




1998 GEORGIA PLANT DISEASE LOSS ESTIMATES





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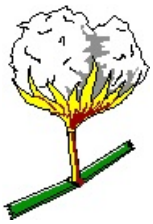

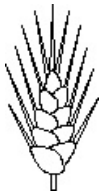
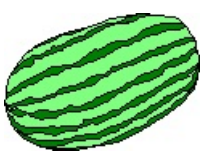

1998 Georgia Plant Disease Loss Estimates

It is estimated that 1998 plant disease losses, including control costs amounted to approximately $605 million. The value of the crops used in this estimate was #3.63 billion, this giving a 16.6 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. 99, No. 4. Estimates for tobacco are based on Market News Service figures for growers net sales and do not include warehouse resales. Estimates for vegetables, ornamentals, and turf rely on specialists knowledge of the industry and industry sources of information.

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1998 PLANT DISEASE CLINIC 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- and insect-related plant problems. Plant samples are submitted directly to the county extension faculty who, at their discretion, forward samples to the appropriate clinic. Commercial turf, fruits, forage crops, greenhouse and ornamental nursery samples are sent to the Plant Disease Clinic in Athens. Diagnoses of and control recommendations for commercial samples of field crops, pecans and vegetables are handled by the Plant Disease Clinic at the Rural Development Center in Tifton, Georgia. All non-commercial plant samples are sent to the Homeowner IPM Clinic in Athens for disease and/or insect 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.

As in 1997, ornamentals (trees, herbaceous and woody ornamentals) and turf comprised most of the samples received in 1998. The high number of turf samples is attributed to two factors; 1) early summer drought stress compounded in many cases by over watering through the remainder of the summer and 2) an unusually warm fall created ideal conditions for disease when warm season turf grasses should have been going dormant.

CLINIC SUMMARIES: 1998 PLANT SPECIMEN DIAGNOSES

Crop	Commercial Samples	Homeowner IPM Clinic: Disease	Insect	Digital Imaging Samples	Total
Field Crops	100	1		118	219
Vegetables	132	168	21	178	499
Fruits & Nuts	46	81	20	30	177
Herbaceous Ornamentals	289	192	19	57	557
Woody Ornamentals	317	458	68	62	907
Trees	135	274	66	84	559
Turf & Forages	524	599	27	56	1206
Miscellaneous	3	19	330	72	424
TOTAL	1545	1792	551	657	4546

APPLE

1998 Disease Loss Estimates for Apple Are Not Available

BUNCH GRAPE

1998 Disease Loss Estimates for Bunch Grape Are Not Available

MUSCADINE GRAPE

1998 Disease Loss Estimates for Muscadine Grape Are Not Available

STRAWBERRY

1998 Disease Loss Estimates for Strawberry Are Not Available

BLUEBERRY

Blueberry production in 1998 was down to 7,500 lbs. statewide due to spring freezes, poor pollination, and drought. Freezes during bloom also predisposed the crop to Botrytis blight. Mummy berry was enhances due to wet soil conditions in late winter and early spring. Rust, anthracnose leaf spot and Septoria leaf spot caused some early defoliation after harvest in the southernmost regions of Georgia. Cost of control included cost of pesticides, equipment, and labor.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Mummy Berry	1.5	86.6	498.0	584.6
Anthracnose Fruit Rot	0.5	28.9	0.0	28.9
Botrytis Blight	0.5	28.9	80.0	108.9
Foliar Disease	0.2	11.6	26.0	37.6
Phytophthora Root Rot	0.2	11.6	7.0	18.6
Total	**2.9**	**167.6**	**611.0**	**778.6**

Estimate by Harald Scherm, Research Plant Pathologist

CANOLA

Canola is an emerging agricultural commodity in Georgia and neighboring states. Acreage in Georgia has varied from over 15,000 to less than 5,000 in recent years, depending on market prices and weather at planting time. Disease losses from the potentially most devastating disease, blackleg, have been kept well below 5 percent by moving production to new areas where the disease is not established and limited use of moderately resistant cultivars. Ample seed supplies of a highly resistant cultivar will be available for the 1999-2000 crop. Yield losses from Sclerotinia stem rot of 5 to 10 percent were observed in many fields, despite a relatively dry 1998-1999 season. Foliar and pod diseases were present at very low levels and did not reduce yields. Overall disease losses for the 1998-1999 season were about 5 percent.

CANOLA DISEASES FOUND IN GEORGIA

Disease	Pathogen	% Reduction in Crop Value
Black Leg	*Leptosphaeria maculans*	< 5.0
Sclerotinia Stem Rot	*Sclerotinia sclerotiorum*	5-10
Alternaria Black Spot	*Alternaria brassicicola & A. brassicae*	0.0
White Leaf Spot	*Pseudocercosporella capsellae*	0.0
Downy Mildew	*Peronospora parasitica*	0.0
Powdery Mildew	*Erysiphe cruciferarum*	0.0
Damping Off	*Rhizoctonia solani & Pythium sp.*	0.0
TOTAL		5.0

Estimate by Dan Phillips, Research Plant Pathologist

CORN

Drought caused severe damage to the 1998 corn crop in Georgia. Approximately 500,000 acres were planted, but only 265,000 acres were harvested and statewide yields were below average. Aflatoxin levels were higher than average in much of the harvested corn causing an estimated $9.6 million in losses. Damage from nematodes exacerbated damage from environmental stresses, but the hot, dry weather reduced foliar disease problems.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Root & Stalk Rot	0.1	.1	0.0	.1
Nematodes	5.0	2.7	1.0	3.7
Mycotoxins	17.7	9.6	0.0	9.6
Leaf Diseases	3.5	1.9	0.0	1.9
Total	**26.3**	**14.3**	**1.0**	**15.4**

Estimate by Richard Davis, Extension Nematologist

COTTON

Approximately 1,400,000 acres of cotton were planted in 1998, but only 1,320,000 acres were harvested. Severe drought in many areas cause significant yield loss and even caused the complete loss of some acreage. Statewide, yields were lower than in recent years. Large amounts of rain, mostly from tropical storm systems and a hurricane late in the season, caused very high losses to boll rot in some areas of the state. Damage from nematodes was similar to recent years, though much of the damage was difficult to distinguish from drought damage: nematode-damaged root systems were less able to take up water, so the effect of drought conditions was more severe.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Boll Rot (lint)	15.0	75.2	0.0	75.2
Nematodes	5.0	25.1	10.6	35.7
Seedling Disease	1.0	5.0	2.5	7.5
Fusarium Wilt	0.5	2.5	0.0	2.5
Total	**21.5**	**107.8**	**13.1**	**120.9**

Estimate by Richard Davis, Extension Nematologist

ORNAMENTALS

The ornamental industry which includes greenhouse and nursery production, as well as landscaping, has an estimated economic value of $990 million in Georgia. Root rot diseases accounted for the largest percentage of disease loss to ornamentals. Drought conditions and warmer temperatures reduced losses from foliar diseases.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Bacterial diseases (fire blight, leaf spots)	0.1	0.99	0.1	1.09
Fungal leaf spots, branch and stem cankers	1.1	10.89	6.8	17.69
Root and crown rots	2.0	19.80	4.2	24.00
Powdery mildew	0.1	0.99	0.9	1.89
Botrytis blight	0.2	1.98	1.0	2.98
Virus (TSWV, INSV, CMV)	0.5	4.95	0.0	4.95
Minor diseases (rust, downy mildew, nematode)	0.05	0.50	0.0	0.50
Total	**4.05**	**40.1**	**13.00**	**53.1**

Estimate by Jean Williams-Woodward, Extension Plant Pathologist

PEACH

Peach production in 1998 was less than half that of the previous year due to spring freezes and poor fruit set. Early-season scab control was generally poor, while brown rot pressure was lower that usual, particularly on mid and late-season varieties, due to dry weather during harvest.

Costs of control included cost of pesticides, equipment, and labor. Flail mowing was the only cost considered for control of gummosis. Pruning out dead wood, which is extremely expensive and a necessary practice for control of gummosis, was considered to be a cultural management expenditure. Control of Phony Peach included cost of scouting, removing tree trunks, and a pro-rated loss of production from trees that had been removed during the last 4 years.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Brown Rot	8.0	1.79	1.17	2.96
Scab	6.0	1.35	1.11	2.46
Bacterial Spot	2.0	0.45	0.02	.47
Gummosis	0.0	0.00	0.28	.28
Phony	1.5	0.33	0.23	.56
Total	**17.5**	**3.92**	**2.81**	**6.45**

Estimate by Harald Scherm, Research Plant Pathologist

PEANUT

The 1998 peanut crop was a pleasant surprise coming in at about 2900 pounds per acre as a state average. There were about 530,000 acres harvested for a total crop value of $409 million. Dry weather during the early to middle part of the season resulted in decreased severity of many diseases and serious concern about the overall development of the crop. However, late season rains and a mild fall with excellent harvest conditions resulted in a much better than expected yields of late maturing peanuts. The one exception in terms of diseases was while mold which was as bad as we have seen it in many years, certainly the worst since the registration of Folicur in 1994. White mold epidemics developed very early in irrigated fields and caused severe crop losses as well as additional expenses in fungicide inputs.

Other diseases were not dramatically different than in previous years. Tomato Spotted Wilt damage was actually lower this year for the first time reflecting the widespread acceptance of the University of Georgia TSWV Risk Index. However, it was still a cause of significant yield loss and continues to be a major factor influencing cultivar selection. Leaf spot was generally not severe, although it was significant in some late-harvested fields. Cylindrocladium Black Rot (CBR) continues to be found in new fields each year and losses are steadily rising. More growers are considering management options for this disease, including use of fumigants.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Leaf spots	3.0	12.3	40.0	52.3
White mold	7.5	30.7	20.0	50.7
Limb Rot	2.0	8.2	--[1]	8.2
Pod Rot	1.0	4.1	--[2]	4.1
Nematodes	4.0	16.4	8.0	24.4
Cylindrocladium Black Rot	3.0	12.3	1.0	13.3
Seedling Disease	1.0	4.1	0.5	4.6
Aspergillus Crown Rot	0.1	0.4	0.0	0.4
Tomato Spotted Wilt	4.5	18.4	0.0[3]	18.4
Total	**26.1**	**106.9**	**69.5**	**176.8**

[1] Folicur or Bravo/Moncut treatment costs about $16/acre. Most growers made 3-4 applications of these for white mold, limb rot and leaf spot.

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

[3] Additional costs for use of increased seeding rates for management of TSWV have not been calculated.

Estimate by Tim Brenneman and Albert Culbreath, Research Plant Pathologist

PECAN

The 1998 season will be remembered more than anything else for low yields. The disease situation was similar to 1997 with some reduction in scab pressure. A dry period from May through mid July reduced disease pressure at most locations during early nut growth. July rains resulted in some disease pressure but control remained quite good at most locations. Loss potential for 1998 was variable as usual running ~7%-71%.[1]

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Scab[2]	1.00	0.49	13.80	14.29
Brown Spot	0.00	0.00	--[1]	0.00
Downy Spot	0.00	0.00	--[1]	0.00
Powdery Mildew[3]	0.00	0.00	0.20	0.20
Zonate Leaf spot	0.00	0.00	0.20	0.20
Total	**1.00**	**0.49**	**14.20**	**14.69**

[1] This data is based on the response of unsprayed trees ("Desirable") in test plots at 10 locations.

[2] Eight treatments on 150,000 acres @ $11.50/A; scab sprays also effective against downy spot and brown spot.

[3] Two treatments on 25,000 acres @ $4/A.

Estimate by Paul Bertrand, Extension Plant Pathologist

SOYBEAN

An estimated 220,000 acres of soybeans were harvested in 1998 with an average yield of 21 bushels/acre for a total value of $24,255,000. Many more acres were planted but not harvested, due primarily to severe drought conditions. There were generally fewer foliar disease problems than in 1997 because of the dry conditions for much of the growing season. Seedling disease problems, caused primarily by *Rhizoctonia*, were much greater in 1998. Surprisingly, there were a number of reports of damage from *Rhizoctonia* during the middle of the growing season. It is suspected that initial infection occurred when plants were young, but disease symptoms were suppressed by drought conditions. When significant moisture became available, disease symptoms appeared rapidly.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Soybean cyst nematode	3.0	0.8	0	0.8
Root-knot nematodes	3.0	0.8	0	0.8
Other nematodes	0.5	0.1	0	0.1
Anthracnose	0.1	0.03	0	0.03
Brown leaf spot	0.1	0.03	0	0.03
Charcoal rot	0.1	0.03	0	0.03
Diaporthe/*Phomopsis* complex	0.5	0.1	0	0.1
Downy mildew	0.1	0.03	0	0.03
Frogeye leaf spot	0.5	0.1	0	0.1
Red crown rot	0.3	0.08	0	0.08
Pod and stem blight	0.1	0.03	0	0.03
Purple stain	0.1	0.03	0	0.03
Seedling diseases (*Rhizoctonia*/*Pythium*/*Fusarium*)	2.5	0.7	0.09	0.79
Southern blight	0.2	0.05	0	0.05
Stem canker	0.5	0.1	0	0.1
Virus diseases	0.0	0.0	0	0.0
Bacterial diseases	0.0	0.0	0	0.0
TOTAL	**11.5**	**2.8**	**0.09**	**2.89**

[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 Richard Davis, Extension Nematologist

TOBACCO

In late April and early May, blue mold scattered itself over Georgia tobacco belt affecting about 5,500 acres. As in 1997, use of acrobat MZ under Section 18 approval and hot/dry weather from mid-May through July limited losses to about1.5 percent in the affected fields.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Blue Mold	0.2	0.33	0.072	0.402
Black Shank	1.5	2.50	1.350	3.850
Root Knot Nematode[1]	1.0	1.70	3.400	5.100
Tomato Spotted Wilt Virus[2]	1.0	1.70	0.850	2.550
Total	**3.7**	**6.23**	**5.672**	**11.902**

[1] An increase in root-knot nematode damage was due to growers not able to fumigate because of extended wet weather.

[2] Cost of control of TSWV is based on estimated use of Admire 2F. Though Admire 2F is NOT labeled for control of TSWV, treatments with this product will usually reduce TSWV incidence. Much of the Admire 2F use in 1998 was driven by high losses from TSWV in 1997. The reduction in TSWV in 1998 over 1997 is not related to use of Admire 2F as much as 1998 was a lower TSWV year then 1997.

Estimate by Paul Bertrand, Extension Plant Pathologist

TURF

It is estimated that there are 1.43 million acres of turf valued at $950 million in Georgia. Soil-borne diseases are present wherever turf is grown and are responsible for much of the disease losses. Nematodes and foliage diseases also are common on turfgrass.

Turf Diseases	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Soil Diseases	3.1	29.45	26.40	55.85
Foliage Diseases	1.9	18.05	15.29	33.25
Nematodes	3.2	30.40	6.30	36.70
Total	**8.2**	**77.9**	**47.9**	**125.80**

Estimate by Ed Brown, Extension Plant Pathologist

VEGETABLES

About 185,000 acres of vegetables are grown in Georgia worth a total of $434 million. Hot, dry temperatures suppressed disease development in early summer, thus reducing losses to disease. Diseases reduce vegetable yields by about 9 percent annually (major crops). Crown Rot in cucurbits and pepper caused additional losses in 1998. Botrytis Neck Rot caused about 15 percent loss in CA stored onions compared to 35 percent in 1997.

Major Vegetable Crops	%Reduction in Crop Value[1]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Watermelon	8.00	8.64	3.10	11.74
Squash	15.00	10.04	17.10	27.04
Tomato	6.00	4.38	1.70	6.08

Other Vegetable Crops	% Reduction in Crop Value[1]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($Millions)
Pepper	6.00	2.05	0.32	2.37
Cucumber	5.00	0.95	0.61	1.56
Snap Bean	5.00	2.80	0.56	3.36
Greens	8.00	3.99	0.60	4.59
Cabbage	7.00	3.32	0.30	3.62
Onion	9.00	5.08	0.22	7.30
Cantaloupe	10.00	1.40	0.10	1.50
Eggplant	6.00	1.34	0.16	1.50
Total	**8.27**	**43.99**	**24.77**	**70.66**

[1] This column is not additive due to the way losses for vegetables are tabulated.

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

WHEAT

The frequent rains during the late winter and spring of 1998 favored some foliar diseases. Excessive rain during this period decreased powdery mildew to insignificant levels. Spores burst or are removed from leaves when rain is heavy. Leaf and glume blotch was more severe than it had been in the past 5 years. In tests conducted at Plains, fungicide-protected plots of a susceptible cultivar yielded 21 percent higher than the control (16 bu/A). Yield reduction statewide was about 5 percent. Leaf rust was heavy on susceptible cultivars. Application of Tilt or several other experimental fungicides, increased yields of three rust-susceptible cultivars 14-18 percent (8-13 bu/A), which was an economic return. Statewide, losses to leaf rust were 5-7 percent. Barley yellow dwarf was very low. Yield reduction was 1 percent or less.

Low seed germination (<80%) in rye seed stocks was the result of heavy fungal infection during seed development. Growers planting seed early for grazing without seed treatment had considerable problems with stand establishment which resulted in replanting in many cases. This was especially important in the lower coastal plain because of high soil temperatures in late summer and early fall. Soilborne *Pythium* species can rot rye seed before it germinates when soil is 75 degrees F or higher and cause damping off at lower soil temperatures. Seed treatment fungicides which control seedborne fungi and metalaxyl which controls soilborne *Pythium* fungi should be considered for all small grains early for grazing.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control[1] ($ Millions)	Total ($ Millions)
Leaf Rust	7.0	1.88	1.95	3.83
Glume Blotch	5.0	1.34	----	1.34
Powdery Mildew	0.0	0.00	0.00	0.00
Barley Yellow Dwarf Virus	<1.0	0.26	0.00	0.26
Total	**12.0**	**3.48**	**1.95**	**5.43**

[1] Fungicides used to control leaf rust also control glume blotch. Estimated that 50% of the wheat acreage received fungicide treatment costing approximately $13.50/acre.

Estimate by Barry Cunfer, Research Plant Pathologist

SUMMARY OF TOTAL LOSSES DUE TO DISEASE DAMAGE AND COST OF CONTROL IN GEORGIA - 1998

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]
Blueberry	5.78	2.9	0.17	0.61	0.78	13.49
Corn	54.06	26.3	14.3	1.0	15.4	28.49
Cotton	501.46	21.5	107.8	13.1	120.9	24.11
Ornamental	990.00	4.05	40.1	13.00	53.1	5.36
Peach	22.44	17.5	3.92	2.81	6.45	28.74
Peanut	408.84	26.1	106.9	69.5	176.8	43.24
Pecan	48.90	1.00	0.49	14.20	14.69	30.04
Soybean	24.26	11.5	2.8	0.09	2.89	11.91
Tobacco	168.37	3.7	6.23	5.67	11.90	7.07
Turf	950.00	8.2	77.9	47.9	125.80	13.24
Vegetable	434.00	8.27	43.99	24.77	70.66	16.28
Wheat	26.83	12.0	3.48	1.95	5.43	20.24
TOTALS	**3634.94**	**11.23**	**408.08**	**194.6**	**604.8**	**16.64**

[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.

SB 41-01 **Reviewed April 2009**