



UNIVERSITY OF GEORGIA
EXTENSION

1999-2000 Small Grains Performance Tests

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Preface

Results of the 1999-2000 performance tests of small grains grown for grain and forage are printed in this research report. Grain-evaluation studies were conducted at five locations, including Tifton, Plains, and Midville in the Coastal Plain region, Griffin in the Piedmont region, and Calhoun in the Limestone Valley region. Small grain forage evaluation tests were conducted at three locations in Georgia, which included Tifton and Plains in the Coastal Plain, Griffin in the Piedmont, and at Quincy, Florida. For identification of the test locations, consult the map below.

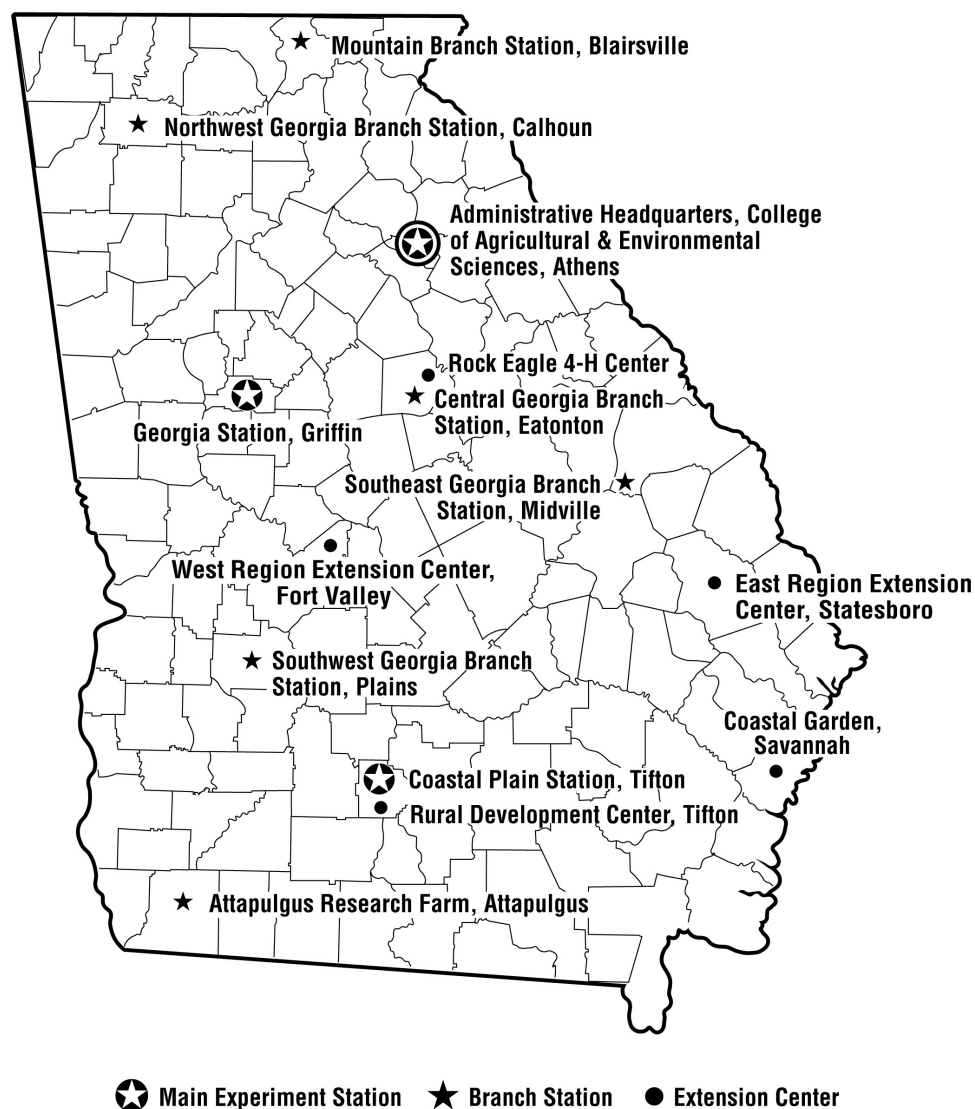
Grain yields are reported as bushels per acre at 13.5 percent moisture for wheat, 13 percent for triticale and rye, 12.5 percent moisture for oats, and 12 percent moisture for barley. Additional agronomic data such as plant height, lodging, disease incidence, etc., are listed along with the corresponding yield data. Information concerning culture and fertilizer practices used is included in footnotes. Since the average yield from several years indicates a variety's potential better than a single year's data, multiple-year yield summaries are included.

In order to have a broad base of information, a number of varieties, including experimental lines, are included in the tests, but this does not imply that all are recommended for Georgia. Varieties best suited to a specific area or for a particular purpose and agreed upon by College of Agriculture scientists are presented in the Small Grain Cultural Practices section and also in the 2000 Fall Planting Schedule for Georgia (available at your county extension office). For additional information, contact your local county extension agent or the nearest experiment station.

The Least Significant Difference (LSD) at the ten percent level has been included in the tables to aid in comparing varieties and tests. If the yields of any two varieties differ by the LSD value or more, they may be considered different. **Bolding** is used in the performance tables to indicate entries with yields statistically equal to the highest yielding entry in the test. The standard error (Std. Err.) of an entry mean is included at the bottom of each table to provide a general indicator of the level of precision of each variety experiment. The lower the value for the standard error of the entry mean, the more precise the experiment.

This report is one of four publications presenting the performance of agronomic crops in Georgia. For information concerning other crops, refer to one of the following research reports: 1999 Corn Performance Tests (Report 661), 1999 Soybean, Sorghum Grain and Silage, Grain Millet, and Summer Annual Forages Performance Tests (Report 663), 1999 Peanut, Cotton and Tobacco Performance Tests (Report 664), and 1999-2000 Canola Performance Tests (Report 667).

This report, along with performance test information on other crops, is also available at our web site www.swvt.uga.edu. Additional information may be obtained by writing to Mr. J. LaDon Day, Department of Crop and Soil Sciences, Georgia Station, 1109 Experiment Street, Griffin, GA 30223-1797.



Cooperators

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The Season

The Fall of 1999 was the second year in a row that most Georgia small grain producers faced the challenge of planting a small grain crop into dry soils. They met the challenge as planting continued at a normal pace throughout the season. Wheat acreage planted was estimated at 300,000 acres, an increase of 20 percent over the previous year. Oat acreage increased 20 percent, while rye acreage declined 8 percent.

Severe drought growing conditions that the state of Georgia has been experiencing for the past two years continued through the completion of the 2000 small grain crop year. Rainfall amounts recorded monthly at the five test locations during the 1999-2000 growing season are presented in the following table. Most areas of the state continue to receive record low rainfall. Locations at Calhoun, Plains, and Tifton received only about 55 percent of normal rainfall, averaging around 15 inches less than long-term eight-month average.

1999-2000 Rainfall ¹						
Month	Year	Calhoun ²	Griffin	Midville	Plains	Tifton
----- inches -----						
October	1999	2.97	3.69	4.27	1.93	0.73
November	1999	1.80	3.55	1.49	2.08	1.26
December	1999	1.12	2.73	1.64	2.83	2.32
January	2000	3.69	5.70	4.98	3.41	3.34
February	2000	1.63	0.96	1.08	0.96	1.90
March	2000	3.58	3.17	4.83	5.72	4.72
April	2000	5.04	1.31	0.85	1.24	1.32
May	2000	1.07	1.51	1.18	0.31	0.03
Total (8 months)		20.90	22.62	20.32	18.48	15.62
Normal (8 months)		37.91	33.43	28.12	31.55	28.09

1. Data collected by Dr. G. Hoogenboom, Georgia Station, Griffin, GA.
2. Floyd County location.

Overall, the 1999-2000 small grain growing season in Georgia was characterized by a mild and dry winter followed by a very dry and hot spring. Lack of adequate vernalization was a problem especially for the late maturing varieties. There were some trouble spots of buildup but low levels of disease and insects helped farmers produce excellent yields and test weights. Farmers not rotating ground planted to small grains is an increasing production problem.

Small grain harvest progressed rapidly during a very hot and dry May and June. Growers harvested 240,000 acres of wheat for grain. This was a 7 percent increase above last year of harvested wheat and a near record estimated 52 bushels per acre produced 29 percent more than 1999. Oat yields increased 2 bushels per acre, while rye yields were unchanged at 21 bushels per acre.

Small Grain Cultural Practices

E. Dewey Lee, Extension Agronomist, Tifton, Georgia

Fertilization

Soil samples should be taken from all fields to be planted in small grains, whether for grain or grazing. Soil testing prior to planting aids in determining the amount and type of fertilizer needed to produce a small grain crop. This practice may prevent excessive expenditures where the soil fertility level is very high, and it ensures that the nutritional needs of the crop are met.

Lime should be applied to maintain the soil pH at a target pH of 6.0. If the small grains are to be grazed or if magnesium (Mg) levels are low, dolomitic lime (high Mg) should be used. Adequate amounts of lime should be applied to the previous crop to assure that the soil pH is in the

desired range prior to planting small grains. However, if soils tests indicate the need for lime, it should be applied as soon as possible in order to allow adequate time for the soil pH change to occur (usually two to three months or more, depending on fineness of grind).

The table below show the recommended rates of fertilizer N-P₂O₅-K₂O to apply to small grain, based on soil test levels:

Soil Test Rating for Potassium (K ₂ O)				
	Low	Medium	High	Very High
Low	*-80-80	*-80-40	*-80-0	*-80-0
Medium	*-40-80	*-40-40	*-40-0	*-40-0
High	*-0-80	*-0-40	*-0-0	*-0-0
Very High	*-0-80	*-0-40	*-0-0	*-0-0

*For small grain following a legume, apply 60-80 lb N/acre; for small grain following cotton, corn, etc., apply 80-100 lb N/acre; for small grain following grain sorghum, apply 100-120 lb N/acre. Apply 20-40 lb of recommended N/acre in the fall and the remainder in February. For grazing, increase the total N fertilizer rate by 60 lb N/acre and apply in two applications – one-half in the fall and the remainder in midwinter.

Planting

Small grain seed should be planted in a well-prepared, firm, moist seedbed. Moldboard plowing or chisel plowing is recommended in preference to disc harrowing. The seed should be planted 1 to 1.5 inches deep. The proper planting date for small grain is important for both grain and forage production. Some factors to consider in determining the date for planting small grains include variety, geographic location, weather patterns, soil moisture, and intended use of the crop. If irrigation is available, the planting date can be more flexible. The following table shows recommended planting dates in Georgia:

Recommended Planting Dates						
Crop	Coastal Plain		Piedmont		Limestone Valley	
	Grain	Grazing	Grain	Grazing	Grain	Grazing
Wheat	11/07* - 12/01	10/15	10/25 - 11/15	10/01	10/10 - 11/01	9/15
Oat	11/07 - 12/01	10/01	10/07 - 10/30	9/15	9/25 - 10/15	9/01
Barley	11/07 - 12/01	10/15	10/25 - 11/15	10/01	10/01 - 11/01	9/01
Triticale	11/15 - 12/15	—	—	—	—	—
Rye	11/07 - 12/01	10/15	10/07 - 11/15	10/01	10/01 - 10/20	9/01

*November 7 in the Upper Coastal Plain and November 15 in the Lower Coastal Plain.

Pest Control

Check with your county extension agent for the latest information on weed, disease, and insect control in small grains.

Varieties

Select high-yielding, insect- and disease-resistant varieties for best results. In selecting varieties, give careful consideration to the statistics (LSD) reported in the tables. An explanation of their proper use is given in the preface to this report. The variety listed at the top of the list may be only one of the best.

For late planting, the early-maturing varieties usually perform the best. Varieties recommended for the 2000 planting season are presented in the table below.

Recommended Grain Varieties for 2000			
Barley	GA-Luttrell (S) ¹	Nomini (S)	Starling (P, M)
Oat	Arkansas Co. 811 (P, M) ² Chapman (C)	Horizon 314 (S) NC Rodgers (P, M) ²	Secretariat (C)
Wheat	AgriPro Hickory (P, M) ² AgriPro Mason (UC, P) ^{2,4} Fleming (C) ³ Jackson (P, M) ^{2,4} Jaypee (P, M) ²	NK Coker 9663 (S) ^{2,4} NK Coker 9704 (P, M) ^{2,4} NK Coker 9803 (M, P) ⁴ NK Coker 9835 (S) ² *Pioneer 2643 (P, M) ²	Pioneer 2684 (S) ^{2,4} Pioneer 2691 (C, P) ^{2,4} Pioneer 26R61 (S) Roberts (P, M) ^{2,x} USG 3209 (S) ⁴
1. M = Mountains; P = Piedmont; C = Coastal Plain; UC = Upper Coastal Plain; LC = Lower Coastal Plain; S = Statewide. 2. Highly susceptible to powdery mildew, leaf rust, or crown rust; consider using a fungicide. 3. Plant at end of recommended planting period or later. 4. Susceptible to Hessian fly; consider using an insecticide. * To be dropped from the 2001 recommended list.			

Recommended Forage Varieties for 2000				
Oat	Arkansas Co. 604 (S) Chapman (S)	Coker 227 (C) Harrison (S)	Horizon 314 (S) NC Rodgers (S)	
Rye	Elbon (S) Gurley GI-87 (S) Kelly Grazer II (LC)	Maton (S) Oklon (S) Wintergrazer 70 (S)	Wintermore (S) Wrens Abruzzi (S) Wrens 96 (S)	
Wheat	Jackson (P, M)	*NK Coker 9134 (S)	Roberts (S)	
1. M = Mountains; P = Piedmont; C = Coastal Plain; UC = Upper Coastal Plain; LC = Lower Coastal Plain; S = Statewide. To be dropped from the 2001 recommended list.				

To ensure good germination, the absence of noxious weeds, and varietal purity **plant certified, treated seed**. General seeding rate recommendations based on bushels per acre are provided in Table 1. Seed size varies greatly from year to year and among varieties and seed lots.

Therefore, more accurate plant populations may be achieved by using seeding rates based on seeds per area rather than on bushels per acre. For example, research on wheat has shown that seeding rates near 35 seeds per square foot are best for top yields. Accurate target populations are best achieved by adjusting grain drill settings based on number of seed per foot of row. Grain drill calibrations can be accomplished quickly and accurately by counting seed collected from one or more rows during travel over a specified distance and calculating the drill output as seeds per foot of row. Table 2 is provided as a guide to establish target populations of the small grain crops for popular row spacings. The figures in Table 2 are broadly based on the average number of seeds per pound for the various crops but even more accurate calibrations can be accomplished if the actual number of seeds per pound is known for the seed lot being planted. At least one seed supplier in the Southeast now prints seed size information on the bag. If seed size is known, Table 3 may more accurately predict seed requirements.

Table 1. Recommended Seeding Rates for 2000			
Crop	Weight	Grain	Grazing
	lb/bu	----- bu/acre -----	
Wheat	60	2.0-2.5	2.0-2.5
Oat	32	2.0	4.0
Barley	48	2.0-2.5	—
Rye	56	1.0-1.5	2.0-2.5
Triticale	48	1.5-2.0	2.0-2.5

Table 2. Example of seeding rate of different small grains.

Crop	Seeding Rate			Row Width (inches)			
				6	7	8	10
	seeds/sq.ft.	lb/A ¹	bu/A ¹	--- seed per foot of row ---			
Barley	19	72	1.5	10	11	13	16
	25	96	2.0	13	15	17	21
	32	120	2.5	16	19	21	27
Oat	19	64	2.0	10	11	13	16
	24	80	2.5	12	14	16	20
	28	96	3.0	14	16	19	23
	38	128	4.0	19	22	25	32
Wheat	27	90	1.5	14	16	18	23
	37	120	2.0	18	22	25	31
	47	150	2.5	24	27	31	39
	55	180	3.0	28	32	37	46
Rye	31	56	1.0	16	18	21	26
	46	84	1.5	23	27	31	38
	62	112	2.0	31	36	41	52

1. Estimates based on average seeds per pound of 11,500 for barley, 12,875 for oat, 13,250 for wheat, and 24,000 for rye. Data compiled by J. L. Day, Georgia Station, Griffin, Georgia.

Table 3. Seeding rates for wheat based on seed size¹.

Seed Size seeds/lb	Desired Population (seeds per square foot)						
	30	32	34	35	36	38	40
	Seeding Rate ----- lb/A -----						
10,000	145	155	165	169	174	184	194
11,000	132	141	150	154	158	167	176
12,000	121	129	137	141	145	153	161
13,000	112	119	127	130	134	141	149
14,000	104	111	118	121	124	131	138
15,000	97	103	110	113	116	123	129
16,000	91	97	103	106	109	115	121
17,000	85	91	97	100	102	108	114
18,000	81	86	91	94	97	102	108

1. Seeding rate assumes 90% germination.

Characteristics of Varieties, 2000

Wheat										
Brand- Variety	Resistance						Test Weight	Maturity	Straw Strength	Vernalization
	Leaf Rust	Glume Blotch	Powdery Mildew	BYD	Hessian Fly					
AGS 2000	good	fair	good	fair	good	good	medium	fair	medium	
AgriPro Hickory	poor	fair	fair	fair	fair	fair	medium	fair	medium	
AgriPro Mason	good	fair	poor	fair	poor	good	early	good	short	
Fleming	good	fair	good	poor	good	good	early	fair	short	
Jackson	poor	fair	fair	fair	poor	good	late	good	long	
Jaypee	poor	fair	poor	good	poor	good	medium	fair	medium	
NK Coker 9134	poor	good	poor	fair	poor	good	late	fair	long	
NK Coker 9663	good	good	poor	good	fair	good	medium	good	medium	
NK Coker 9704	poor	fair	poor	good	poor	good	late	good	long	
NK Coker 9803	good	good	fair	fair	poor	good	late	good	long	
*NK Coker 9835	poor	fair	fair	poor	good	fair	medium	good	medium	
Pioneer 2643	poor	fair	poor	fair	poor	fair	late	good	long	
Pioneer 2684	poor	good	good	fair	good	good	medium	good	medium	
Pioneer 2691	fair	fair	fair	fair	fair	fair	early	good	very short	
Pioneer 26R61	good	fair	good	fair	good	good	medium	good	medium	
Roberts	poor	good	good	fair	good	good	late	fair	medium-long	
USG 3209	fair	fair	good	fair	poor	fair	medium	good	medium	

* Susceptible to stem rust.

Oat						
Brand- Variety	Resistance		Cold Hardiness	Maturity	Test Weight	Straw Strength
	Crown Rust	BYD				
Arkansas Co. 604	excellent	fair	good	late	fair	good
Arkansas Co. 811	poor	poor	good	medium	good	poor
Chapman	good	fair	fair	early	fair	good
Horizon 314	good	fair	good	medium	good	good
NC Rodgers	poor	poor	good	medium	fair	poor
Secretariat	fair	fair	good	medium	good	good

Barley								
Brand- Variety	Resistance					Maturity	Test Weight	Head Type
	Glume Blotch	Spot Blotch	Scald	Hessian Fly				
GA-Luttrell	fair	good	good	poor	early	fair	awned	
Nomini	fair	good	good	poor	medium	fair	awned	
Starling	fair	fair	good	—	medium	fair	awnless	

Small Grains Updates

Variety Releases

**Dr. J. W. Johnson, Department of Crop and Soil Sciences
Georgia Station, Griffin, GA 30223-1797**

The Small Grains Breeding Program released a wheat cultivar which will be marketed as **AGS 2000** (PVP applied for). AGS 2000 is medium maturing, awned, white chaffed, medium tall soft red winter wheat. It is resistant to currently predominant races of powdery mildew, moderately resistant to leaf rust, and resistant to the predominant biotypes of Hessian Fly in the Southeast. It has a heavy wax on the plants at heading which gives it a distinctive grayish blue-green plant color. This new cultivar available for the first time for the Fall 2000 planting season was tested experimentally as 89482E7. It has the following pedigree: Pioneer 2555 /PF84301 //Florida 302. AGS 2000 is broadly adapted and is high yielding with a high test weight. It was developed by the University of Georgia/University of Florida small grains breeding program. AGS 2000 will be marketed by AGSouth Genetics, a new marketing company created to market selected new varieties developed by both Universities.

The team has also released a new oat cultivar, **Horizon 314** (PVP applied for). Horizon 314 (tested as FL92OHR31,314 and FLX499-1-B3-G6) is a new full season winter oat cultivar that has considerable potential for both grain and forage production in the Southeast. It was developed by the University of Florida and the University of Georgia. In comparison to Chapman it is higher yielding, has a heavier test weight, and is 3-6 days later in heading and 4 inches taller in height. It has good winter hardiness, good crown rust resistance, tillers well, and has a dark green plant color. At heading the flag leaves are more upright than most other varieties. Seed are white similar to Chapman and turn greyish if weathered. Horizon 314 has been released exclusively to Plantation Seeds, Newton, Georgia for marketing and promotion and is available for the first time in the Fall of 2000.

Several wheat cultivars have been released by private companies for production in Georgia. These include: FFR 518, Pioneer 26R61, and USG 3209.

Metribuzin Sensitivity*

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***NOTE:** A metribuzin sensitivity field trial was conducted during this small grain growing season (1999-2000). Extremely dry soil at planting caused uneven emergence of wheat and variation within varieties from application of metribuzin. Therefore, the data will not be included in this report. The experiment will be repeated this fall for the 2000-01 growing season. The following information and data are from the 1998-99 field trial.

In recent years Georgia wheat farmers have increasingly experienced difficulties controlling Italian (annual) ryegrass in wheat with Hoelon (diclofop). An option is to use Sencor (metribuzin) as a postemergence treatment for control of annual ryegrass, wild radish, and other broadleaf species. Approximately 10 years ago metribuzin use among Georgia wheat growers was fairly common, but use had declined over the intervening years. However, the current difficulties in controlling ryegrass with Hoelon have spurred interest in once again using Sencor.

Some wheat cultivars are sensitive to Sencor (metribuzin). If Sencor is applied to sensitive cultivars severe injury and/or stand loss may occur. The Sencor label contains a list of known tolerant and sensitive wheat and barley cultivars. However, the label does not contain all varieties that are currently grown in Georgia. Until about 10 years ago, field experiments were routinely conducted to determine cultivar sensitivity to metribuzin. Due to the increased interest in using metribuzin for winter wheat weed control we resumed cultivar evaluations using metribuzin during the 1997-98 wheat season and conducted trials again during the 1998-99 season.

The following table summarizes data collected in a field trial at Griffin, Georgia, during the 1998/99 growing season. Wheat was seeded 13 November 1998 at a seeding rate of 2 bu/acre. Paired treated and untreated plots were included in each of four replicates. Metribuzin (Sencor) was applied postemergence at a rate of 0.375 lb ai/acre to wheat in the 2-3 leaf stage on 4 December 1998. Wheat injury was visually estimated on 14 January 1999 and yields were determined in June 1999.

Wheat variety response to Sencor (metribuzin) herbicide, Griffin, GA 1998-99.

Cultivar	Wheat Injury (%)	Yield			Sensitivity Classification ¹	
		Untreated Weed-free (bu/acre)	Treated Weed-free (bu/acre)	Yield Difference ²	UGA Tests	Sencor Label
AgriPro D93*7163	10	56	56	NS	T	NOL
AgriPro Hickory	5	57	51	NS	T	MT
AgriPro Mason	2.5	66	60	NS	T	T
AgriPro Patton	0	65	60	NS	T	T
AgriPro Shelby	0	61	60	NS	T	T
Delta King 1551W	5	52	48	NS	T	NOL
Jackson	2.5	60	57	NS	T	T
Terral LA 422	5	65	62	NS	T	NOL
NK Coker 9134	5	71	63	NS	T	T
NK Coker 9704	5	54	51	NS	T ³	S ³
NK Coker 9803	5	57	48	NS	T	MT
Pioneer 2684	2.5	58	55	NS	T	T
Pioneer 26R46	2.5	66	66	NS	T	NOL
Pioneer 26R61	2.5	69	68	NS	T	NOL
Pocahontas	5	59	50	NS	T	T
UGA88622E51	10	59	54	NS	T	NOL
UGA89482E7	2.5	74	70	NS	T	NOL
Fleming	12.5	63	52	NS	MT	S
Pioneer 2643	15	65	45	S	MT ³	NOL
Roberts	12.5	66	57	NS	MT	NOL
UGA881178E53	12.5	66	56	NS	MT	NOL
Clemson 201	57.5	62	36	S	S	NOL
FL8868	32.5	66	47	S	S	NOL
GA-Dozier	68.5	51	24	S	S	S
GA-Gore	27.5	66	52	S	S	S
GA-Stuckey	80	55	26	S	S	S
Jaypee	55	60	26	S	S	S
Morey	70	63	18	S	S	S
NK BL931167	32.5	52	32	S	S	NOL
NK Coker 9663	50	74	43	S	S	NOL
NK Coker 9835	30	63	44	S	S	S
Pioneer 2691	22.5	61	44	S	S	NOL
Roane	20	52	44	NS	S	NOL
UGA881428LE2	50	67	43	S	S	NOL

UGA901146E15	72.5	67	23	S	S	NOL
UGA90524E35	42.5	70	43	S	S	NOL
USG 3209	55	50	21	S	S	NOL
¹ Sensitivity Classification: T = Tolerant (UGA studies indicated 10% or less visual injury and no stand loss); MT = Moderately Tolerant (UGA studies indicated visual injury from 11 to 20% with no stand loss); S = Sensitive (UGA studies indicated greater than 20% visual injury and/or stand loss); and NOL = not on label. ² Where yield differences are marked with "S", differences between Sencor-treated plots and untreated plots were significantly different at the 10% probability level. For varieties marked "NS", yields were not significantly different. ³ NK Coker 9704 scored a rating of "Tolerant" in UGA tests. However, it is rated as "Sensitive" on the Sencor label, which indicates that in at least one trial severe injury and/or stand loss was observed with the cultivar. Therefore, NK Coker 9704 should be regarded as "Sensitive". Pioneer 2643 was initially rated as "Moderately Tolerant" based on early-season visual injury, but based on yields it should be regarded as "Sensitive".						

Diseases

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The dry spring was not conducive for development of foliar diseases. The low level of disease contributed to high yields and grain test weights across the state. However, some losses were encountered on cultivars susceptible to leaf rust. Stagonospora leaf and glume blotch were very low. Symptoms were mostly confined to the lower leaves and very little glume blotch occurred. The most serious disease occurrence was on one farm where over 200 acres were lost because of common bunt or stinking smut. This disease produces a foul odor like dead fish. Spores of the fungus carried on seed invade the seedling when the seed germinates. No damage is seen until heads emerge when the seeds are entirely replaced by smut spores. The smut spores are released during threshing and adhere to the healthy seed. Because so many spores are produced, an infection level near 1 percent one season can result in 50 percent or greater loss the next season. Therefore, the disease may go unnoticed the year before serious loss occurs. Loose smut on oats has a similar life cycle. Loose smut of wheat and barley has a somewhat different life cycle but it is also transmitted only by seed. Smut diseases are very easily controlled by systemic seed treatments. Tebuconazole (Raxil) and difenoconazole (Dividend) are most effective but carboxin (Vitavax) will also give effective control in most cases. Seed protectant fungicides such as captan and thiram will not control smut diseases. Certified seed is inspected for smut diseases and only a very low level is tolerated. Therefore, planting Certified seed is an effective way to control smuts.

Barley yellow dwarf was variable and caused mostly light damage. Take-all root rot caused significant losses in fields with three years of consecutive wheat-soybean doublecropping. Rotation with fallow, oats or canola in place of wheat controls take-all. Wheat should not be grown more than two consecutive years in the same field. Stripe rust was found at very low levels at two locations in the state. The disease was found in several locations in the eastern United States for the first time. The cool spring was favorable for the disease which caused losses in the Mississippi Valley. Stripe rust is unlikely to become a problem in the Southeast.

Insects

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Relatively mild weather during the winter encouraged damaging insect populations to develop in small grains. The Hessian fly, *Mayetiola destructor*, can cause extensive damage to winter wheat, triticale and barley. Most wheat fields were planted with a resistant variety, and some fields were treated with an at-planting application of insecticide. Hessian fly infestations reached damaging levels in some areas in the southern part of the state. A new Hessian fly biotype (biotype L) is established in northern Georgia and is present in low numbers in southern Georgia. Biotype L can overcome virtually all the Hessian fly resistant varieties currently grown in the state. Varieties showing good levels of Hessian fly resistance at Plains and Griffin in 1999/2000 were 'AGS 2000,' 'NK Coker 9835,' 'Croplan SR218,' 'FFR 516,' 'Pioneer 26R24,' 'Pioneer 26R61,' 'Roane,' and 'Roberts.' 'Santee' was resistant at Plains but susceptible at the Griffin site. 'AgriPro Hickory,' 'Pioneer 2684,' and 'Fleming' had moderate or intermediate levels of resistance at both sites. Although rated as resistant in past years, significant infestations occurred in 'Pioneer 2684' in 1999-2000 indicating that this variety has only moderate level of resistance which is not effective under high levels of Hessian fly pressure. Both rye and oats are good Hessian-fly resistant alternatives to wheat for forage production, because rye is highly resistant and oats are immune to the insect.

The mild winter and dry spring encouraged large populations of aphids to develop throughout the state. Aphids caused direct feeding injury to small grains during head emergence and grain fill. Aphids also transmit barley yellow dwarf virus (BYDV) which can cause large yield reductions in wheat, oats, barley and triticale. BYDV symptoms were present in low to moderate levels throughout the state and the disease caused considerable damage to wheat in some areas this season. Although the level of expression of symptoms varies between varieties, no varieties are truly resistant or tolerant of BYDV infection. Systemic insecticide seed treatments and properly timed foliar applications of insecticides can greatly reduce aphid numbers and minimize BYDV incidence.

The cereal leaf beetle now is established throughout northern and most of southern Georgia. Populations continue to increase and caused noticeable damage this year in the Coastal Plain region. Larvae and adults are present in the spring during grain filling where they remove the upper leaf surface and chew elongated holes in leaves. Populations in most areas still are below the treatment threshold of 0.5 larva or adult per stalk. However, damage was very evident in the northwestern and central Piedmont regions of the state with some fields needing treatment with an insecticide. Cereal leaf beetle can be effectively controlled by a number of insecticides when applied to active larvae. Consult your local county extension agent for a list of recommended insecticides for this insect and for management practices for other insect pests of small grains.

Winter Wheat Variety Trial at Plains, GA, in 1999-2000.

Winter wheat variety	Resistance to fall Georgia State	% infested plants	HF immature per plant
Jackson	S	88.8 *	5.03 *
Croplan SR204	S	87.6 *	4.20 *
AR 656-5	S	84.8 *	2.62 *
FFR 522	S	80.6 *	3.31 *
FFR 518R	S	78.8 *	1.89 *
Madison	S	77.7 *	4.93 *
Jaypee	S	73.0 *	2.56 *
APD 95-7763	S	70.8 *	3.39 *
LA 9070G45	S	67.3 *	2.20 *
Patton	S	67.3 *	2.23 *
NK Coker 9663	S	66.7 *	2.56 *
FFR 2704	S	63.0 *	2.20 *
GA 93132E6	S	63.2 *	2.37 *
FFR 566	S	62.6 *	2.01 *
NK Coker 9803	S	61.9 *	2.34 *
Pioneer 2691	S	61.8 *	1.46 *
VA 96W-158	S	58.3 *	2.49 *
GA 911316E46	S	55.5 *	1.38 *
LA 8983B14	S	55.1 *	1.85 *
NK Coker 9704	S	51.2 *	1.56 *
GA 901146E15	S	43.0 *	1.64 *
USG 3209	S	40.0 *	1.17
AR 584A3	S	30.1 *	1.06
Terral 422	S	28.0 *	0.59
Pioneer 2684	MR	26.0 *	0.84
VA 96W-270	MR	21.2	0.48
AgriPro Hickory	MR	19.4	0.83
LA 90144B16	MR	18.4	0.36
Fleming	MR	18.0	0.45
GA 91436E29	MR	17.8	0.44
GA 921188E43	R	17.1	0.25
GA93059LE6	R	15.2	0.29
Roane	R	14.6	0.33
GA 92485E15	MR	12.2	0.37
BL 930026	R	10.9	0.26
GA 921204E44	R	10.8	0.17
AGS 2000	R	10.4	0.30

Croplan SR218	R	9.0	0.20
GA 921221E16	R	7.8	0.16
GA 90524E1	R	7.2	0.22
FFR 516	R	4.6	0.13
Roberts	R	3.4	0.03
GA 91426E39	R	3.3	0.10
Santee	R	2.3	0.07
GA 92412LE16	R	1.5	0.02
Pioneer 26R24	R	1.3	0.03
NK Coker 9835	R	1.1	0.03
PXW682	R	0.8	0.01
GA 921206E38	R	0.6	0.01
Pioneer 26R61	R	0	0
GA 90524E35	R	0	0
AR 494B2	R	0	0
GA 92601LE9	R	0	0
LA 90518TB43	R	0	0
<i>LSD (0.05)</i>		21.9	1.29
<i>LSD (0.1)</i>		18.3	1.08