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

Georgia Plant Disease Loss Estimates

2011

Compiled by Jean Williams-Woodward
Extension Plant Pathologist

2011 Georgia Plant Disease Loss Estimates

It is estimated that 2011 plant disease losses, including control costs, amounted to approximately $823.4 million. The value of the crops used in this estimate was approximately $6285.1 million, resulting in a 13.1% total percent disease loss across all crops included in this summary.

The estimated values for most crops used to compute these disease losses are summarized in the UGA Center for Agribusiness & Economic Development 2011 Georgia Farm Gate Value Report (AR-12-01). Some estimates for fruits, ornamentals and turf rely on specialists' knowledge of the industry and industry sources for information.

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2011 Plant Disease Clinics Annual Summary

Extension Plant Pathology maintains plant disease clinics at Athens and Tifton to aid county Extension faculty in diagnosing and correcting disease-related plant problems. Additionally, a laboratory for analysis for nematodes is maintained at Athens. The Plant Disease Clinic at Athens, operated by Ansuya Jogi, is located in Room 2405 Miller Plant Sciences Building. Samples analyzed in this clinic include commercial fruit, ornamentals and turf; Christmas trees and forestry; all homeowner samples; and legume forages, small grains, mushroom identification and wood rots. The Plant Disease Clinic at Tifton, operated by Jason Brock, is located in Room 116 of the Horticulture Building. Samples analyzed in this clinic include commercial samples of field crops, grain forages, pecans and vegetables. The Nematology Lab, operated by Dr. Ganpati Jagdale, is located in the Agricultural Services Complex. This clinic processes soil and plant samples for nematode analysis.

In 2011, 708 commercial plant samples were processed for diagnosis at Athens and 717 commercial plant samples were processed for diagnosis at Tifton. For homeowners, 387 samples were analyzed. A total of 6,712 samples were analyzed for nematodes.

Diagnoses and educational recommendations are returned to the county faculty. The clinics maintain a computerized database of samples and their diagnoses through the DDDI system.

2011 PLANT DISEASE CLINIC SAMPLE SUMMARIES

PLANT SAMPLES DIAGNOSES			
Crop	**Commercial Samples**	**Homeowner IPM Samples**	**Total**
Field Crops	270	0	270
Fruits and Nuts	104	30	134
Herbaceous Ornamentals	69	18	87
Miscellaneous	7	9	16
Trees	35	51	86
Turf	405	162	567
Vegetables	461	42	503
Woody Ornamentals	74	75	149
Total	**1425**	**387**	**1812**

SAMPLES FOR NEMATODE DIAGNOSES			
Crop	**Samples**	**Crop**	**Samples**
Field Crops	2490	Trees	7
Fruits & Nuts	27	Turf	1080
Miscellaneous	2340	Vegetables	390
Ornamentals	378		
Total of all nematode samples			**6712**

Apple

North Georgia had a moderately dry season in 2011. As a result, major disease losses were not observed, including bitter rot, one of our primary summer diseases. Likewise, fire blight was not prevalent since early-season conditions were generally cold. Summer rot diseases did not result in significant production losses. Overall disease pressure was low. There is still a strong need for more efficacious fungicides, especially for control of bitter rot and other summer rot diseases. Though not yet observed, we are concerned that streptomycin antibiotic resistance may yet become an issue; currently, streptomycin is the most effective antibiotic for fire blight, though oxytetracycline is also now registered. Cost of control included pesticide usage for fire blight, pruning costs and summer rot control measures.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Fire Blight	0.10	8.9	50.0	58.9
Bitter Rot	1.00	89.0	100.0	189.0
Bot Rot	0.01	0.9	52.0	52.9
Black Rot	0.01	0.9	33.0	33.9
Alternaria Leaf Spot	0.01	0.9	0.0	0.9
Powdery Mildew	0.01	0.9	11.5	12.4
Sooty Blotch	0.01	0.9	0.0	0.9
Fly Speck	0.01	0.9	0.0	0.9
Cedar Apple Rust	0.01	0.9	0.0	0.9
Scab	0.01	0.9	0.0	0.9
Other Diseases	0.01	0.9	1.0	1.9
Total	**1.2**	**105.9**	**247.5**	**353.4**
*Controlled with fungicides applied for other diseases.				
Estimate by Phil Brannen, Extension Plant Pathologist				

Blackberry

Blackberries are still a relatively new commodity for Georgia. Diseases have been a major reason for losses observed, and limited research information is available for this expanding market. In 2011, Botrytis fruit rot was observed in some locations. This disease is especially damaging when wet weather occurs during bloom. Several rust diseases were observed in 2011, including orange rust and cane and leaf rust. Viruses, many of which can't be readily detected, continue to make their way into the state, and these have also caused significant losses. Fungicidal applications generally decreased losses to low levels relative to the total crop.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Botrytis	0.10	11.2	1228.8	1240.1
Orange Rust	0.01	1.1	153.6	154.7
Cane and Leaf Rust	0.10	11.2	614.4	625.6
Double Blossom	0.10	11.2	307.2	318.4
Viruses	5.00	560.8	153.6	714.4
Phytophthora Root Rot	0.10	11.2	30.7	41.9
Cane Blight	1.00	112.2	307.2	419.4
Septoria Leaf Spot	0.10	11.2	122.9	134.1
Botryosphaeria	0.10	11.2	153.6	164.8
Total	6.6	741.4	3072.1	3813.5
Estimate by Phil Brannen, Extension Plant Pathologist				

Blueberry

Blueberry production in 2011 was generally good, but diseases had a major impact on production. Mummy berry losses were low to moderate. Necrotic ring blotch, a new viral pathogen, was highly prevalent, and red ringspot virus was observed as well. Exobasidium leaf and fruit spot, an emerging disease, increased in both severity and prevalence. Bacterial leaf scorch, a newly identified bacterial disease of Southern highbush blueberries, continued to cause losses on several varieties. Botryosphaeria canker and Botrytis were prevalent in 2011 due to cold damage prior to and during bloom; however, recommended pruning and fungicide applications were instrumental in disease mitigation. Rhizoctonia root rot, a relatively rare propagation disease, caused substantive losses in one planting.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Mummy Berry	0.1	261.1	4349.8	4610.9
Botrytis Blight	0.0	26.1	1739.9	1766.0
Foliar Disease	1.0	2611.5	1304.9	3916.4
Rots	1.0	2611.5	1304.9	3916.4
Bacterial Scorch	0.1	261.1	435.0	696.1
Dieback	0.1	261.1	435.0	696.1
Phytophthora Root Rot	0.1	261.1	435.0	696.1
Total	**2.4**	**6293.6**	**8699.6**	**16298.2**
Estimate by Phil Brannen, Extension Plant Pathologist				

Bunch Grape

Grape diseases were not very prevalent in 2011. Powdery and downy mildews were observed where spray programs were not well administered. The downy mildew epidemic was initiated later in the season, so fruit were not infected. In addition, Phomopsis cane and leaf spot were observed in some vineyards. 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. Regardless, cold temperatures allow for production of Vinifera wine grapes, and we do not recommend that producers plant these at elevations below 1,300 feet. Pierce's disease losses were minimal in 2011, and new infections from Pierce's disease were rarely observed. An indirect result of Pierce's disease mortality has been an increase in leaf roll viruses. An initial survey of leaf roll virus diseases indicated that these have resulted in substantive losses in some vineyards. This disease was introduced extensively through replanting of vines killed by Pierce's disease in previous years, and leaf roll virus is now becoming a major issue for the Georgia wine grape industry, as plant destruction is the only control option.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Botrytis	0.1	4.5	50.0	54.5
Downy Mildew	2.0	89.7	70.0	159.7
Black Rot	1.0	44.8	70.0	114.8
Powdery Mildew	3.0	134.5	20.0	154.5
Phomopsis Cane Blight	1.0	44.8	35.0	79.8
Crown Gall	0.01	0.4	1.0	1.4
Pierce's Disease	0.01	0.4	10.0	10.4
Leaf Roll Virus	0.1	4.5	5.0	9.5
Total	**7.2**	**323.7**	**261.0**	**584.7**
Estimate by Phil Brannen, Extension Plant Pathologist				

Corn

In 2011, corn for grain was planted on 320,261 acres in Georgia with an average yield of 162.6 bu/A. The crop was valued at $311,603,285. Southern rust (*Puccinia polysora*) and northern corn leaf blight (*Exserohilum turcicum*) were of limited importance, largely due to the extreme drought and high temperatures experienced that season. However, charcoal rot, which is favored by periods of drought stress, was observed more frequently in 2011 than in other years. Additionally, aflatoxin was more of a problem because of favorable environmental conditions. Use of fungicides was uncommon in 2011 as conditions were generally unfavorable for disease spread.

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	0.3	0.0	0.3
Nematodes	5.0	15.6	0.8*	16.4
Mycotoxins	5.5	17.1	0.0	17.1
Southern Corn Rust	0.1	0.3	0.4**	0.7
Northern Corn Leaf Blight	0.2	0.6	---**	0.6
Other Leaf Diseases	trace	---	0.0	0.0
Total	**10.9**	**34.0**	**1.2**	**35.1**

* It is estimated that approximately 40,000 acres of corn were treated with 7 lb/A Counter insecticide-nematicide for control of nematodes.
**It is estimated that 30,000 acres of corn were sprayed with fungicides at least once during the 2011 season at a cost of $5/A for application and $10/A for cost of fungicide.

Estimate by Robert Kemerait, Extension Plant Pathologist

Cotton

In 2011, cotton was planted on an estimated 1,564,191 acres. The average lint yield was 869.72 lb/A. The crop was valued at $1,508,274,752.

Conditions throughout most of the 2011 field season were warm and dry, which minimized losses to seedling diseases, primarily Rhizoctonia seedling blight ("soreshin"), boll rot, and target spot caused by *Corynespora cassiicola*. The most serious foliar disease in 2011 was Stemphylium leaf spot. Though this disease typically has its basis in a nutrient deficiency, especially potassium, the fungal pathogen is the cause of the leaf spots that can lead to rapid and severe defoliation in a field. Dry weather during 2011 very likely affected the uptake of the potassium, leading to the problems with Stemphylium leaf spot.

Losses to nematodes, primarily southern root-knot nematodes, continued to be one of the most important problems for cotton growers in Georgia. Until growers are able to practice effective crop rotation, increase the number of years between cotton crops in a field and use nematicides effectively, the losses and damage from parasitic nematodes will continue to increase.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Boll Rot (lint)	1.0	15.1	0.0	15.1
Nematodes	**11.5**	**173.4**	**20.9[a]**	**194.3**
Southern Root-Knot	8.5	128.2	---	---
Reniform	2.5	37.7	---	---
Columbia Lance	0.5	7.5	---	---
Seedling Disease	1.0	15.1	1.2[b]	16.3
Fusarium Wilt	Trace	---	---	---
Ascochyta Blight	Trace	---	---	---
Stemphylium Leaf Spot	0.5	7.5	---	7.5
Total	**13.5**	**211.1**	**22.1**	**233.2**

[a] This figure is based on an estimation that approximately 35% of the cotton acreage in the state is treated with a nematicide rate of Temik (5 lb/A or greater), 20% with a seed-treatment nematicide, and approximately 5% 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

Disease pressure was minimal in most muscadine vineyards due to low rainfall in southern Georgia counties where muscadines are grown. Good spray programs further resulted in minimal losses. As a native grape, muscadines generally have less disease pressure than European bunch (Vinifera) grapes. Rot diseases resulted in more direct losses than any other disease category, but there are now multiple fungicides that adequately control these diseases. An active fungicide program is required, and where producers are unable to spray effectively, diseases can be significant. Dead arm diseases were more prevalent in 2011 due to winter cold injury. These trunk diseases result in relatively minor losses each year, but cold damage and/or stress are the primary drivers.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Bitter Rot	0.5	21.4	50.0	71.4
Macrophoma Rot	0.5	21.4	45.0	66.4
Ripe Rot	0.5	21.4	25.0	46.4
Angular Leaf Spot	0.5	21.4	10.0	31.4
Black Rot	0.5	21.4	0.0	21.4
Phomopsis Dead Arm	0.5	21.4	1.0	22.4
Total	**3.0**	**128.7**	**131.0**	**259.7**
*Controlled with fungicides applied for other diseases.				
Estimate by Phil Brannen, Extension Plant Pathologist				

Ornamentals

The 2011 farm gate value for ornamental horticulture (excluding turf) was estimated at $489.68 million. This was down approximately 2% from 2010, and represents a 13.2% decrease in farm gate value since 2009. The downturn in the economy and new house construction has contributed to the decrease in sales of ornamental plants. In addition, many ornamental plant producers have closed in recent years. The ornamental disease loss estimate is only for ornamental production and excludes the value-added service industries because the true value, disease loss and cost of control are not documented and vary greatly within the industry. This change was initiated in 2005, and is a major deviation from the disease loss estimates generated in years prior to 2005, as only farm-gate value of ornamental plant production is reported and used to develop the loss estimate.

Losses due to plant diseases were generally low in 2011. Root rot diseases still account for the largest percentage of disease loss in commercial ornamental production. Heat stress within containers contributed to additional root rot loss. Downy mildew diseases and needle blight on Leyland cypress continue to increase in both occurrence and the cost of control due to additional fungicide inputs and labor costs.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Bacterial Diseases (Fire Blight, Leaf Spots)	0.2	0.98	0.7	1.68
Fungal Leaf Spots, Stem Cankers, Needle Blights	1.2	5.88	7.0	12.88
Root and Crown Rots	3.5	17.14	8.8	25.94
Powdery Mildew	0.6	2.94	2.2	5.14
Botrytis Blight	0.2	0.98	1.4	2.38
Virus (TSWV, INSV, Hosta Virus X)	0.1	0.5	0.1	0.6
Minor Diseases (Rust, Downy Mildew, Nematode)	0.8	3.92	3.0	6.92
Total (Ornamental Production)	**6.6**	**32.34**	**23.20**	**55.54**

Production Category (2010 Farm Gate Value)	% Reduction in Crop Value[1]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Field Nursery ($70.73 M)	2.1	1.48	1.9	3.38
Container Nursery ($143.04 M)	9.0	12.93	11.9	24.83
Floriculture (Greenhouse) ($275.90 M)	6.5	17.93	9.4	27.33
Total (Ornamental production)	**6.6**	**32.34**	**23.20**	**55.54**

[1]Column is not additive because disease losses are weighted according to production category.

Estimate by Jean Williams-Woodward, Extension Plant Pathologist

Peach

Peach production was good to excellent in 2011. Conditions were relatively dry for most of the season, and brown rot and scab diseases were of minimal consequence due to adequate fungicide programs. Extensive surveys have indicated that brown rot fungicide resistance is prevalent in many locations, but field surveys allowed for prescription fungicide management (selection of fungicide classes for which resistance was not observed). Bacterial spot was not prevalent due to cool and dry early conditions. *Armillaria* continued to be a major, expanding problem in replant peach production.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Brown Rot	0.1	45.1	2000.0	2045.1
Scab	0.01	4.5	1200.0	1204.5
Bacterial Spot	0.01	4.5	20.0	24.5
Phony Peach	0.1	45.1	230.0	275.1
Gummosis	0.1	45.1	20.0	65.1
Armillaria Root Rot	1.0	451.3	50.0	501.3
Phomopsis Constriction Canker	0.01	4.5	10.0	14.5
Total	**1.3**	**600.3**	**3530.0**	**4130.3**
Estimate by Phil Brannen, Extension Plant Pathologist				

Peanut

In 2011, peanuts were harvested from approximately 475,872 acres. Yields averaged 3721 lb/A for a total production valued at $586,414,003.

Tomato spotted wilt was very light again in 2011 for reasons that likely include continued use of Peanut Rx (risk index) and peanut varieties with significantly improved resistance to the disease. White mold (stem rot) was severe again (though not as severe as in 2010) and was fueled by very warm soil temperatures beginning early and continuing through much of the season. Early and late leaf spot diseases, though a problem for some growers where peanuts were planted on a short rotation, were generally only a minor problem in 2011 due to the droughty conditions common throughout much of the season. The peanut root-knot nematode remained a problem in the south-central and southwestern regions of the state. Losses to nematodes were slightly elevated in 2011 from 2010 as use of the nematicide Temik 15G became more limited. Development and spread of Cylindrocladium black rot (CBR) was slight in 2011 due to very warm temperatures during the season. For unknown reasons, the severity of Rhizoctonia limb rot, though nowhere near as important as white mold, was up in 2011 from recent years.

As the popular fungicide tebuconazole became available in generic formulations, growers using the generic formulations were able to realize less expensive fungicide programs. However, growers must realize that other fungicides may provide better value by providing improved disease control.

Disease	% Reduction in Crop Value[a]	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Leaf Spots	1.0	5.9	22.4[b]	29.3
White Mold	7.0	41.0	6.8[c]	47.8
Limb Rot	0.5	2.9	---[d]	2.9
Pod Rot	0.5	2.9	---[e]	2.9
Nematodes	3.0	17.6	3.6[f]	21.2
Cylindrocladium Black Rot	Trace	---	---	---
Seedling Disease	0.5	2.9	0.2[g]	3.1
Tomato Spotted Wilt	0.5	2.9	---	2.9
Diplodia Collar Rot	Trace	---	----	----
Total	**13.0**	**76.1**	**33.0**	**110.1**

[a] The total value of the crop was $586,414,003, according the Georgia Farm Gate Value report.
[b] It was estimated that 55% of peanut acreage in Georgia receives some irrigation and that most of this acreage was sprayed with fungicides seven 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 four to five 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 (estimated at $4.00/A) if growers chose to use products such as azoxystrobin, tebuconazole, prothioconazole, penthiopyrad or flutolanil to control soilborne diseases at some point during the season.
[d] The 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 15% of the acreage in Georgia is treated at a cost of $50/A.
[g] It was estimated that the cost to treat seed with fungicides is about $0.50/A.

Estimate by Robert Kemerait, Extension Plant Pathologist

Pecan

In 2011, pecan acreage was estimated to be 142,529 acres in Georgia with a total farm gate value of $319,538,540.

Leaf scab incidence and severity remained relatively low. Nut scab pressure was low to moderate depending on location. In University of Georgia fungicide trials in Tift County, non-treated controls of the cultivar 'Desirable' had nut scab severity ratings of 4.8% and 31.7% in early October. In addition to scab, anthracnose was a problem in isolated areas. Most occurrences of anthracnose were on the leaves, with fruit infection less common.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)[1]	Total ($ Millions)
Scab	1.0	3.2	20.5	23.7
Anthracnose	0	0	0	0
Brown Spot	0	0	0	0
Downy Spot	0	0	0	0
Powdery Mildew	0	0	0	0
Zonate Leaf Spot	0	0	0	0
Phytophthora Shuck and Kernel Rot	0	0	0	0
Total	**1.0**	**3.2**	**20.5**	**23.7**

[1] Eight treatments on 142,539 acres @ $18.00/A; scab fungicide programs are also effective against anthracnose, downy spot, brown spot and powdery mildew in most cases; number of sprays varied by location.

Estimate by Jason Brock and Tim Brenneman, Extension Plant Pathologists

Soybean

In 2011, soybeans were harvested from approximately 176,782 acres. Yields averaged 31.72 bu/A for a total production valued at $65,479,034.

The 2011 growing season was characterized by elevated temperatures and little rainfall. For these reasons, diseases like Asian soybean rust, red crown rot and frogeye leaf spot were of little importance. Foliar fungicides were not applied in most soybean fields in 2011. However, Southern blight and charcoal rot were more important than usual due to warmer soil temperatures. Plant parasitic nematodes and Phomopsis pod and stem blight continued to be important concerns as well.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Soybean Cyst Nematode[a]	Trace	---	---	---
Root-knot Nematodes	3.5	2.3	0.5[b]	2.8
Other Nematodes[c]	1.5	1.0	---	1.0
Asian Soybean Rust	Trace	---	Trace	---
Anthracnose	0.25	0.2	0	0.2
Brown Leaf Spot	Trace	---	0	---
Charcoal Rot	0.25	0.2	0	0.2
Diaporthe/Phomopsis Complex	0.5	0.3	0	0.3
Downy Mildew	0.0	0.0	0	0.0
Frogeye Leaf Spot	Trace	---	0	---
Red Crown Rot	0.0	0.0	0	0.0
Pod and Stem Blight	1.5	1.0	0	1.0
Purple Stain	Trace	0	0	---
Seedling Diseases (*Rhizoctonia/Pythium/Fusarium*)	0.1	0.06	0.1	0.16
Southern Blight	0.5	0.3	0	0.3
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	**8.1**	**5.36**	**0.6**	**5.96**

[a] Resistant varieties are used to manage most nematode and disease problems. Typically, the only fungicides used are seed treatments to reduce seedling diseases.
[b] It is estimated that approximately 20% of the soybean acreage was treated with Temik 15G (5 lb/A).
[c] "Other nematodes" includes reniform, sting and Columbia lance nematodes.

Estimate by Robert Kemerait, Extension Plant Pathologist

Strawberry

Foliar and fruit disease pressure was low to moderate in 2011. Most presumptive disease issues were actually cultural in nature, such as poor growth caused by extensive use of canopy covers for the first time, or were related to excessive winter cold. *Botrytis* (gray mold) was rarely reported, and fungicides gave adequate control where they were well utilized. Phytophthora, Pythium and Rhizoctonia root rots were often damaging. These diseases were introduced from nurseries, and the increasingly poor quality of strawberry transplants is of concern. However, overall, 2011 was a good year for strawberry production. There is concern that the strobilurin fungicides, which are heavily and virtually exclusively utilized for control of anthracnose, may be developing resistance. There is a strong need for fungicides with different modes of action if we are to continue strawberry production in Georgia.

Disease	% Reduction in Crop Value	Damage ($ Thousands)	Cost of Control ($ Thousands)	Total ($ Thousands)
Gray Mold	0.1	6.7	443.4	450.1
Fungal Leaf Spots	0.1	6.7	138.0	144.6
Anthracnose	0.1	6.7	147.8	154.5
Root Rots & Nematodes	2.0	133.7	246.3	380.0
Angular Leaf Spot	0.0	0.7	9.9	10.5
Total	**2.3**	**154.4**	**985.4**	**1139.8**
Estimate by Phil Brannen, Extension Plant Pathologist				

Turfgrass

In 2011, it was estimated that there were 1.95 million acres of turf with a maintenance value of $1.8 billion in Georgia. There were 23,142 acres used for sod/stolon production in the state, yielding a farm gate value of $74,931,899. Wide fluctuations in temperature were the norm in 2011, with cold temperatures and freeze events in early January followed by a heat wave during the summer. This made turfgrass management difficult, especially on *Agrostis* sp. (bentgrass). However, the heat wave of 2011 was not as severe and/or as prolonged as the record-setting temperatures registered in 2010. "Environmental/cultural" and heat stress-related problems as well as anthracnose (*Colletotrichum cereale*) were commonly diagnosed at the UGA plant disease clinic. Record numbers of nematode analyses were submitted to the UGA nematology laboratory from warm- and cool-season swards. Numerous and severe outbreaks of *Ophiosphaerella* spp. (spring dead spot) affecting *Cynodon* spp. (bermudagrass) were observed throughout the mid- to northern portion of the state. A few cases of leaf and sheath blight (mini-ring) disease caused by *Rhizoctonia zeae* were registered throughout the state on bermudagrass greens. *Gaeumannomyces* spp. (the causal agent of root decline of take all root rot / root decline of warm season grasses / bermudagrass decline) continued to be prevalent throughout the state. *Rhizoctonia* infections were common on *Festuca arundinacea* (tall fescue) during the summer of 2011 while *Pythium* spp. infections declined from those observed in 2010. *Sclerotinia homoeocarpa* was prevalent throughout the state in several turfgrass species. *Bipolaris* spp. was particularly problematic on bermudgrass during the fall. Minor incidences of *Puccinia* spp., *Curvularia* spp. and *Pyricularia grisea* infections were observed in 2011.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Soil-borne and Crown Diseases	3.0	54.0	63.0	117.0
Foliar Diseases	1.5	27.0	36.0	63.0
Nematodes	3.0	54.0	63.0	117.0
Total	**7.5**	**135.0**	**162.0**	**297.0**
Estimate by Alfredo Martínez-Espinoza, Extension Plant Pathologist				

Vegetables

About 150,000 acres of vegetables worth a total of approximately $775 million were grown in Georgia in 2011. Drought conditions were prevalent for most of the growing season, which kept many diseases from becoming problematic. Bacterial fruit blotch incidence was very high but did not cause major losses due to the dry conditions. Black mold (*Aspergillus niger*) on Vidalia onions caused severe losses in stored onions. Fusarium wilt of watermelon continued to increase in incidence and caused some early season losses. Losses to *Phytophthora capsici* on bell pepper and cucurbits were below average. The most prevalent disease on tomatoes and peppers was bacterial spot, caused by *Xanthomonas campestris* pv. *vesicatoria*. This disease continues to plague growers because it is difficult to prevent, and remedial disease management tools are generally suppressive at best.

Major Vegetable Crops	**% Reduction in Crop Value[1]**	**Damage ($ Millions)**	**Cost of Control ($ Millions)**	**Total ($ Millions)**
Watermelon	1.0	1.0	6	7.0
Squash (Yellow + Zucchini)	1.0	0.45	1.4	1.9
Tomato	1.0	0.35	2.8	3.2
Other Vegetable Crops	**% Reduction in Crop Value[1]**	**Damage ($ Millions)**	**Cost of Control ($ Millions)**	**Total ($ Millions)**
Pepper (Bell)	2.0	1.5	1.9	3.4
Cucumber	1.5	0.73	1.8	2.5
Snap Bean	2.0	0.36	1.3	1.7
Greens	1.0	0.3	1.3	1.6
Cabbage	1.0	0.36	0.7	1.0
Onion (Dry)	2.0	3.2	2.1	5.3
Cantaloupe	1.5	0.37	2.3	2.7
Eggplant	0.5	0.1	0.4	0.5
Total	**2.2[1]**	**13.27**	**22**	**30.80**

[1] This column is not additive due to the way losses for vegetables are tabulated.
Total values for vegetable commodities are taken from the 2010 farm gate values (AR-12-01).

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

Wheat

The farm gate value of wheat in 2011 in Georgia was $85,175,081. Wheat was harvested from 231,035 acres with an average yield of 55.5 Bu/acre. Rainfall was sporadic south of Atlanta during October and November 2010 but enough rainfall was received to get emergence. Cold temperatures and adequate rainfall through the winter ensured adequate vernalization and tillering. Reduction in rainfall was observed from March through April 2011, with an accentuated reduction in May during the grainfill period. Powdery mildew (*Blumeria graminis* f. sp *tritici*) incidences were low in 2011. Localized incidences of stripe rust (*Puccinia striiformis*) were observed but no widespread epidemics were reported in the state. Leaf rust (*Puccinia triticina*) was observed late in the season, which, combined with widespread use of fungicides, prevented serious threat to the crop. *Stagonospora* leaf and glume blotch were observed at moderate levels across the state; however, infections were late in the season with little or no impact on yield. Barley Yellow Dwarf Virus (BYDV) was almost nonexistent across the state in 2011. State wheat trials at Tifton, Plains and Griffin had some of the lowest BYDV infection rates observed in several years. Slow emergence due to low rainfall and a cooler fall greatly reduced the fall aphid populations. Colder conditions led to moderate incidences of soilborne wheat mosaic virus (SBMV) and wheat spindle streak mosaic virus (SSMV) infections on a few susceptible varieties in the state.

Disease	% Reduction in Crop Value	Damage ($ Millions)	Cost of Control ($ Millions)	Total ($ Millions)
Leaf Rust/Stripe Rust	0.5	0.41	0.83	1.24
Glume Blotch	0.5	0.41	0.08	0.49
Powdery Mildew	0.5	0.41	0.08	0.49
Barley Yellow Dwarf Virus	0.1	0.08	0.08	0.16
Soilborne Wheat Mosaic / Spindle Streak Mosaic Virus	0.5	0.41	0.41	0.82
Stinking/Loose Smut	-----	-----	-----	-----
Total	**2.1**	**1.72**	**1.48**	**3.2**
Estimate by Alfredo Martinez-Espinoza, Extension Plant Pathologist				

Summary of Total Losses Due to Disease Damage and Cost of Control in Georgia – 2011

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	8.83	1.2	0.106	0.25	0.353	4.0
Blackberry	11.23	6.6	0.741	3.07	3.81	34.0
Blueberry	262.23	2.4	6.29	8.7	16.3	6.2
Bunch Grape	4.49	7.2	0.328	0.26	0.585	15.4
Corn	311.60	10.9	34.0	1.2	35.1	11.3
Cotton	1508.27	13.5	211.1	22.1	233.2	15.5
Muscadine Grape	4.29	3.0	0.129	0.13	0.26	6.0
Ornamentals	489.68	6.6	32.34	23.20	55.54	11.3
Peach	46.18	1.3	0.60	3.53	4.13	8.9
Peanut	586.41	13.0	76.1	33.0	110.1	18.7
Pecan	319.54	1.0	3.2	20.5	23.7	7.4
Soybean	65.48	8.1	5.36	0.60	5.96	9.1
Strawberry	6.69	2.3	0.154	0.985	1.14	17.0
Turfgrass	1800.00	7.5	135.0	162.0	297.0	16.5
Vegetable	775.0	2.2	13.27	22.0	30.8	4.0
Wheat	85.18	2.1	1.72	1.48	3.2	3.8
TOTALS	**6285.1**	**8.3**	**520.4**	**303.0**	**823.4**	**13.1**

[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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