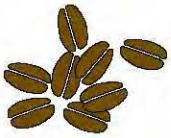
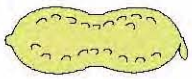
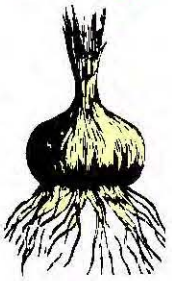
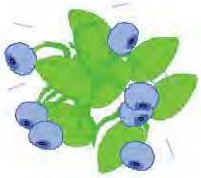




2003 GEORGIA PLANT DISEASE LOSS ESTIMATES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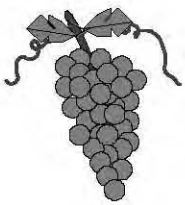
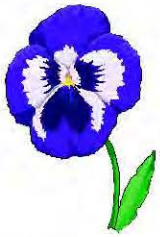

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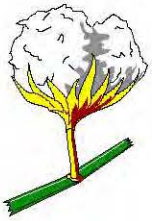

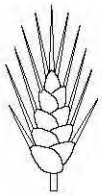
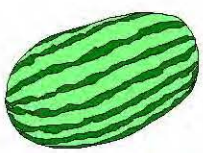
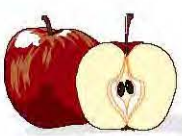


2003 Georgia Plant Disease Loss Estimates

It is estimated that 2003 plant disease losses, including control costs, amounted to approximately $682.67 million. The value of the crops used in this estimate was approximately $5.399 billion, resulting in a 12.64 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 2003 Georgia Farm Gate Value Report (AR-04-01). 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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2003 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.

Herbaceous and woody ornamentals and trees collectively account for 45 percent of the sample diagnoses rendered in 2003. There was a 29 percent increase in the number of commercial herbaceous ornamental samples over 2002. This is most likely due to an increased number of geranium samples evaluated for the presence of bacterial blight, caused by *Ralstonia solanacearum* race 3 biovar 2. Commercial vegetable diagnoses also increased by roughly 19 percent compared to the past three year average (2000–2002). The greatest drop in sample diagnoses is in the area of commercial turf. Sample diagnoses in 2003 were 52 percent less than the previous three year average (2000-2002). The drop in sample diagnoses is most likely due to changes within crop responsibilities for extension plant pathology faculty and may not reflect the true number of samples submitted and diagnosed in 2003. Sample diagnoses provide by the Homeowner IPM Clinic located in Griffin increased over 2002 by roughly 24 percent. Overall total sample diagnoses provided in 2003 were approximately 12 percent higher than in 2002. The increase is primarily due to an increase in homeowner samples and the re-opening of the Homeowner IPM Clinic.

CLINIC SUMMARIES: 2003 PLANT SPECIMEN DIAGNOSES

Crop	Commercial Samples	Homeowner IPM Clinic	Total
Field Crops	209	4	211
Vegetables	464	69	533
Fruits & Nuts	142	61	203
Herbaceous Ornamentals	393	68	461
Woody Ornamentals	239	225	464
Trees	171	232	403
Turf	264	318	582
Miscellaneous	25	48	73
TOTAL	**1907**	**1023**	**2930**

APPLE

Apples had very high disease pressure in 2003. Due to wet, warm conditions during bloom, fire blight was prevalent if antibiotic sprays were not applied. Bitter rot was a major issue; fungicides for bitter rot were not effective enough under the wet conditions observed, and rainy weather made fungicide application difficult. There is strong need for more efficacious fungicides for control of bitter rot and other summer rot diseases. In addition, we are concerned that streptomycin antibiotic resistance may become an issue; currently, streptomycin is the only effective control method for fire blight. If we lose this antibiotic due to resistance, apple production will be much more difficult. Cost of control included increased pesticide usage for fire blight and summer rots.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Fire Blight	1.0	16.8	45.0	61.8
Bitter Rot	20.0	335.8	100.0	435.7
Bot Rot	1.0	16.8	52.0	68.8
Black Rot	0.1	1.68	33.0	34.7
Alternaria Leaf Spot	0.1	1.68	--[1]	1.7
Powdery Mildew	0.1	1.68	11.5	13.2
Sooty Blotch	0.1	1.68	--[1]	1.7
Fly Speck	0.1	1.68	--[1]	1.7
Cedar Apple Rust	0.1	1.68	--[1]	1.7
Scab	0.05	0.8	--[1]	0.8
Other Diseases	0.05	0.8	1.0	0.8
Total	**22.7**	**381.0**	**241.5**	**622.5**

[1] Controlled with fungicides applied for other diseases.

Estimated by Phil Brannen, Extension Plant Pathologist

BLUEBERRY

In 2003, 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	38.5	250.0	288.5
Botrytis Blight	0.2	38.5	50.0	88.5
Foliar Disease	1.0	192.6	20.0	212.6
Dieback	1.0	192.6	10.0	202.6
Phytophthora Root Rot	0.1	19.3	5.0	24.3
Total	**2.5**	**481.5**	**335.0**	**816.5**

Estimate by Phil Brannen, Extension Plant Pathologist

BUNCH GRAPE

Disease pressure, especially from downy mildew, was extremely high among bunch grape vineyards in 2003, due largely to wet conditions throughout the season and during harvest. Pathological issues, foliage diseases and rots, resulted in a substantial value loss in 2003. Where adequate spray programs were not maintained, 100 percent losses were observed. 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 effective in disease control — even under the worst of environmental conditions for disease management.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Botrytis	5.0	93.0	30.0	123.0
Downy Mildew	20.0	372.4	20.0	392.4
Black Rot	1.0	18.6	20.0	38.6
Powdery Mildew	5.0	93.0	5.0	98.0
Phomopsis Cane Blight	4.0	74.5	--[1]	74.5
Crown Gall	0.5	9.3	5.0	14.3
Pierce's Disease	0.5	9.3	5.0	14.3
Total	**36.0**	**670.3**	**85.0**	**755.3**

[1] Controlled with fungicides applied for other diseases.

Estimate by Phil Brannen, Extension Plant Pathologist

CORN

In 2003, corn was planted on 340,000 acres and harvested from 285,000 acres in Georgia. The average yield in 2003 was 129 Bu/A, up from 115 Bu/A in 2002. The 2003 crop was valued at $115,988,586. Abundant rainfall during the season led to outstanding yields for many growers. The rainfall was also an important factor in severe outbreaks of southern rust that affected many fields across the state, especially in fields where susceptible varieties were planted. Southern corn leaf blight was observed, but caused much less damage than did the rust. Plentiful rainfall helped to reduce the severity of aflatoxin contamination in 2003. 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	0.12	0.0	0.12
Nematodes	3.0	3.5	1.0	4.50
Mycotoxins	4.0	4.6	0.0	4.60
Leaf Diseases	8.0	9.3	0.0	9.44
Total	**15.1**	**17.52**	**1.14**	**18.66**

Estimate by Robert Kemerait, Extension Plant Pathologist

COTTON

Rainfall was abundant in 2003 and growing conditions were generally favorable for the cotton crop. Cotton was planted on 1.30 million acres in 2003 and harvested from an estimated 1.29 million acres. The average yield was a near-record of 785 lb/A for a total production of 2.11 million bales. The crop was valued at $840,350,843. Wet weather blight caused by *Ascochyta gossypii* was common in many fields early in the season, but was not a problem for most growers later in the year. Seedling disease in Georgia is largely caused by *Rhizoctonia solani* (soreshin); however, there is evidence that *Pythium* spp. may play a greater role in this disease complex than previously thought. Soreshin was observed in many fields; however, it rarely reached a level that would result in significant yield losses. Fusarium wilt was of minimal importance.

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.

Traditional "boll rot" was scattered across the production area in Georgia, but was not considered to be of excessive severity. However, losses did occur in some fields.

Losses to nematodes, primarily southern root-knot nematode, continue to be important problems for cotton growers in the state. In a recent survey, the level of southern root-knot nematode was found to be above the economic threshold (100 southern root-knot nematodes per 100 cc soil) in 25 percent of the nearly 1800 fields that were sampled. This is largely a result of inadequate crop rotation in many areas. Reniform and Columbia lance nematodes were less of a problem across the state; however, they can be devastating in localized areas. In 2003, some symptoms associated with injury from nematodes, e.g. stunting and poor growth, were masked by the outstanding growing conditions and plentiful water.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Boll Rot (lint)	4.0	32.1	0.0	32.1
Nematodes	10.0	80.4	8.6[a]	89.0
Seedling Disease	2.0	16.1	2.2[b]	18.3
Fusarium Wilt	Trace	----	----	----
Total	**16.0**	**128.6**	**10.8**	**139.4**

[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

Even in a wet year, 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. If anything, the wet 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	1.0	14.3	40.2	54.5
Macrophoma Rot	2.0	28.6	35.0	63.6
Ripe Rot	1.0	14.3	15.0	29.3
Angular Leaf Spot	0.1	1.4	5.0	6.4
Black Rot	0.1	1.4	--[1]	1.4
Phomopsis Dead Arm	0.1	1.4	1.0	2.4
Total	**4.3**	**61.4**	**96.2**	**157.6**

[1] Controlled with fungicides applied for other diseases.

Estimate by Phil Brannen, Extension Plant Pathologist

ORNAMENTALS

The estimated value of the ornamental industry (excluding turf) was $1.24 billion in 2003. Farm gate values for field and container nursery and greenhouse sales continues to increase each year. In 2003, the farm gate value of ornamentals horticulture (excluding turf) was estimated at $497.89 million, with landscape industries (including re-wholesalers) making up the remainder of the total ornamental crop value. Root rot diseases continue to account for the largest percentage of disease loss in ornamentals. However rust, particularly daylily rust, and downy mildew diseases are increasing in prevalence. Wet conditions in 2003 contributed to an overall increase in percent reduction in crop value compared to 2002. The introduction of bacterial blight caused by *Ralstonia solanacearum* race 3 biovar 1 on infected geranium crops resulted in significant floriculture crop loss for some growers.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Bacterial diseases (fire blight, leaf spots)	1.2	14.88	0.9	15.78
Fungal leaf spots, branch and stem cankers	1.0	12.40	6.5	18.90
Root and crown rots	3.0	37.20	8.1	45.30
Powdery mildew	0.4	4.96	1.8	6.76
Botrytis blight	0.3	3.72	1.0	4.72
Virus (TSWV, INSV, CMV)	0.01	0.124	0.0	0.124
Minor diseases (rust, downy mildew, nematode)	2.0	24.80	2.3	27.10
Total	**7.91**	**98.08**	**20.6**	**118.68**

Production Category	% Reduction [1] in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Field Grown Stock	4.2	3.01	2.1	5.11
Containerized Nursery	8.9	15.27	5.5	20.77
Floriculture	8.3	20.92	4.4	25.32
Landscape	7.4	31.91	5.7	37.61
Re-wholesale	8.7	26.97	2.9	29.87
Total	**7.91**	**98.08**	**20.6**	**118.68**

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

Estimate by Jean Williams-Woodward, Extension Plant Pathologist

PEACH

Peach production in 2003 experienced very high disease pressure, due to wet conditions throughout much of the season. Brown rot pressure was especially high, with in-field losses of >50 percent in many locations. Without the use of post-harvest fungicides, rot losses would have been catastrophic for this commodity. Scab was also prevalent, but scab control was less problematic. 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	20.0	8,072.7	1,750.0	9,822.7
Scab	2.0	807.3	1,110.0	1,917.3
Bacterial Spot	0.5	201.8	20.0	221.8
Phony Peach	0.5	201.8	230.0	431.8
Gummosis	0.1	40.4	20.0	60.4
Armillaria Root Rot	1.0	403.6	50.0	453.6
Phomopsis Constriction Canker	0.05	20.2	10.0	30.2
Total	**24.2**	**9,747.8**	**3,190.0**	**12,937.8**

Estimate by Phil Brannen, Extension Plant Pathologist

PEANUT

In 2002, peanut was planted on an estimated 545,000 acres and harvested from approximately 540,000 acres. With ample rainfall, improved varieties, and effective disease management programs, peanut farmers achieved the highest average yield per acre on record. Yields in 2003 averaged 3,450 lb/A for a total production of 1.86 billion pounds, valued at $364,846,048. Despite abundant rainfall throughout much of the season, reports of severe disease outbreaks were uncommon. Spotted wilt was of only minor concern throughout the production region of the state. In isolated instances where spotted wilt was severe, the cause typically could be linked back to a breakdown in the use of the 2003 Spotted Wilt Index, e.g. failure to achieve a good early season plant stand. Conditions were generally favorable for leaf spot diseases during most of the season. However, except in instances where heavy rains followed closely after a fungicide spray, or in cases where muddy fields kept growers from making timely fungicide applications, there were few complaints about leaf spot diseases in 2003. Despite abundant rainfall, white mold epidemics did not develop until later in the season. The combined effects of cooler soil temperatures (few days were over 95 degrees F) and frequent heavy rains beating on the pathogen as it developed, kept losses to white mold low in 2003. Conditions were ideal for Rhizoctonia limb rot, however, this disease too was of only moderate importance. Cylindrocladium black rot was very damaging in some fields, but not widespread in 2003. The peanut root-knot nematode continued to cause marked losses in some fields, especially in sandier fields in the southwestern corner of the state. The true damage to nematodes in Georgia's peanut production is likely much more significant than most growers realize.

Disease	% Reduction in Crop Value[a]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($Millions)
Leaf spots	1.5	5.5	25.6[b]	31.1
White mold	2.0	7.3	12.4[c]	19.7
Limb Rot	2.0	7.3	----[d]	7.3
Pod Rot	0.5	1.8	----[e]	1.8
Nematodes	3.0	11.0	0.8[f]	11.8
Cylindrocladium Black Rot	1.5	5.5	0.27[g]	5.8
Seedling Disease	0.2	0.7	0.5[h]	1.2
Tomato Spotted Wilt Virus	1.0	3.6	0.0	3.6
Diplodia Collar Rot	Trace	----	0.0	0.0
Total	**11.7**	**42.4**	**39.6**	**93.7**

[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

Season long rainfall created conditions more favorable for pecan scab development and less favorable for fungicide application than any year in recent memory. In general there was more early season scab on leaves in sprayed orchards than is usually seen in unsprayed plots. Fungicide use increased to an average of 11 applications per acre with 13 applications common in the Flint River basin. Data from test plots indicated fungicides were generally effective even though more scab than desirable occurred on sprayed trees. The loss potential in these plots ranged from 60-100 percent based on unsprayed trees.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Scab [1]	20.00	13.80	19.00	32.80
Brown Spot	0.00	0.00	-- [1]	0.00
Downy Spot	0.00	0.00	-- [1]	0.00
Powdery Mildew	T	0.00	-- [1]	-
Zonate Leaf Spot	T	0.00	-	-
Total	**20.05**	**13.80**	**19.00**	**32.80**

[1] Eleven treatments on 150,000 acres @ 11.50/A; scab sprays also effective against downy spot, brown spot, and powdery mildew in most cases.

Estimate by Paul Bertrand, Extension Plant Pathologist

SOYBEAN

In 2003, soybean was planted on approximately 190,000 acres and harvested from an estimated 180,000 acres. Plentiful rainfall during the growing season saw the average yield jump from 21 Bu/A in 2002 to 33 Bu/A in 2003. The total soybean production for Georgia in 2003 was valued at $47,939,011. The percent losses to most diseases appeared similar between 2002 and 2003. Frogeye leaf spot was common in 2003 and many growers were interested in spraying fungicides to control the disease. 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	1.5	0.72	0	0.72
Root-knot nematodes	3.5	1.60	0	1.60
Other nematodes	0.25	0.12	0	0.12
Anthracnose	0.20	0.10	0	0.10
Brown leaf spot	0.0	0.00	0	0.00
Charcoal rot	0.1	0.05	0	0.05
Diaporthe/*Phomopsis* complex	0.3	0.15	0	0.15
Downy mildew	0.0	0.00	0	0.00
Frogeye leaf spot	1.0	0.48	0	0.48
Red crown rot	0.5	0.24	0	0.24
Pod and stem blight	0.2	0.01	0	0.01
Purple stain	0.1	0.05	0	0.05
Seedling diseases (*Rhizoctonia*/*Pythium*/*Fusarium*)	0.1	0.05	0.1	0.15
Southern blight	0.1	0.05	0	0.05
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	**8.35**	**3.86**	**0.1**	**3.96**

[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 virtually overwhelming in strawberries throughout most of the state in 2003. As a result of cold damage, angular leaf spot was observed early in the season. Anthracnose and Botrytis (gray mold) diseases were also prevalent throughout the state, due to wet, warm conditions during bloom and fruit development. Root rots were also observed in some locations, resulting in additional yield losses and control costs. Overall, it was a very difficult year for strawberry production, and disease losses generally meant that producers either made very poor profits or posted a loss for 2003. 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	10.0	521.7	75.0	596.7
Fungal Leaf Spots	1.0	52.2	34.0	86.2
Anthracnose	25.0	1,304.2	16.0	1,320.2
Root Rots & Nematodes	3.0	156.5	50.0	206.5
Angular Leaf Spot	2.0	104.3	1.0	105.3
Total	**41.0**	**2,138.9**	**176.0**	**2,314.9**

Estimated by Phil Brannen, Extension Plant Pathologist

TOBACCO

Spotted wilt shrank to inconsequential levels in 2003. In spite of the lowest incidence since 1994 a few growers including some research plot cooperators reported highest ever spotted wilt levels for their farms. Blue mold appeared in mid-April and in spite of a generally wet season caused lower than anticipated losses. Activity seemed to wain as temperature rose in June and July. Target spot began to show in mid-June and caused significant losses in most counties. Black shank was present but caused very low losses.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Blue Mold	1.00	1.10	0.30	1.40
Black Shank	Trace	0.00	0.83	0.83
Target Spot	2.50	2.80	0.00	2.80
Root Knot Nematode	0.00	0.00	2.30	2.30
TSWV[1]	0.00	0.00	0.60[2]	0.60
TMV	0.00	0.00	0.00	0.00
Total	**3.5**	**3.90**	**4.03**	**7.93**

[1] TSWV is estimated to have caused about 7% stand loss and no loss of quota lbs. Cost of control was up over 2002. In response to 2002 losses more growers used more Admire than before. About 10,000 acres received the newly labeled Actigard treatment.

[2] Previous cost of control has significantly over estimated Admire use and did not account for recent quota cuts.

Estimate by Paul Bertrand, Extension Plant Pathologist

TURF

It is estimated that there are 1.70 million acres of turf with a maintenance value of $1.65 billion in Georgia. In 2003, 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 2003. The wet conditions of 2003 influenced the onset of foliage diseases, which continue to be problematic during the hot, humid summer. *Curvularia* spp. and *Colletotrichum* spp. were the most common foliar diseases encountered. Nematodes have been attributed to increased damage and promoting stress on turfgrasses.

Turf Diseases	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Soil Diseases	3.8	62.7	31.3	94.0
Foliage Diseases	1.7	28.0	18.1	46.1
Nematodes	3.5	57.7	5.0	62.7
Total	**9.0**	**148.4**	**54.4**	**202.8**

Estimate by Alfredo Martinez, Extension Plant Pathologist

VEGETABLES

About 200,000 acres of vegetables were grown in Georgia in 2003 worth a total of ca. $900 million. Overall, most crops suffered fewer losses in the field despite favorable weather conditions for disease development. The lack of losses in the field was offset somewhat by postharvest losses to *Pythium* spp. and *Phytophthora capsici* in cucurbits. Snap beans did suffer losses to Pythium pod blight due to heavy rains during the growing season. Wet weather did suppress losses to insect vectored viruses such as Tomato Spotted Wilt Virus, the Squash Mosaic Virus complex, and the Geminiviruses Cabbage Leaf Curl and Tomato Yellow Leaf Curl Virus.

Major Vegetable Crops	%Reduction in Crop Value[1]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Watermelon	6.0	4.6	4.7	9.3
Squash (yellow + zucchini)	4.0	3.3	1.2	4.5
Tomato	4.0	4.8	2.5	7.3

Other Vegetable Crops	% Reduction in Crop Value[1]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($Millions)
Pepper (bell)	3.0	2.6	1.7	4.3
Cucumber	3.0	2.1	1.3	3.4
Snap Bean	7.0	4.2	0.9	5.1
Greens	4.0	2.7	0.9	3.6
Cabbage	4.0	1.8	0.33	2.1
Onion (dry)	10.0	10.4	2.5	12.9
Cantaloupe	4.0	1.5	1.0	2.5
Eggplant	5.0	1.0	0.2	1.2
Total	**5.0**	**39.0**	**17.23**	**56.2**

[1] This column is not additive due to the way losses for vegetables are tabulated.
Total values for vegetable commodities are taken from the 2003 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. Rusts caused only low amounts of damage to wheat during 2003 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 high causing moderate 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	0.2	0.05	1.12	1.17
Glume Blotch	0.2	0.05	----	0.05
Powdery Mildew	1.0	0.27	0.3	0.57
Barley Yellow Dwarf Virus	0.75	0.22	0.3	0.52
Stinking smut	----	----	----	----
Total	**2.15**	**0.59**	**1.72**	**2.31**

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	1.68	22.7	0.381	0.242	0.623	37.08
Blueberry	19.26	2.5	0.481	0.335	0.816	4.24
Bunch Grape	1.86	36.0	0.670	0.085	0.755	40.59
Corn	115.99	15.1	17.52	1.14	18.66	16.09
Cotton	804.35	16.0	128.6	10.8	139.4	17.33
Muscadine Grape	1.43	4.3	0.061	0.096	0.158	11.05
Ornamental	1240.0	7.91	98.08	20.6	118.68	9.57
Peach	40.36	24.2	9.75	3.19	12.94	32.06
Peanut	364.85	11.7	42.70	39.6	82.30	22.56
Pecan	69.0	20.05	13.80	19.00	32.80	47.54
Soybean	47.94	8.35	3.86	0.10	3.96	8.26
Strawberry	5.22	41.0	2.14	0.176	2.32	44.25
Tobacco	110.0	3.5	3.90	4.03	7.93	7.21
Turf	1650.0	9.0	148.4	54.4	202.8	12.29
Vegetable	900.0	5.0	39.00	17.23	56.23	6.24
Wheat	27.44	2.15	0.59	1.72	2.31	8.42
TOTALS	**5399.38**	**9.44**	**509.93**	**172.74**	**682.67**	**12.64**

[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.

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

3. Use pesticides at correct label dosage and intervals to avoid illegal residues or injury to plant 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 and 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 Office identify actions that may threaten Endangered Species or their habitat.

Trade names are used only for information.

Learning for Life

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