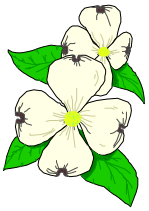
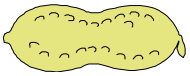
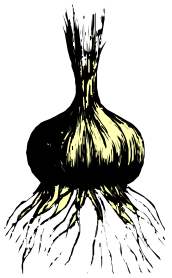
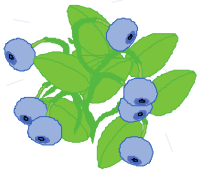




2004 GEORGIA PLANT DISEASE LOSS ESTIMATES


COMPILED BY:

Mila J. Pearce
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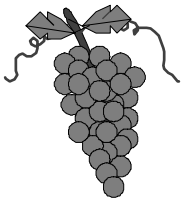
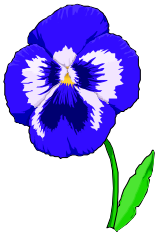
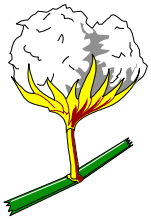
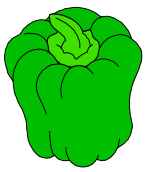
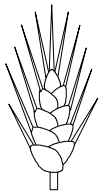
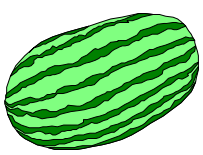
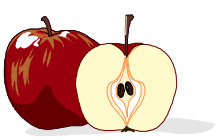


2004 Georgia Plant Disease Loss Estimates

It is estimated that 2004 plant disease losses, including control costs, amounted to approximately $558.92 million. The value of the crops used in this estimate was approximately $5472.65 billion, resulting in a 10.21 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 Vol. 04, No. 4 and the 2004 Georgia Farm Gate Value Report (AR-05-01). Estimates for tobacco are based on Market News Service figures for grower's net sales and do not include warehouse resales. Some estimates for grapes, ornamentals, and turf rely on specialists knowledge of the industry and industry sources for information.

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2004 PLANT DISEASE CLINICS ANNUAL SUMMARY

Extension Plant Pathology maintains three clinics as educational resources for county extension agricultural faculty to use to aid their clients in diagnosing and correcting disease-related plant problems. Plant samples are submitted directly to the county extension faculty who, at their discretion, forward samples to the appropriate clinic. Commercial fruits, legume forage crops, forestry, Christmas tree, and commercial ornamental greenhouse, nursery, and landscape samples are sent to the Plant Disease Clinic in Athens. Diagnoses of and control recommendations for commercial samples of field crops, grain forages, pecans and vegetables are handled by the Plant Disease Clinic at the Rural Development Center in Tifton, Georgia. Commercial turf and all non-commercial homeowner plant samples are sent to the Plant Disease and Homeowner IPM Clinics in Griffin for disease diagnoses and recommendations. Diagnoses and educational recommendations are returned to the county faculty. The clinics maintain a computerized database of samples and their diagnoses, as well as a reference library for use by Extension agents, specialists, researchers, and students.

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CLINIC SUMMARIES: 2004 PLANT SPECIMEN DIAGNOSES

Crop	Commercial Samples	Homeowner IPM Clinic	Total
Field Crops	201	1	202
Vegetables	209	71	280
Fruits & Nuts	156	29	185
Herbaceous Ornamentals	235	144	379
Woody Ornamentals	209	193	402
Trees	126	165	291
Turf	103	277	380
Miscellaneous	18	36	54
TOTAL	**1257**	**916**	**2173**

APPLE

Apples had a moderate to high disease pressures in 2004. This was partly due to wet, warm conditions during bloom, as fire blight was prevalent if antibiotic sprays were not applied. In addition, fire blight was even more prevalent as post-bloom shoot blight. The disease was so prevalent that antibiotic-resistance testing was conducted, but resistant bacteria were not found – indicating that the environment or inoculum buildup from 2003 was responsible. As usual, bitter rot was a major issue; fungicides for bitter rot were not effective enough when wet conditions were observed, and rainy weather sometimes made fungicide application difficult. 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 increased pesticide use for fire blight, as well as increased pruning costs as a result of fire blight and summer rot control measures.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Fire Blight	**5.0**	**153.0**	**70.0**	**223.0**
Bitter Rot	**5.0**	**153.0**	**100.0**	**253.0**
Bot Rot	**1.0**	**30.6**	**52.0**	**82.6**
Black Rot	**0.1**	**3.1**	**33.0**	**36.0**
Alternaria Leaf Spot	**0.1**	**3.1**	**0.0**	**3.1**
Powdery Mildew	**0.1**	**3.1**	**11.5**	**14.6**
Sooty Blotch	**0.1**	**3.1**	**0.0***	**3.1**
Fly Speck	**0.1**	**3.1**	**0.0***	**3.1**
Cedar Apple Rust	**0.1**	**3.1**	**0.0***	**3.1**
Scab	**0.05**	**1.5**	**0.0***	**1.5**
Other Diseases	**0.05**	**1.5**	**1.0**	**1.5**
Total	**11.7**	**358.2**	**267.5**	**624.6**

*** Controlled with fungicides applied for other diseases.**

Estimate by Phil Brannen, Extension Plant Pathologist

BLUEBERRY

In 2004, mummy berry (both primary shoot blight and mummified fruit) was observed at very high levels, largely due to wet conditions and/or poor fungicide programs. Botrytis blight was prevalent when fungicides were not utilized during bloom. In southern highbush cultivars, problems due to foliar diseases and dieback were also observed, but the use of fungicides helped to reduce these diseases when utilized. Rust was also much more prevalent than normal. In general, disease pressure was high due to wet conditions.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Mummy Berry	0.2	48.7	250.0	298.7
Botrytis Blight	0.2	48.7	50.0	98.7
Foliar Disease	1.0	243.6	20.0	263.6
Dieback	1.0	243.6	10.0	253.6
Phytophthora Root Rot	0.1	24.3	5.0	29.4
Total	**2.5**	**609.0**	**335.0**	**944.0**

Estimate by Phil Brannen, Extension Plant Pathologist

BUNCH GRAPE

Disease pressure was low to moderate among bunch grape vineyards in 2004, due largely to dryer conditions throughout the maturation period and during harvest. Disease pressure was greatly reduced over that observed in 2003, and wine produced from the 2004 crop should be excellent. Pathological issues, foliage diseases and rots resulted in minor losses in 2004. Where adequate spray programs were maintained, near 0 percent losses were observed in many cases. The degree of loss was directly correlated with the accuracy and intensity of the fungicidal spray program. Where utilized correctly, fungicides and spray programs were very effective in disease control.

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	0.1	2.0	5.0	7.0
Total	**5.1**	**102.0**	**90.0**	**192.0**

Estimate by Phil Brannen, Extension Plant Pathologist

CORN

In 2004, corn was planted on 335,000 acres and harvested from 280,000 acres in Georgia. The average yield in 2004 was 130 Bu/A. The 2004 crop was valued at $80,080,000. Much of the corn crop was harvested prior to the arrival of tropical storms late in the season. Had harvest not been well under way, the damage to the corn crop from these storms could have been phenomenal. Southern corn leaf blight was of minor importance in 2004. Southern rust, which was very important in 2003, was inconsequential in 2004. Rainfall was less abundant during the growing season in 2004 than in 2003. Therefore, aflatoxin levels increased slightly for the 2004 crop. The true importance of damage from nematodes, e.g. 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	0.08	0.0	0.08
Nematodes	3.0	2.4	1.0	3.4
Mycotoxins	5.0	4.0	0.0	4.0
Leaf Diseases	2.0	1.6	0.17	1.77
Total	**10.1**	**8.08**	**1.17**	**9.25**

Estimate by Robert Kemerait, Extension Plant Pathologist

COTTON

Torrential rainfall from multiple tropical storms and hurricanes as harvest approached in 2004 had devastating effects on many growers and helped to increase the severity of boll rot. Cotton was planted on 1.29 million acres in 2004 and harvested from an estimated 1.20 million acres. The average yield was a near-record of 675 lb/A for a total production of 1.8 million bales. The crop was valued at $406,080,000.

Hardlock of cotton occurs when the lint forms properly, yet fails to "fluff" when the bolls open and cannot be harvested effectively with a spindle-picker. There are multiple causes for hardlock of cotton, including boll maturity, environmental conditions, and damage from insects, especially stinkbugs. Researchers at the University of Florida believe that another factor involved with this malady may be the fungal pathogen *Fusarium moniliforme*; research efforts continue to verify this. In some test plots assessed in 2003, as many as 35 percent of the bolls could be considered "hardlocked." Until the cause of this condition is completely understood, hardlock will not appear in our disease loss estimates.

Losses to nematodes, primarily southern root-knot nematode, continue to be important problems for cotton growers in the state. 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.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Boll Rot (lint)	10.0	40.6	0.0	40.6
Nematodes	10.0	40.6	10.3[a]	50.9
Seedling Disease	1.0	4.6	2.2[b]	6.8
Fusarium Wilt	Trace	----	----	----
Total	**21.0**	**85.8**	**12.5**	**98.3**

[a] This figure is based upon an estimation that approximately 25% of the cotton acreage in the state is treated with a nematicide rate of Temik (5 lb/A or greater) and approximately 0.5% 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 sufficient enough to reduce vine stress, while not being in excess. Conditions may have helped to reduce vine stress, which had been causing vine losses due to secondary dieback diseases.

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	18.9	35.0	53.9
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	--[1]	1.9
Phomopsis Dead Arm	0.1	1.9	1.0	2.9
Total	**1.5**	**28.4**	**96.2**	**124.6**

[1] Controlled with fungicides applied for other diseases.

Estimate by Phil Brannen, Extension Plant Pathologist

ORNAMENTALS

The 2004 farm gate value for ornamentals horticulture (excluding turf) was estimated at $516.13 million. Landscape, re-wholesale and retail (service) industries are estimated to account for an additional $800 million for a total ornamental industry estimated value of $1.31 billion. The disease losses provided are only for ornamental production and exclude the service industries as value and disease losses are difficult to assess in these areas. This is a major change from disease loss estimates in previous years. Typically, root rot diseases account for the largest percentage of disease loss in ornamentals. However, the introduction of *Phytophthora ramorum*, cause of sudden oak death and ramorum blight, into primarily retail ornamental nurseries resulted in significant losses due to destruction of infected and adjacent plants. Leaf rusts, downy mildews, and needle blight on Leyland cypress continue to increase in occurrence cost of control due to additional fungicide inputs and labor costs. This combined with wet conditions in 2004 contributed to an overall increase in percent reduction in crop value compared to 2003.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Bacterial diseases (fire blight, leaf spots)	0.6	3.10	0.9	4.0
Fungal leaf spots, branch and stem cankers	3.5	18.07	6.5	24.57
Root and crown rots	2.7	13.93	7.7	21.63
Powdery mildew	0.7	3.61	1.8	5.41
Botrytis blight	0.3	1.55	1.2	2.75
Virus (TSWV, INSV, CMV)	0.05	0.26	0.1	0.36
Minor diseases (rust, downy mildew, nematode)	1.9	9.80	2.4	12.20
Total	**9.75**	**50.32**	**20.6**	**70.92***

Production Category	% Reduction [1] in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Field Grown Stock	2.5	2.35	2.1	4.45
Containerized Nursery	12.9	23.76	9.7	33.46
Floriculture	10.3	24.21	8.8	33.01
Landscape	7.6	31.93	5.7	37.61
Re-wholesale	8.4	26.95	2.9	29.87
Total	**8.3**	**109.2**	**29.2**	**138.4**

[1] This column not additive due to way losses are tabulated

Estimate by Jean Williams-Woodward and Mila J. Pearce, Extension Plant Pathologists

PEACH

Due to dry conditions throughout much of the season in the major production regions, peach production in 2004 experienced very low disease pressures. Brown rot pressure was especially low, with in field losses of ≤ 1 percent in most areas. Also in 2004, we confirmed resistance of the brown rot fungus to the DMI fungicides which are generally used for control. This resistance will increase the cost of control in the future, due to the required use of more expensive fungicides. Scab was also minimal. The same was true of bacterial spot, which was virtually nonexistent; the good control of bacterial spot can be largely attributed to producer acceptance and utilization of more advanced spray programs and weather-monitoring systems. Problems with Armillaria root rot and phony peach were observed. Armillaria continues to be a major, expanding problem in re-plant peach production. In addition, some losses were incurred from nematodes and crown gall. Cost of control included cost of pesticides, equipment, and labor. Costs associated with certain cultural practices (flail mowing to reduce gummosis; detailed pruning for control of Phomopsis shoot blight) are directly related to disease control and were therefore considered in the assessment.

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	168.0	230.0	398.0
Gummosis	0.1	33.6	20.0	53.6
Armillaria Root Rot	1.0	336.0	50.0	386.0
Phomopsis Constriction Canker	0.05	16.8	10.0	26.8
Total	**1.8**	**594.8**	**3,190.0**	**3,784.8**

Estimate by Phil Brannen, Extension Plant Pathologist

PEANUT

In 2004, peanut was planted on an estimated 620,000 acres and harvested from approximately 610,000 acres. With ample rainfall, improved varieties, and effective disease management programs, peanut farmers achieved the highest average yield per acre on record. Yields in 2004 averaged 3,000 lb/A for a total production of 1.83 billion pounds, valued at $347,000,000. Growing conditions for the crop were fair throughout much of the season; however the end of the season was marred by multiple tropical storms and hurricanes. The most important result of these storms was that the torrential rainfall fueled fungal disease epidemics, delayed growers from making timely fungicide applications, and delayed harvest in many instances. Many growers still successfully managed fungal diseases, both foliar and soilborne, despite inclement weather. Losses from leaf spot diseases were increased in 2004 from 2003, primarily because of rainfall and also the increased incidence of late leaf spot in the state. Losses from Rhizoctonia limb rot also increased from 2003 due to wet weather and delays in fungicide applications and harvest. The losses associated with white mold also increased slightly; severity of Cylindrocladium black rot (CBR) was similar to 2003. Although still of relatively minor concern, a few fields in southwestern Georgia were particularly hard-hit by Diplodia collar rot. Losses from tomato spotted wilt were increased in 2004 from 2003 and were estimated to be approximately 4 percent. Grower use of more resistant varieties and the University of Georgia's Spotted Wilt Index helped to keep the severity of this important disease lower than they might have been. Where the losses to this disease were severe in individual fields around the state, the cause could likely be related back to planting date, poor plant stand, and/or choice of variety.

Disease	% Reduction in Crop Value[a]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($Millions)
Leaf spots	3.5	12.2	31.7[b]	43.9
White mold	3.0	10.4	19.2[c]	29.6
Limb Rot	3.0	10.4	----[d]	10.4
Pod Rot	0.5	1.7	----[e]	1.7
Nematodes	3.0	10.4	0.8[f]	11.2
Cylindrocladium Black Rot	1.0	3.5	0.3[g]	3.8
Seedling Disease	0.2	0.6	0.5[h]	1.1
Tomato Spotted Wilt Virus	4.0	13.9	0.0	12.1
Diplodia Collar Rot	Trace	----	0.0	0.0
Total	**18.2**	**63.1**	**52.5**	**115.6**

[a] The total value of the crop was $365 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 2.5% 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 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

The 2004 season will be remembered for the series of hurricanes and tropical storms that moved through Georgia late in the growing season. Rains during June and July resulted in fairly high disease pressure at most locations. Loss potential was variable, ranging from 15 to 80 percent.[1]

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Scab [1]	4.0	2.9	13.8	16.7
Brown Spot	0.00	0.00	0.0	0.00
Downy Spot	0.00	0.00	0.0	0.00
Powdery Mildew	0.0	0.00	0.0	0.0
Zonate Leaf Spot	0.0	0.00	0.0	0.0
Phytophthora Shuck and Kernal Rot	Trace	0.0	0.0	0.0
Total	**3.0**	**2.2**	**13.8**	**16.0**

[1] This data is based on the response of unsprayed trees ("Desirables") in test plots ar 10 locations.
[2] Eight treatments on 150,000 acres @ $11.50/A; scab sprays also effective against downy mildew, brown spot, and powdery mildew in most cases.

Estimate by Jason Brock, Extension Plant Pathologist

SOYBEAN

In 2004, soybean was planted on approximately 280,000 acres and harvested from an estimated 270,000 acres. Average yields in 2004 were 31 bu/A, which is fairly high by state standards. The total soybean production for Georgia in 2004 was valued at $44,361,000. The percent losses to most diseases appeared similar between 2003 and 2004. Frogeye leaf spot and downy mildew were common in 2004. Many growers were interested in spraying fungicides to control frogeye leaf spot, though few actually did. Nematodes remain an important problem of soybean in Georgia, especially in fields rotated with corn and cotton.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions) [1]	Total ($ Millions)
Soybean cyst nematode	0.5	0.22	0	0.22
Root-knot nematodes	4.0	1.8	0	1.8
Other nematodes	0.25	0.11	0	0.11
Anthracnose	0.20	0.09	0	0.09
Brown leaf spot	0.0	0.00	0	0.00
Charcoal rot	0.1	0.04	0	0.04
Diaporthe/*Phomopsis* complex	0.3	0.13	0	0.13
Downy mildew	0.2	0.09	0	0.09
Frogeye leaf spot	2.0	0.9	0	0.90
Red crown rot	0.5	0.22	0	0.22
Pod and stem blight	0.2	0.08	0	0.08
Purple stain	0.1	0.04	0	0.04
Seedling diseases (*Rhizoctonia*/*Pythium*/*Fusarium*)	0.1	0.04	0.1	0.14
Southern blight	0.2	0.08	0	0.08
Stem canker	0.5	0.24	0	0.24
Fusarium Wilt	0.0	0.00	0	0.00
Virus diseases	0.0	0.00	0	0.00
Bacterial diseases	0.0	0.00	0	0.00
TOTAL	**8.45**	**4.44**	**0.1**	**4.45**

[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 2004, since rainfall was not as prevalent as that observed in 2003. Angular leaf spot was minimally observed. Anthracnose and Botrytis (gray mold) diseases were also not prevalent throughout the state, due once again to drier conditions during bloom and throughout fruit development. However, plug plants were found to have anthracnose at the time of transplanting, and some producers did not produce strawberries as a result. 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	1.0	106.7	75.0	181.7
Fungal Leaf Spots	1.0	106.7	34.0	140.7
Anthracnose	1.0	106.7	16.0	122.7
Root Rots & Nematodes	1.0	106.7	50.0	156.7
Angular Leaf Spot	1.0	106.7	1.0	107.7
Total	**5.0**	**533.5**	**176.0**	**709.5**

Estimated by Phil Brannen, Extension Plant Pathologist

TOBACCO

Spotted wilt returned in 2004 to cause the second highest loss recorded. Losses were particularly severe in a 40 mile wide band running along U.S. Highway 1. Several farmers plowed up their tobacco for insurance. Losses were somewhat less in the Douglas-Hazelhurst-Nashville triangle due in part to a heavy spotted wilt loss history inducing a higher percentage of growers to use what control measures are available. Blue mold was not reported in 2004. Black shank increased in frequency and severity on the newer resistant varieties (NC-71, NC-72, NC-297, Sp-168, etc.). It is increasingly clear that these varieties rapidly select for race 1 of the pathogen to which they have no resistance. Target spot occurred late and caused very little damage. Growers in increasing numbers are not using nematicide which is reflected in an overall decline in cost of control.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Blue Mold[1]	0.0	0.0	0.0	0.0
Black Shank[2]	Trace	0.05	0.80	0.85
Target Spot	Trace	0.01	0.00	0.01
Root Knot Nematode[3]	0.00	0.00	1.50	1.50
TSWV[4]	18.5	16.70	0.67	17.37
TMV	0.00	0.00	0.00	0.00
Total	**18.50**	**16.76**	**1.97**	**19.73**

[1] Not reported in 2004.
[2] Most losses associated with pathogen race1 selected by new race0 resistant varieties.
[3] Nematicide use steadily decreasing.
[4] TSWV is estimated to have caused about 36% stand loss and 18.5% loss of quota lbs. Cost of control continues to increase as more growers use Admire+Actigard treatments in some manner.

Estimate by Paul Bertrand, Extension Plant Pathologist

TURF

It is estimated that there are 1.80 million acres of turf with a maintenance value of $1.65 billion in Georgia. In 2004, soilborne diseases are present wherever turf is grown and were responsible for much of the disease losses. *Rhizoctonia* spp. was the most prevalent pathogen on turfgrass. Increased incidence of *Gaunannomyces* spp. and *Pythium* spp. was observed in 2004. In 2004, a steady increase of *Magnoportha poae* (summer patch) and *Opiosphaerella* spp. (spring dead spot) was observed. Foliar diseases continue to be problematic in 2004. *Sclerotinia homoecarpa* was present throughout the state in several turfgrass species. During the summer, *Curvularia* spp. and incidences of *Sclerophthora macrospora* (downy mildew) were registered in 2004. Nematodes have been attributed to increased damage and promoting stress on turfgrass. Mixed infections of nematodes and *Pythium* were common in 2004.

Turf Diseases	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Soil Diseases	3.5	57.7	28.0	85.7
Foliage Diseases	1.5	24.7	16.5	41.2
Nematodes	2.5	41.2	3.3	44.5
Total	**7.5**	**123.6**	**47.8**	**171.4**

Estimate by Alfredo Martinez, Extension Plant Pathologist

VEGETABLES

About 200,000 acres of vegetables were grown in Georgia in 2004 worth a total of ca. $725 million. Overall, most crops suffered fewer losses in the spring. Although, low disease pressure was observed in the spring, low produce prices reduced the value per acre. In the fall however, the hurricanes predisposed many crops to disease and may have actually brought some diseases into the state. Prices on produce reached record highs in the fall due to productions shortfalls caused by hurricanes. Snap beans suffered losses in the fall to brown rot caused by *Pseudomonas syringae*. Fall cucurbits were damaged by downy mildew that was found to be resistant to strobilurins. Fall pepper crops were ravaged by anthracnose (*Colletotrichum acutatum*) and bacterial spot (*Xanthomonas campestris* pv. *vesicatoria*).

Major Vegetable Crops	%Reduction in Crop Value[1]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Watermelon	2.0	1.7	5.1	6.8
Squash (yellow + zucchini)	3.0	1.5	1.2	2.7
Tomato	2.0	2.0	2.6	4.6

Other Vegetable Crops	% Reduction in Crop Value[1]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($Millions)
Pepper (bell)	6.0	3.6	1.7	5.3
Cucumber	4.0	2.0	1.4	3.4
Snap Bean	9.0	2.5	1.0	3.5
Greens	3.0	1.5	1.0	2.5
Cabbage	3.0	0.83	0.4	1.23
Onion (dry)	8.0	8.6	2.5	11.1
Cantaloupe	4.0	1.1	1.3	2.4
Eggplant	5.0	0.5	0.3	0.8
Total	**4.33**	**25.8**	**17.9**	**44.3**

[1] This column is not additive due to the way losses for vegetables are tabulated.
Total values for vegetable commodities are taken from the 2004 farm gate values (AR-04-01).

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

WHEAT

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 severe; this was mostly due to intense aphid activity experienced during the mild fall-early winter. Sporadic wheat samples with symptoms resembling wheat spindle streak mosaic virus were observed in 2004. Rusts caused only low amounts of damage to wheat during 2004 due to planting of resistant cultivars and the use of fungicides to control other foliar diseases such as powdery mildew. Fusarium foot rot and take-all were sporadically found in South Georgia and may have contributed to the early decline of some fields. Powdery mildew incidence was moderate causing minimal damage. Weather conditions and early spray of fungicides helped to avoid an epidemic. Glume blotch on heads and leaves (*Stagnospora*) was at some of the lowest levels in years. An important piece of the disease management strategies was the use of disease resistant cultivars in 2003. Wheat was harvested from 250,000 acres.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Leaf Rust	0.3	0.06	1.3	1.36
Glume Blotch	0.2	0.05	----	0.05
Powdery Mildew	1.0	0.27	0.3	0.57
Barley Yellow Dwarf Virus	0.75	0.26	0.3	0.56
Stinking smut	----	----	----	----
Total	**2.5**	**0.64**	**1.9**	**2.54**

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

SUMMARY OF TOTAL LOSSES DUE TO DISEASE DAMAGE AND COST OF CONTROL IN GEORGIA – 2003

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	11.7	0.358	0.267	0.625	37.20
Blueberry	48.56	2.5	0.609	0.335	0.944	4.90
Bunch Grape	1.86	5.1	0.102	0.090	0.192	10.32
Corn	126.88	10.1	8.08	1.17	9.25	10.29
Cotton	608.56	21.0	85.8	12.5	98.30	13.77
Muscadine Grape	1.43	1.5	0.0284	0.096	0.125	8.71
Ornamental	1310.0	8.3	109.22	29.2	138.4	10.5
Peach	36.30	1.8	0.594	3.19	3.784	9.37
Peanut	380.30	18.2	63.10	52.5	115.6	31.68
Pecan	121.4	3.0	2.2	13.8	16.0	23.18
Soybean	62.11	8.45	4.44	0.10	4.45	9.47
Strawberry	3.91	5.0	0.533	0.176	0.709	13.58
Tobacco	94.43	18.5	6.76	1.97	19.73	7.93
Turf	1407.0	7.5	123.6	47.8	171.40	10.38
Vegetable	725.0	4.33	25.8	17.9	44.30	4.85
Wheat	41.56	2.5	0.64	1.90	2.54	9.25
TOTALS	**4973.57**	**8.68**	**431.84**	**182.99**	**626.35**	**12.59**

[1] This column is not additive.

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

ATTENTION!
Pesticide Precautions

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

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

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

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

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

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

6. 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 Office identify actions that may threaten Endangered Species or their habitat.

Trade names are used only for information.

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Josef M. Broder, Interim Dean and Director