Georgia Plant Disease Loss Estimates
2006

Compiled by Alfredo Martinez, Extension Plant Pathologist

It is estimated that 2006 plant disease losses, including control costs, amounted to approximately $647.2 million. The value of the crops used in this estimate was approximately $4673.73 million, resulting in a 12.08 percent total disease loss across all crops included in this summary.

The estimated values for most crops used to compute these disease losses are summarized in: Georgia Agricultural Statistics Service, Georgia Farm Report 7, No. 1 and the 2006 Georgia Farm Gate Value Report (AR-07-01). Some estimates for fruits, grapes, ornamentals and turf rely on specialists' knowledge of the industry and industry sources for information.

The following members of the University of Georgia Department of Plant Pathology made direct contribution to this publication:

Phil Brannen Athens, Ga.	706-542-2685	pbrannen@uga.edu
Jason Brock Tifton, Ga.	229-386-7202	jbrock@uga.edu
Robert Kemerait Tifton, Ga.	912-386-7495	kemerait@uga.edu
David Langston Tifton, Ga.	912-386-7495	dlangsto@uga.edu
Alfredo Martinez Griffin, Ga.	770-228-7375	martinez@griffin.uga.edu
Holly Thornton Athens, Ga.	706-542-4719	hthornto@uga.edu
Jean Williams-Woodward Athens, Ga.	706-542-9140	jwoodwar@uga.edu

2006 PLANT DISEASE CLINICS ANNUAL SUMMARY

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. There have been some major changes in the past year in regard to the diagnostic clinics. First, the Homeowner IPM plant disease clinic reopened in October, 2006, and is now located in Athens and operated in conjunction with the Athens Plant Disease Clinic by Holly Thornton. The following plant disease samples are now processed at this location: commercial fruit, ornamentals and turf; Christmas trees and forestry; all homeowner samples; legume forages and small grains; urban ornamental landscapes; mushrooms; and wood rots. In addition, there is now a $10 processing fee for all physical homeowner samples submitted to the Plant Diagnostics Clinic in Athens.

In Tifton, the Plant Disease Clinic run by Jason Brock recently moved from the Rural Development Center to 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.

Compared to previous years, sample numbers are down. This is due in part to the fact that the Homeowner IPM Clinic was closed for most of 2006, and drought conditions experienced throughout the state were not conducive for most disease organisms.

Diagnoses and educational recommendations are returned to the county faculty. The clinics maintain a computerized data base 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 home page — http://www.plant.uga.edu/Extension/Clinics/PDC.htm.

CLINIC SUMMARIES: 2006 PLANT SPECIMEN DIAGNOSES

Crop	Commercial Samples	Homeowner IPM Clinic	Total
Field Crops	154	1	155
Vegetables	256	4	260
Fruits & Nuts	84	7	91
Herbaceous Ornamentals	136	12	148
Woody Ornamentals	161	48	209
Trees	102	17	119
Turf	239	60	299
Miscellaneous	3	4	7
TOTAL	**1,135**	**153**	**1,288**

APPLE

Apples had very limited disease pressures in 2006. This was due to exceptionally dry conditions from bloom throughout most of the season. Fire blight was not prevalent. As usual, bitter rot was an issue, but dry conditions helped to prevent major losses. 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, apply production will be must 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	1.0	23.4	70.0	93.4
Bitter Rot	5.0	116.8	100.0	216.8
Bot Rot	0.1	2.3	52.0	54.3
Black Rot	0.1	2.3	33.0	35.3
Alternaria Leaf Spot	0.1	2.3	0.0	2.3
Powdery Mildew	0.1	2.3	11.5	13.8
Sooty Blotch	0.1	2.3	0.0*	2.3
Fly Speck	0.1	2.3	0.0*	2.3
Cedar Apple Rust	0.1	2.3	0.0*	2.3
Scab	0.05	1.2	0.0*	1.2
Other Diseases	0.05	1.2	1.0	2.2
Total	**6.8**	**158.8**	**267.5**	**426.3**

* Controlled with fungicides applied for other diseases.

Estimate by Phil Brannen, Extension Plant Pathologist

BLUEBERRY

In 2006, disease losses were minimal in the blueberry crop due to dry conditions. However, a new disease has entered the blueberry market, and it is worth tracking it at this point. The disease is called bacterial scorch, and it is also caused by *Xylella fastidiosa.* At this point, we are researching means of suppressing this disease, but no control methods are currently being used. To date, disease losses have been minimal, but this is an emerging disease problem, and it may eventually be problematic for the entire blueberry industry.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Mummy Berry	0.1	60.1	1,277.5	1,337.6
Botrytis Blight	0.1	60.1	511.0	571.1
Foliar Disease	0.1	60.1	383.3	443.4
Rots	0.1	60.1	127.8	187.9
Bacterial Scorch	0.01	6.0	0.0	6.0
Dieback	0.1	60.1	127.8	187.9
Phytophthora Root Rot	0.1	60.1	127.8	187.9
Total	**0.61**	**366.9**	**2,555.0**	**2,921.94**

Estimate by Phil Brannen, Extension Plant Pathologist

BUNCH GRAPE

Disease pressure was low to moderate for rot and foliar diseases among bunch grape vineyards in 2006, largely as a result of a dry year. However, downy mildew was prevalent in some locations; this might be a result of fungicide resistance development in the fungal population and, if so, this is very troubling. This will be the topic of future screening efforts.

Also, Pierce's disease losses were extensive in 2006. 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 that is vectored by an insect (the glassy-winged sharpshooter). Cold winter temperatures either kill the insect that transmits the disease, or the temperatures may actually prevent the bacteria from surviving, but the verdict is still out on which is more important. We do know, however, 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. The past two or three winters have been very warm by comparison to average. Whether this is a direct relationship to global warming, or whether this is strictly a random event, remains to be determined. As a result of these warmer winters, however, we have observed substantial increases in vine death even at higher elevations and longitudes. In some cases, producers have gone from losing fewer than 10 vines per year to losses of several hundred vines. Needless to say, we cannot continue in this manner. In order to combat the current trend, we are suggesting that producers incorporate more insecticidal applications to kill the insect vector, and we are conducting experiments with inoculations of closely related bacteria. This is all very experimental at this time, but we are hopeful.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Botrytis	1.0	19.6	30.0	49.6
Downy Mildew	1.0	19.6	20.0	39.6
Black Rot	1.0	19.6	20.0	39.6
Powdery Mildew	1.0	19.6	5.0	24.6
Phomopsis Cane Blight	1.0	19.6	5.0	24.6
Crown Gall	0.1	2.0	5.0	7.0
Pierce's Disease	1.0	19.6	5.0	24.6
Total	**6.1**	**119.6**	**90.0**	**209.9**

Estimate by Phil Brannen, Extension Plant Pathologist

CORN

In 2006, corn was harvested from 269,144 acres in Georgia with an average yield of 131 bu/A. The 2006 crop was valued at $102,543,111. Southern corn leaf blight was of minor importance in 2006. Southern rust, which was very important in 2003, was inconsequential in 2004, 2005 and 2006. Rainfall was less abundant during the 2005 and 2006 growing seasons than in 2003 and 2004, so aflatoxin levels increased slightly for the 2005 and 2006 crops. 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	0.1	0.0	0.1
Nematodes	5.0	5.1	0.4	5.5
Mycotoxins	6.0	6.2	0.0	6.2
Leaf Diseases	1.0	1.0	0.1	1.1
Total	**12.1**	**12.4**	**0.5**	**12.9**

Estimate by Robert Kemerait, Extension Plant Pathologist

COTTON

In 2006, it was reported that cotton was harvested from an estimated 1.40 million acres. The average lint yield was 844 lb/A. The crop was valued at $745,462,412.

Losses to seedling disease, primarily Rhizoctonia seedling blight or "soreshin," were low due to ideal growing conditions at planting time. Losses to nematodes, primarily southern root-knot nematodes, continue to be one of the most important problems for cotton growers in Georgia. Mid-season drought during 2006 increased losses associated with damage from nematodes. 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. Ascochyta blight was of particular concern among growers in the southwestern region of Georgia in 2006; however, it appears that losses to this disease were minimal.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Boll Rot (lint)	3.0	22.4	0.0	22.4
Nematodes	**10.0**	**74.5**	**14.0**[a]	88.5
Southern root-knot	7.5	55.9	---	---
Reniform	2.0	14.9	---	---
Columbia lance	0.5	3.7	---	---
Seedling Disease	1.0	7.4	2.2[b]	9.6
Fusarium Wilt	Trace	---	---	---
Ascochyta Blight	Trace	---	---	---
Total	**14.0**	**178.7**	**16.2**	**194.9**

[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), 25% 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.

Estimate by Robert Kemerait, Extension Plant Pathologist

MUSCADINE GRAPE

Minimal disease pressure was observed in most muscadine vineyards. When rots were observed, Macrophoma rot was the predominant disease observed. Black rot was observed on leaves, but this did not translate to fruit rots. Moisture levels were low, and disease losses were minimal.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Bitter Rot	0.1	1.9	40.2	42.1
Macrophoma Rot	1.0	18.7	35.0	53.7
Ripe Rot	0.1	1.9	15.0	16.9
Angular Leaf Spot	0.1	1.9	5.0	6.9
Black Rot	0.1	1.9	0.0[1]	1.9
Phomopsis Dead Arm	0.1	1.9	1.0	2.9
Total	**1.5**	**28.1**	**96.2**	**124.3**

[1] Controlled with fungicides applied for other diseases.

Estimate by Phil Brannen, Extension Plant Pathologist

ORNAMENTALS

The 2006 farm gate value for ornamental horticulture (excluding turf) was estimated at $597.63 million. Landscape, re-wholesale and retail (i.e. service) industries are estimated to account for an additional $1.8 billion, for a total ornamental industry value-added estimate of $2.39 billion. Disease loss estimates were generated only for ornamental production and exclude the value-added service industries as true value, disease loss, and cost of control is not documented and varies greatly within the industry. This change was initiated in 2005 and is a major change from disease loss estimates in previous years, as only farm-gate value is reported and figured into the loss estimate.

Root rot diseases still account for the largest percentage of disease loss in commercial ornamental production. Downy mildews, rust diseases and needle blight on Leyland cypress continue to increase in occurrence and cost of control due to additional fungicide inputs and labor costs.

Disease (ornamental production)	**% Reduction in Crop Value**	**Damage ($ Millions)**	**Cost of Control ($ Millions)**	**Total ($ Millions)**
Bacterial diseases (fire blight, leaf spots)	0.5	3.48	0.9	4.38
Fungal leaf spots, stem cankers, needle blights	2.7	16.13	6.5	22.63
Root and crown rots	3.0	17.93	8.2	26.13
Powdery mildew	0.5	2.99	1.8	4.79
Botrytis blight	0.2	1.20	1.2	2.4
Virus (TSWV, INSV, Hosta X)	0.3	1.79	0.1	1.89
Minor diseases (rust, downy mildew, nematode)	1.8	10.76	2.5	13.26
Total (ornamental production)	**9.0**	**54.28**	**21.2**	**75.48***

Production Category (2006 Farm-Gate Value)	**% Reduction [1] in Crop Value**	**Damage ($ Millions)**	**Cost of Control ($ Millions)**	**Total ($ Millions)**
Field Nursery ($104.79 M)	3.1	3.27	2.1	5.37
Container Nursery ($201.44 M)	12.9	25.99	10.2	36.19
Floriculture (greenhouse) ($274.93 M)	9.1	25.02	8.9	33.92
Total	**9.0[1]**	**54.28**	**21.2**	**75.48***

[1] This column not additive as disease losses are weighted according to production category.

* Disease loss estimate is less than in previous years due to estimating losses using only farm-gate values for ornamental production and excluding losses within the ornamental service industries.

Estimate by Jean Williams-Woodward, Extension Plant Pathologist

PEACH

Due to exceptionally dry conditions observed throughout much of the season in the major production regions, peach production in 2006 experienced very limited disease pressure. Brown rot pressure was extremely low due to dry weather during most of the harvest. Scab, though present, was also minimal. The same was true of bacterial spot. Problems with Armillaria root rot and phony peach were observed. Armillaria continues to be a major, expanding problem in replant peach production. Bacterial canker was observed in a couple of locations, but it was very sporadic — only worthy of mention since it is somewhat rare.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Brown Rot	0.1	33.6	1,750.0	1,783.6
Scab	0.01	3.4	1,110.0	1,113.4
Bacterial Spot	0.01	3.4	20.0	23.4
Phony Peach	0.5	168.1	230.0	398.1
Gummosis	0.1	33.6	20.0	53.6
Armillaria Root Rot	1.0	336.1	50.0	386.1
Phomopsis Constriction Canker	0.05	16.8	10.0	26.8
Total	**1.8**	**595.0**	**3,190.0**	**3,785.0**

Estimate by Phil Brannen, Extension Plant Pathologist

PEANUT

In 2006, peanut was harvested from approximately 592,000 acres. Yields in 2006 averaged 2,888 lb/A for a total production valued at $321,334,435. Growing conditions were favorable for peanut production early in the season; however, hotter and drier conditions were common during the second half of the season over much of the Coastal Plain.

The 2006 season was fairly mild for tomato spotted wilt. Severity of this disease was much lower than in 2005. Warm soil conditions during the second half of the 2006 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; however, dry conditions slowed the spread of these diseases. Leaf spot diseases are often more severe in fields where peanuts are planted on a short rotation. Dry weather helped reduce the overall severity of leaf spot diseases in 2006.

Disease	% Reduction in Crop Value[a]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Leaf Spots	1.0	3.2	27.8[b]	31.0
White Mold	6.0	19.2	18.9[c]	38.1
Limb Rot	1.0	3.2	---[d]	3.2
Pod Rot	0.5	1.6	---[e]	1.6
Nematodes	2.0	6.4	2.9[f]	9.3
Cylindrocladium Black Rot	1.0	3.2	0.3[g]	3.5
Seedling Disease	0.2	0.6	0.6[h]	1.2
Tomato Spotted Wilt	2.5	8.0	0.0	8
Diplodia Collar Rot	Trace	---	0.0	0
Total	**14.2**	**45.6**	**50.5**	**96.1**

[a] The total value of the crop was $321.3 million according to Annual Comparison of Farm Gate Value by Commodity.

[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 flutolanil 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 cost of $50/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 for seedling diseases is about $0.50/A and that approximately 5% of the peanut acreage in Georgia is treated with an in-furrow fungicide at planting at $10/A.

Estimate by Robert Kemerait, Extension Plant Pathologist

PECAN

The 2006 pecan season was relatively dry, resulting in conditions unfavorable for disease development. Loss potential was variable, ranging from 1 to 40 percent.[1]

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)[2]	Total ($ Millions)
Scab	0.1	0.14	13.5	13.64
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 Kernal Rot	0.0	0.0	0.0	0.0
Total	**0.1**	**0.14**	**13.5**	**13.64**

[1] This data is based on the response of unsprayed trees ("Desirable") in test plots.

[2] Seven treatments on 137,901 acres @ $14.00/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 pachyrhizi,* in Georgia was the most important disease issue for soybean producers in 2006. Asian soybean rust was found to successfully survive the winter of 2005-2006 on protected patches of kudzu in southern Georgia, in Miller, Grady, Thomas and Brooks counties for example. The disease, however, was not detected on sentinel plots in the state until mid-July (first in extreme 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 45 percent of the growers in Georgia applied at least one fungicide spray for the management of this disease. In fungicide trials, significant yield losses were attributed to rust. In one trial, yields were improved by more than 20 bu/A where fungicides were applied

In 2006, soybean was harvested from an estimated 156,268 acres with an average yield of 28 bu/A. The total soybean production for Georgia in 2006 was valued at $26,272,081.

Frogeye leaf spot was fairly common but was relatively unimportant for most growers. 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) [1]	Total ($ Millions)
Soybean cyst nematode	Trace	---	0	0
Root-knot nematode	3.0	0.8	0	0.8
Other nematodes	1.0	0.3	0	0.3
Asian soybean rust	2.5	0.6	0.6	1.2
Anthracnose	1.0	0.3	0	0.3
Brown leaf spot	0.5	0.1	0	0.1
Charcoal rot	1.0	0.3	0	0.3
Diaporthe/*Phomopsis* complex	0.5	0.1	0	0.1
Downy mildew	0.0	0.0	0	0.0
Frogeye leaf spot	1.0	0.3	0	0.3
Red crown rot	0.25	0.1	0	0.1
Pod and stem blight	0	0	0	0
Purple stain	NA	0	0	0
Seedling diseases (*Rhizoctonia*/*Pythium*/*Fusarium*)	1.0	0.3	0.1	0.4
Southern blight	Trace	---	0	0
Stem canker	NA	0	0	0
Fusarium Wilt	0.0	0	0	0
Virus diseases	0.0	0	0	0
Bacterial diseases	0.0	0	0	0
TOTAL	**10.75**	**3.2**	**0.7**	**3.9**

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

Estimate by Robert Kermerait, Extension Plant Pathologist

STRAWBERRY

Disease pressure was not severe in 2006, since it was a relatively dry year. Angular leaf spot was minimally observed. Anthracnose and Botrytis (gray mold) diseases were also 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 used 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	1.0	71.3	434.6	505.9
Fungal Leaf Spots	1.0	71.3	135.2	206.5
Anthracnose	1.0	71.3	144.9	216.2
Root Rots & Nematodes	1.0	71.3	241.4	312.7
Angular Leaf Spot	1.0	71.3	9.7	81.0
Total	**5.0**	**356.4**	**965.8**	**1,322.2**

Estimated by Phil Brannen, Extension Plant Pathologist

TURFGRASS

It is estimated that there are 1.95 million acres of turf with a maintenance value of $1.80 billion in Georgia. In 2006, soilborne diseases were responsible for much of the disease losses. *Rhizoctonia* spp. (causal agent of brown patch, large patch and yellow patch) was the most prevalent pathogen on turfgrass. *Rhizoctonia zeae* was documented in the southernmost part of the state, affecting Bermuda greens. Increased incidence of *Gaumannomyces* spp. (causal agent of take all and Bermuda decline) was observed throughout the state, with higher incidences of the disease in the coastal and southern areas of Georgia. Bermuda, centipede and St. Augustine were the most affected species. *Pythium* spp. was observed throughout the state in 2006, especially in bentgrass greens. In 2006, a steady increase of *Magnaporthe poae* (summer patch) and *Ophiosphaerella* spp. (spring dead spot) was observed. Fairy ring, caused by basidiomycetes, commonly occurred during the year. Foliar diseases continue to be problematic in 2006. *Sclerotinia homoeocarpa* was present throughout the state and present in several turfgrass species. During the hot, humid summer, *Curvularia* spp. and *Colletotrichum* spp. were the most common foliar diseases encountered. Zoysiagrass was particularly affected. *Pyricularia grisea* infections were registered in 2006, prevalent in south and coastal Georgia. *Bipolaris* spp. was particularly problematic on Bermuda during the fall. Minor incidences of *Puccinia* spp. and *Fusarium* spp. were registered in 2006. Nematodes have been blamed for increased damage and promoting stress on turfgrass. Mixed infections of nematodes and *Pythium* were common in 2006. Some diseases of rare occurrence were observed in the state, such as *Rhizoctonia zeae,* causing a disease called mini-ring, and *Curvularia* spp., causing "Bentgrass yellow spots."

Turf Diseases	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Soil-borne Diseases	3.5	63.0	36.0	99.0
Foliage Diseases	1.3	23.4	21.6	45.0
Nematodes	2.5	45.0	9.0	54.0
Total	**7.3**	**131.4**	**66.6**	**198.0**

Estimate by Alfredo Martínez, Extension Plant Pathologist

VEGETABLES

About 170,000 acres of vegetables were grown in Georgia in 2006 worth a total of ca. $828 million. Overall, most crops suffered fewer losses in the field despite favorable weather conditions for disease development during most of the year. Fusarium wilt of watermelon and watermelon fruit blotch caused sporadic losses. Losses to *Phytophthora capsici* on bell pepper and cucurbits were 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. Due to the cool, dry fall, however, losses to bacterial spot were lower than in the previous year.

Major Vegetable Crops	% Reduction in Crop Value[1]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Watermelon	2.5	2.7	5.3	8.0
Squash (yellow + zucchini)	2.5	1.1	1.3	2.4
Tomato	3.0	1.7	2.8	4.5

Other Vegetable Crops	% Reduction in Crop Value[1]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Pepper (bell)	5.0	3.8	1.9	5.7
Cucumber	3.0	1.3	1.6	2.9
Snap Bean	4.0	2.0	1.3	3.3
Greens	2.5	1.6	1.2	2.8
Cabbage	2.5	0.8	0.6	1.4
Onion (dry)	3.5	4.6	2.5	7.1
Cantaloupe	2.0	1.2	1.5	2.7
Eggplant	3.5	0.35	0.3	0.65

Total	**3.3**	**21.2**	**20.3**	**41.5**

[1] This column is not additive due to the way losses for vegetables are tabulated.
Total values for vegetable commodities are taken from the 2006 farm gate values (AR-04-01).

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

WHEAT

Presence of *Puccinia striiformis* (stripe rust) was registered in 2006 in the southern part of the state. Disease pressure from this disease was less than in 2005. Dry conditions impacted on disease. *Puccinia recondita* (leaf rust) was present in low amounts of damage to wheat during 2006 as did the planting of resistant cultivars and the use of fungicides to control other foliar diseases (such as powdery mildew). *Fusarium* spp. (causal agent of fusarium foot rot) and *Gaumannomyces graminis* var. *tritici* (take-all) were sporadically found in central and southern Georgia and may have contributed to the early decline of some fields. *Blumeria graminis* f. sp. *tritici* (powdery mildew) incidence was moderate, causing fair damage. Weather conditions and early spray of fungicides helped to avoid an epidemic. *Stagonospora* (Glume blotch on heads and leaves) incidence was low in 2006. Minor incidences of loose smut caused by *Ustilago tritici,* and black point caused by *Alternaria* spp., were observed in localized areas. Barley Yellow Dwarf Virus (BYDV) was variable throughout the state, with low amounts observed in south Georgia. From the Piedmont and north, the damage was moderate. Sporadic wheat samples with symptoms resembling wheat spindle streak mosaic were observed in 2006.

An important piece of the disease management strategies was the use of disease resistant cultivars in 2006.

Wheat was harvested from 180,872 acres with an average yield of 52 bu/A. The farm gate value of wheat in 2006 was $34,714,533.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Leaf Rust	0.2	0.07	0.9	0.97
Glume Blotch	0.0	0.00	----	0.00
Powdery Mildew	0.8	0.28	0.3	0.58
Barley Yellow Dwarf Virus	0.75	0.27	0.3	0.57
Stinking/Loose Smut	----	----	----	----
Total	**1.75**	**0.62**	**1.5**	**2.05**

Estimate by Alfredo Martínez, Extension Plant Pathologist, and John Youmans, Dept. Plant Pathology

SUMMARY OF TOTAL LOSSES DUE TO DISEASE DAMAGE AND COST OF CONTROL IN GEORGIA – 2006

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	4.35	6.8	0.158	0.267	0.426	9.79
Blueberry	48.56	0.6	0.366	2.555	2.921	6.02
Bunch Grape	1.86	6.1	0.119	0.090	0.209	11.24
Corn	102.54	12.1	12.4	0.5	12.9	12.50
Cotton	745.46	14.0	178.7	16.2	194.9	26.10
Muscadine Grape	1.43	1.5	0.0281	0.096	0.124	8.60
Ornamentals	597.63	9.0	54.2	21.2	75.48	12.62
Peach	36.30	1.8	0.595	3.19	3.785	10.43
Peanut	321.33	14.2	45.6	50.5	96.1	29.90
Pecan	121.4	0.1	0.14	13.5	13.64	11.23
Soybean	26.27	10.75	3.2	0.7	3.9	14.84
Strawberry	3.91	5.0	0.356	0.965	1.322	8.24
Turfgrass	1,800.0	7.3	131.4	66.6	198.0	11.00
Vegetable	828.0	3.3	21.2	20.3	41.5	5.01
Wheat	34.71	1.7	0.62	1.5	2.05	5.91
TOTALS	**4673.73**		**449.08**	**198.16**	**647.2**	**12.08**

[1] This column is not additive.

[2] Total % loss for each crop and the grand total is figured on the basis of: $\frac{\text{Value of Damage + Cost Control}}{\text{Crop Value}}$

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