent as growers and county agents become more familiar with the symptoms.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Root & Stalk Rot	0.1	0.2	0.0	0.2
Nematodes	5.0	10.0	0.8*	10.8
Mycotoxins	4.0	8.0	0.0	8.0
Southern Corn Rust	5.0	10.0	1.5**	11.5
Northern Corn Leaf Blight	0.5	1.0	--**	1.0
Other Leaf Diseases	Trace	--	0.0	0.0
Total	**14.6**	**29.2**	**2.3**	**31.5**
*It is estimated that approximately 40,000 acres of corn were treated with 7 lb/A Counter insecticide-nematicide for control of nematodes.				
**It is estimated that 100,000 acres of corn were sprayed with fungicides at least once during the 2008 season at a cost of $5/A for application and $10/A for cost of fungicide.				
Estimate by Robert Kemerait, Extension Plant Pathologist				

COTTON

In 2008, it was reported that cotton was planted on an estimated 940,000 acres and harvested from an estimated 920,000 acres. The average lint yield was 835 lb/A. The crop was valued at $498.728 million.

Losses to seedling disease, primarily Rhizoctonia seedling blight, or "soreshin," were moderate in 2008. The most serious disease in 2008 was Stemphylium leaf spot. Though this disease typically has its basis in a nutrient deficiency, especially potassium, the fungal pathogen is the cause of the leaf spots that can lead to rapid and severe defoliation in a field. Dry weather during 2008 may have affected the uptake of the potassium leading to the problems with Stemphylium leaf spot.

Losses to nematodes, primarily southern root-knot nematodes, continue to be one of the most important problems for cotton growers in Georgia. Until growers are able to practice effective crop rotation and increase the number of years between cotton crops in a field, the losses and damage from parasitic nematodes will continue to increase unless growers use nematicides effectively. The current decline in cotton acreage in Georgia should make it easier for growers, especially those who grow peanuts, to increase the time between successive cotton crops in a field.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Boll Rot (lint)	2.0	10.0	0.0	10.0
Nematodes	**10.0**	**50.0**	**9.5[a]**	**59.5**
Southern root-knot	7.5	37.4	---	---
Reniform	2.0	10.0	---	---
Columbia lance	0.5	2.6	---	---
Seedling Disease	1.0	5.0	1.2[b]	6.2
Fusarium Wilt	Trace	---	---	---
Ascochyta Blight	Trace	---	---	---
Stemphylium leaf spot	3.0	15.0	0.9[c]	15.9
Total	**16.0**	**80.0**	**11.6**	**91.6**

[a] This figure is based upon an estimation that approximately 35% of the cotton acreage in the state is treated with a nematicide rate of Temik (5 lb/A or greater), 20% with AVICTA Complete Pak, and approximately 2.0% of the acreage was treated with Telone II.

[b] This figure is an estimate of the cost of fungicides, both in the seed treatments and additional hopper box and in-furrow applications, that are used to manage seedling diseases. For this figure, it is estimated that approximately 15% of the cotton acreage in Georgia is treated with a fungicide in addition to the seed treatment to manage seedling disease.

[c] This figure is based upon an estimate that 10% of the cotton acreage in the state was sprayed with a fungicide in 2008 to manage foliar diseases of cotton.

Estimate by Robert Kemerait, Extension Plant Pathologist

MUSCADINE GRAPE

Minimal disease pressure was observed in most muscadine vineyards due to extreme drought. Some losses continued to occur from "dead arm" diseases, but in general, disease losses were minimal. As a native grape, muscadines generally have less disease pressure than European grapes.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Bitter Rot	0.1	2.0	40.2	42.2
Macrophoma Rot	0.1	2.0	35.0	37.0
Ripe Rot	0.1	2.0	15.0	17.0
Angular Leaf Spot	0.1	2.0	5.0	7.0
Black Rot	0.1	2.0	0.0	2.0
Phomopsis Dead Arm	0.1	2.0	1.0	3.0
Total	**0.6**	**11.9**	**96.2**	**108.1**
*Controlled with fungicides applied for other diseases.				
Estimate by Phil Brannen, Extension Plant Pathologist				

PEACH

Peach production was good to excellent in 2008. Due to extremely dry conditions, brown rot and scab diseases were of minimal consequence on the fruit that remained. Likewise, bacterial diseases were of minimum consequence as well. However, many orchards were prematurely defoliated as a result of rust. Armillaria continued to be a major, expanding problem in replant peach production.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Brown Rot	0.1	19.7	1,750.0	1,769.7
Scab	0.01	2.0	1,110.0	1,112.0
Bacterial Spot	0.01	2.0	20.0	22.0
Phony Peach	0.5	98.3	230.0	328.3
Gummosis	0.1	19.7	20.0	39.7
Armillaria Root Rot	1.0	196.7	50.0	246.7
Phomopsis Constriction Canker	0.01	2.0	10.0	12.0
Total	**1.7**	**340.2**	**3,190.0**	**3,530.2**
Estimate by Phil Brannen, Extension Plant Pathologist				

PEANUT

In 2008, peanuts were planted on approximately 690,000 acres and harvested from approximately 685,000 acres. Yields in 2008 averaged 3,400 lb/A for a total production valued at $475.116 million.

Tomato spotted wilt was very light again in 2008 for reasons that remain unclear. Severity of spotted wilt was much lower in 2006 (2.5% estimated reduction in crop value), 2007 (1.5% estimated reduction in crop value) and in 2008 than in 2005. Warm soil conditions early in the 2008 season favored the development of white mold ,which was the most important peanut disease for Georgia last year. Early and late leaf spot diseases were a problem for some growers and were especially severe in fields where peanuts were planted on a short rotation.

As the popular fungicide tebuconazole became available in generic formulations, growers using the generic formulations were able to realize less expensive fungicide programs.

Disease	% Reduction in Crop Value[a]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($Millions)
Leaf spots	1.0	4.8	34.9[b]	39.7
White mold	8.0	38.0	22.7[c]	60.7
Limb Rot	1.0	4.8	----[d]	4.8
Pod Rot	0.5	2.4	----[e]	2.4
Nematodes	3.0	14.2	6.4[f]	20.6
Cylindrocladium Black Rot	1.0	4.8	0.03[g]	4.83
Seedling Disease	0.2	1.0	0.7[h]	1.7
Tomato Spotted Wilt	1.0	4.8	0.0	4.8
Diplodia Collar Rot	Trace	----	0.0	0.0
Total	**15.7**	**74.8**	**64.73**	**139.53**

[a] The total value of the crop was $475.1 million according to the National Agricultural Statistics Service.

[b] It was estimated that 55% of peanut acreage in Georgia receives some irrigation and that most of this acreage was sprayed with fungicides 7 times during the season. Fungicide treatments for leaf spot control alone are about $8/acre per application. Growers usually sprayed non-irrigated fields less often, perhaps 4-5 times per season. This figure is based upon the cost to growers if they ONLY used fungicides (e.g. chlorothalonil) for leaf spot control. Only the approximate cost of the fungicide is factored into this figure.

[c] This figure reflects the additional cost BEYOND control of leaf spot if growers chose to use products such as azoxystrobin, tebuconazole or fluto-lanil to control soilborne diseases at some point during the season.

[d] Cost of control for limb rot is included in treatments for white mold.

[e] The cost of gypsum treatments applied to reduce pod rot has not been estimated.

[f] For the cost of nematode management, it was estimated that 10.0% of the acreage in Georgia is treated at a cost of $30/A; 5% of the acreage at $60/A; and 5% of the acreage at $67/A.

[g] It was estimated that approximately .1% of the total peanut acreage is treated with metam sodium to control CBR at $50/A.

[h] It was estimated that the cost to treat seed with fungicides is about $0.50/A and that approximately 5% of the peanut acreage is treated with an in-furrow fungicide at planting at $10/A.

Estimate by Robert Kemerait, Extension Plant Pathologist

PECAN

Much like 2006 and 2007, the 2008 pecan season was extremely dry, resulting in conditions unfavorable for disease development. In University of Georgia fungicide trials conducted at commercial orchards, non-treated controls remained free of scab in a number of locations in the state. Any fruit scab that occurred was the result of infections late in the growing season, with little to no loss occurring. The risk for growers not to spray is too great, but the intervals between fungicide applications could have been extended due to the dry conditions. In 2007, pecan acreage was estimated to be 140,339 acres in Georgia with an average yield of 662 lbs./A. The 2007 crop was valued at $125,932,662.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)[1]	Total ($ Millions)
Scab	0.05	0.63	17.7	18.33
Anthracnose	0.0	0.0	0.0	0.0
Brown Spot	0.0	0.0	0.0	0.0
Downy Spot	0.0	0.0	0.0	0.0
Powdery Mildew	0.0	0.0	0.0	0.0
Zonate Leaf Spot	0.0	0.0	0.0	0.0
Phytophthora Shuck and Kernel Rot	0.0	0.0	0.0	0.0
Total	**0.05**	**0.63**	**17.7**	**18.33**

[1] Seven treatments on 140,339 acres @ $18.00/A; scab sprays also effective against anthracnose, downy spot, brown spot, and powdery mildew in most cases; number of sprays varied by location.

Estimate by Jason Brock, Extension Plant Pathologist

SOYBEAN

The recurrence of soybean rust, *Phakopsora pachyrhiz*i, in Georgia was the most important disease issue for soybean producers in 2008; however plant parasitic nematodes were certainly an important concern as well. Asian soybean rust was not known to successfully survive the winter of 2007-2008 and thus had to be reintroduced in 2008. The disease was not detected on sentinel plots until mid-July (in southwestern Georgia). The most important spread of Asian soybean rust into commercial areas occurred in late August and early September. It is estimated that at least 70% of the growers in Georgia applied at least one fungicide spray for management of rust.

In 2008, soybean was planted on 430,000 acres and harvested from an estimated 415,000 acres with an average yield of 30 bu/A. The total soybean production for Georgia in 2008 was valued at $114.540 million. Frogeye leaf spot was fairly common but was relatively unimportant for most growers. Many growers were concerned about the development of downy mildew during the season. However, we do not believe that this disease affects soybean yields in the state. Nematodes remain an important problem of soybean in Georgia, especially in fields rotated with corn or cotton.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Soybean Cyst Nematode[1]	Trace	---	---	---
Root-Knot Nematodes	3.5	4.0	1.3	5.3
Other Nematodes[2]	1.5	1.7	---	1.7
Asian Soybean Rust	0.5	0.6	4.5	5.1
Anthracnose	0.5	0.6	0.0	0.6
Brown Leaf Spot	Trace	---	0.0	---
Charcoal Rot	0.1	0.1	0.0	0.1
Diaporthe/Phomopsis complex	Trace	---	0.0	---
Downy Mildew	0.0	0.0	0.0	0.0
Frogeye Leaf Spot	Trace	---	0.0	---
Red Crown Rot	1.0	1.1	0.0	1.1
Pod and Stem Blight	2.0	0.0	0.0	0.0
Purple Stain	Trace	0.0	0.0	---
Seedling Diseases (*Rhizoctonia/ Pythium/Fusarium*)	0.2	0.2	0.1	0.3
Southern Blight	0.1	0.1	0.0	0.1
Stem Canker	NA	0.0	0.0	0.0
Fusarium Wilt	0.0	0.0	0.0	0.0
Virus Diseases	0.0	0.0	0.0	0.0
Bacterial Diseases	0.0	0.0	0.0	0.0
Total	**9.4**	**8.4**	**5.9**	**14.3**

[1] Resistant varieties are used to manage most nematode and disease problems. Typically, the only fungicides used are seed treatments to reduce seedling diseases.

[2]"Other nematodes" includes reniform, sting, and Columbia lance nematodes.

Estimate by Robert Kemerait, Extension Plant Pathologist

STRAWBERRY

Disease pressure was not severe in 2008, since it was a relatively dry year. Angular leaf spot was minimally observed. Anthracnose and Botrytis (gray mold) diseases, though infrequently observed, were not prevalent due to adequate control afforded through use of multiple fungicides throughout fruit development. Overall, it was a very good year for strawberry production. There is some concern that the strobilurin fungicides, which are heavily and virtually exclusively utilized for control of anthracnose, may be developing resistance. There is a strong need for fungicides with different modes of action if we are to continue strawberry production in Georgia.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Gray Mold	0.1	9.7	306.2	315.9
Fungal Leaf Spots	0.1	9.7	95.3	105.0
Anthracnose	0.5	48.7	102.1	150.8
Root Rots & Nematodes	0.5	48.7	170.1	218.8
Angular Leaf Spot	0.1	9.7	9.7	19.4
Total	**1.3**	**126.6**	**683.4**	**810.0**
Estimated by Phil Brannen, Extension Plant Pathologist				

TOBACCO

Paul Bertrand
Department of Plant Pathology

Spotted wilt continued to decline with an estimated plant loss of 10% for 2008.

Black shank continued to increase as growers continue to rely on Ph gene race 0 resistance, which is selecting for race 1. The preferred Ph gene varieties have low FL-301 resistance.

Blue mold was reported for the first time in four years. Losses were low but significant in the fields where it occurred.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total Loss ($ Millions)
Blue Mold[1]	0.01	0.005	0.002	0.007
Black Shank[2]	2.00	1.000	.400	1.400
Target Spot	0.01	0.005	0.001	0.006
Root Knot Nematode[3]	0.10	0.050	0.550	0.600
TSWV[4]	1.00	0.005	0.500	1.000
TMV[5]	T	0.000	0.000	0.000

[1] Not reported since 2004.
[2] Most losses are associated with pathogen race 1 selected by race 0 resistant Ph gene varieties.
[3] Increasing numbers of growers not using nematicide. Nematode damage is increasing on some farms.
[4] TSWV is estimated to have caused 10% plant loss and 1% loss of yield.
[5] Traces reported in 2008. This is the common occurrence of TMV. All cases were associated with NC-71 and NC-72.

TURFGRASS

It is estimated that there are 1.98 million acres of turf with a maintenance value of $1.80 billion in Georgia. There were 41,257 acres used for producing sod/stolons. In 2008, the drought continued and had a detrimental effect on the turfgrass industry. Watering restrictions were implemented to level IV throughout the state. The drought also impacted disease incidence; stressed turf swards were ubiquitous. High incidences of *Curvularia* spp. and *Colletotrichum* spp. were common in warm season grasses. Soilborne diseases were responsible for much of the disease losses. *Gaeumannomyces* spp. (causal agent of take all root rot and bermuda decline) continues to be prevalent and was observed throughout the state with higher incidences of the disease in the coastal and southern areas of Georgia. St Augustinegrass, centipede, zoysia and bermuda were the most affected species (in that order). In 2007, *Gaeumannomyces* sp was commonly diagnosed at our Plant Disease Clinics. *Rhizoctonia* spp. (causal agent of brown patch, large patch and yellow patch) was prevalent. *Pythium* spp. was observed throughout the state in 2008 especially in bentgrass greens. Incidences of *Magnaporthe poae* (summer patch) and *Ophiosphaerella* spp. (spring dead spot) were common in 2008. Foliar diseases continued to be problematic in 2008. *Sclerotinia homoeocarpa* was present throughout the state and in several turfgrass species. *Pyricularia grisea* infections were minimal in 2008. *Bipolaris* spp. was particularly problematic on Bermuda during the fall. Nematodes have been attributed to increased damage and promoting stress on turfgrass. Mixed infections of nematodes and Pythium were common in 2008. Sales of Nemacur® (Fenamiphos) ceased in May 2008, leaving turfgrass managers with limited options of nematode chemical control.

Turf Diseases	**% Reduction in Crop Value**	**Damage ($ Millions)**	**Cost of Control ($ Millions)**	**Total ($ Millions)**
Soil-borne Diseases	3.0	59.4	39.6	99.0
Foliar Diseases	1.7	29.7	23.7	53.4
Nematodes	2.5	49.5	9.9	59.4
Total	**7.2**	**138.6**	**73.2**	**211.8**
Estimate by Alfredo Martínez, Extension Plant Pathologist				

VEGETABLES

About 151,000 acres of vegetables were grown in Georgia in 2008 worth a total of approximately $849 million. Overall, most crops suffered few losses due to the drought, which resulted in unfavorable conditions for most diseases. Fusarium wilt of watermelon continues to increase in incidence and caused some early season losses. Losses to *Phytophthora capsici* on bell pepper and cucurbits were below average. The most prevalent disease on tomatoes and peppers was bacterial spot, caused by *Xanthomonas campestris* pv. *vesicatoria*. This disease continues to plague growers because it is difficult to prevent, and remedial disease management tools are generally suppressive at best. The fall produced periods of weather that was favorable for bacterial spot. Cost of control for watermelons is higher due to an expensive fungicide, Inspire Super MP + Vanguard, being used via a crisis exemption for control of gummy stem blight.

Major Vegetable Crops	**% Reduction in Crop Value[1]**	**Damage ($ Millions)**	**Cost of Control ($ Millions)**	**Total ($ Millions)**
Watermelon	2.2	2.6	7.0	9.6
Squash (yellow + zucchini)	2.2	0.88	1.4	2.3
Tomato	2.9[1]	1.5	2.8	4.3
Other Vegetable Crops	**% Reduction in Crop Value[1]**	**Damage ($ Millions)**	**Cost of Control ($ Millions)**	**Total ($ Millions)**
Pepper (bell)	4.5	4.7	1.9	6.6
Cucumber	2.8	2.3	1.8	4.1
Snap Bean	3.1	0.7	1.3	2.0
Greens	2.4	1.3	1.3	2.6
Cabbage	2.1	0.74	0.7	1.44
Onion (dry)	2.0	2.7	2.3	5.0
Cantaloupe	2.9	0.6	2.3	2.9
Eggplant	3.0	0.5	0.4	0.9
Total	**2.7[1]**	**18.6**	**23.2**	**41.8**

[1] This column is not additive due to the way losses for vegetables are tabulated.
Total values for vegetable commodities are taken from the 2007 farm gate values (AR-08-02).

Estimated by David B. Langston, Jr., Extension Plant Pathologist

WHEAT

Wheat was harvested from 397,255 acres with an average yield of 55.8 Bu/Acre. The farm gate value of wheat in 2008 was $121,707,481. Acreage planted in 2008 accounted for an increase of 38% compared to 2007. The wheat season began with a dry fall, with rains arriving in late November and early December. Wheat began to germinate at this time. Early infections of *Blumeria graminis f.* sp *tritici* (powdery mildew) were registered in the southern part of the state. Powdery mildew disease pressure was high on wheat research plots in Tifton and southwest Georgia. Weather conditions ultimately held the disease on check. *Puccinia striiformis* (stripe rust) was observed in artificially inoculated research plots at Plains and Griffin, but no widespread epidemics were observed in the state. The cool and dry grain-filling period of April held *Puccinia recondita* (leaf rust) back in wheat critical physiological stages. *P. recondita* increased late in the season but had no effect on yield. Near-freezing temperatures were observed in northern Georgia in April, causing some damage to heading and flowering wheat but not to the extent observed in 2007. *Gaumannomyces graminis* var *tritici* (take-all) was sporadically found in central and south Georgia and may have contributed to the early decline of some fields. *Stagonospora* (Glume blotch on heads and leaves) incidence was low in 2008. Minor incidences of loose smut caused by *Ustilago tritici* were observed in localized areas. Cooler temperatures and moist conditions in late winter encouraged soilborne mosaic virus to develop throughout the state. Barley Yellow Dwarf Virus (BYDV) was moderate with higher infection levels noted at the research plots located in Calhoun. An important piece of the disease management strategies was the use of disease resistant cultivars in 2008.

Wheat Diseases	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Leaf Rust/Stripe Rust	0.2	0.24	1.2	1.44
Glume Blotch	0.1	0.12	-----	0.12
Powdery Mildew	1.0	1.21	0.3	1.51
Barley Yellow Dwarf Virus	0.6	0.60	0.3	0.90
Stinking/Loose Smut	-----	-----	-----	------
Total	**1.9**	**2.17**	**1.8**	**3.97**
Estimate by Alfredo Martinez and John Youmans, Plant Pathology Department-Griffin				

SUMMARY OF TOTAL LOSSES DUE TO DISEASE DAMAGE AND COST OF CONTROL IN GEORGIA – 2008

Crop or Commodity	Estimated Crop Value ($ Millions)	% Reduction in Crop Value[1]	Value of Damage ($ Millions)	Cost of Control ($ Millions)	Total Disease Loss (Damage & Control) ($ Millions)	Total % of Loss[1, 2]
Apple	5.90	1.30	0.056	0.267	0.324	5.40
Blueberry	60.20	0.60	0.423	2.555	2.978	4.90
Bunch Grape	2.05	4.0	0.082	0.270	0.352	17.70
Corn	199.0	14.60	29.20	2.30	31.50	15.80
Cotton	498.0	16.0	80.0	11.60	91.60	18.40
Muscadine Grape	2.0	0.60	0.012	0.096	0.108	5.40
Ornamental	543.60	5.80	31.53	19.60	51.13	9.40
Peach	48.90	1.70	0.340	3.19	3.53	7.20
Peanut	475.0	15.70	74.80	64.73	139.50	29.40
Pecan	121.40	0.05	0.63	17.70	18.33	15.10
Soybean	114.50	9.40	8.40	5.90	14.30	12.49
Strawberry	4.80	1.30	0.126	0.683	0.810	16.80
Turf	1800.0	7.20	138.60	73.20	211.80	11.70
Vegetable	849.0	2.70	18.60	23.20	41.80	4.90
Wheat	121.70	1.90	2.17	1.80	3.97	3.30
TOTALS	**4846.05**	**--**	**384.97**	**227.09**	**612.06**	**12.63**

[1] This column is not additive.

[2] Total % loss for each crop and the grand total is figured on the basis of: (Value of Damage + Cost Control) / Crop Value

ATTENTION!
Pesticide Precautions

1. Observe all directions, restrictions and precautions on pesticide labels. It is dangerous, wasteful and illegal to do otherwise.

2. Store all pesticides in original containers with labels intact and behind locked doors. KEEP PESTICIDES OUT OF THE REACH OF CHILDREN.

3. Use pesticides at correct label dosage and intervals to avoid illegal residues or injury to plants and animals.

4. Apply pesticides carefully to avoid drift or contamination of non-target areas.

5. Surplus pesticides and containers should be disposed of in accordance with label instructions so that contamination of water and other hazards will not result.

6. Follow directions on the pesticide label regarding restrictions as required by State or Federal Laws and Regulations.

7. Avoid any action that may threaten an endangered species or its habitat. Your county Extension agent can inform you of endangered species in your area, help you identify them, and through the Fish and Wildlife Service identify actions that may threaten endangered species or their habitat.

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