

WHEAT VARIETY CHALLENGE

2002-03

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- Location:** Edisto Research and Education Center, Barnwell Co. SC, Field D-13 C.
- Design:** RCB with six replicates; plot size 8 rows (8" spacing) x 40'
- Soil Type:** Marlboro sandy loam.
- Rotation:** 2002 strip-till corn; 2001 strip-till peanut, fallow; 2000 strip-till corn, fallow; 1999 wheat, fallow.
- Planting Date:** Wheat was planted 25 Nov 2002, Triticale was planted 5 Dec.
- Seeding Rate:** 24 seed / row foot
- General Fertility:** 30 lbs. / acre N (11.3 gal S-25) was applied 19 Dec and 65 lbs. / acre N (23.4 gal S-25) was applied 14 Feb (GS 23). Total N = 95 lbs. /acre, total S = 13 lbs. / acre.
- Herbicide:** 0.30 oz Express 75DF was applied 10 Feb.
- Insecticide:** Warrior T (3.87 oz /ac) applied with N 14 Feb.
- Methods:** Three replicates were treated with fungicide (Headline 6 oz/ac April 2, GS 40) and three were left untreated. In addition, one of the untreated replicates was treated with Axiom herbicide (8 oz/ac, Jan 15, GS 2.1).

Wheat maturity was determined by examining representative plants from one replicate. Heights were measured from 5 locations in plots of one replicate. All plots were rated for standability (1-3 scale; 1 = low (severely lodged), 3 = high (little, if any, lodging). 17 Apr powdery mildew (PM) and leaf blotch (LB) ratings were taken from each plot of the non-fungicide treated replicates by two observers on an arbitrary 0-5 scale where 0 = none observed, 1 = some disease present on lower stems, 2 = disease affecting the lowest leaves, 3 = disease affecting mid- and lower-canopy leaves, 4 = disease symptoms affecting some F-2 and F-1 leaves; 5 = entire plant diseased. 1 May PM, LB, glume blotch, black chaff, and leaf stripe ratings were based on the same scale, but were taken from only one untreated rep. Scab notes were taken from the same replicate. Percent flag leaf area affected by leaf blotch was estimated in every plot by one observer 14 May. Hessian fly (HF) infestation was determined by examining 80 culms per variety (20 / replicate) from replicated single row plots planted Oct 27 in a separate field close to a known HF source (last year's wheat stubble). Varieties were bordered on each side with a susceptible cultivar (Southern States 535). The inner six rows of each 8-row plot were harvested 23 June with an Almaco plot combine. Yield samples were weighed on an electronic balance. Test weight was taken by funneling a sub-sample of grain through a Seedburo No. 151 filling hopper and weighing one dry pint of grain on an electronic scale. Grain moisture content

was measured with a Burrows DMC-700 moisture meter. All yields were adjusted to 13.5% moisture before analysis.

Analysis: ANOVA, using SAS PROC GLM and Fisher's protected LSD ($P=0.05$). Pearson correlation ($P=0.05$) using Mini-Tab.

Since Axiom apparently affected yield (Table 3), the Axiom replicate was not included in yield and test weight analyses and Pearson correlations; however, data were used when summarizing 17 April powdery mildew ratings, 17 Apr and 14 May leaf blotch ratings, and standability scores.

Notes: Ga 931241 and Pioneer 26R12 exhibited pale, chlorotic, mid-leaf, viral-like symptoms beginning the last week of March (possibly a resistant reaction?). Symptoms were severe enough to possibly affect yield. LB symptoms appeared earlier on AGS 2485 than any other wheat variety (March).

Cold winter temperature apparently reduced triticale tillering as evidenced by lower than expected head counts (below 100/m), however, yield were still quite acceptable where fungicide was applied.

Weather-delayed harvest significantly reduced yield and test weight.

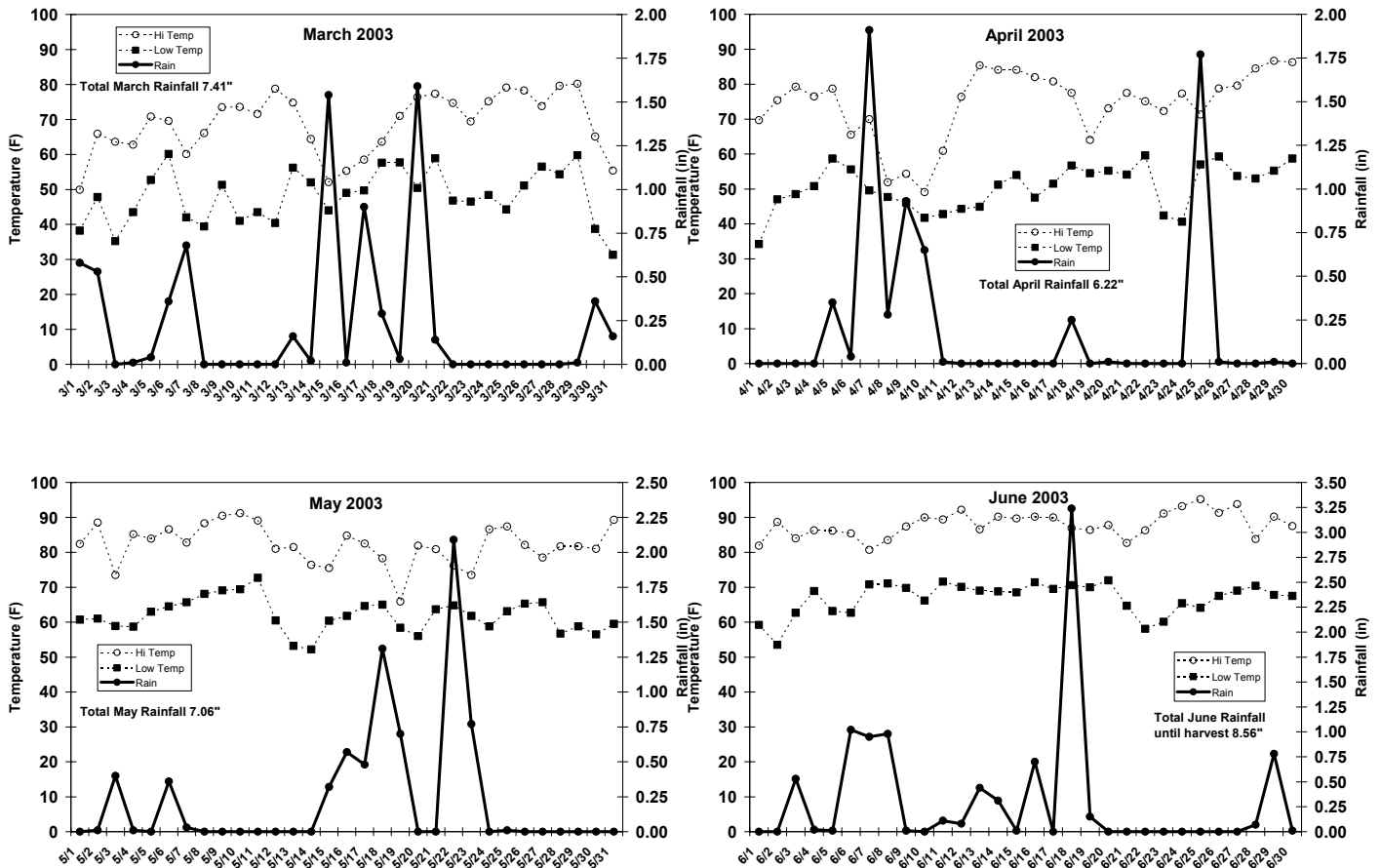


Table 1. Wheat varietal characteristics and disease ratings, Blackville, SC 2002-2003.

Variety	Joint Date	Head Date	Mat. Date	Hgt (cm)	Stand-ability Rating* 14 May	Powdery Mildew Rating** 17 Apr 1 May		Leaf Blotch			Glume Blotch Rating** 1 May 7 May		Leaf Stripe Rating** 1 May	Black Chaff Rating** 1 May 7 May		Scab Present ? 7 May
								Rating**		% Leaf Area Affected 14 May						
								17 Apr	1 May							
RSI 314 (triticale)	9-Mar	13-Apr	6-Jun	105	3.0	0.0	0.0	1.2	2.8	86.7	0.0	1.9	0.0	0.0	0.0	no
Pioneer 26R61	9-Mar	13-Apr	31-May	108	3.0	1.1	2.0	0.7	1.0	50.0	0.0	0.8	0.0	0.0	0.0	no
Pioneer 26R12	13-Mar	15-Apr	1-Jun	100	3.0	0.9	2.0	2.8	2.8	23.0	0.0	0.4	0.0	0.0	0.0	no
Southern States 524	9-Mar	8-Apr	30-May	85	3.0	1.3	2.0	0.2	3.0	76.7	3.0	2.5	0.0	2.0	?	yes
AGS 2485	12-Mar	12-Apr	30-May	105	2.5	0.7	0.0	3.1	3.0	83.3	0.3	0.7	0.0	0.0	0.0	no
Coker 9835	10-Mar	16-Apr	2-Jun	90	2.9	2.1	2.5	0.8	2.5	60.0	1.8	1.5	1.5	0.0	0.0	yes
Pioneer 26R58	9-Mar	12-Apr	30-May	93	3.0	0.3	1.0	0.5	1.5	53.0	0.5	2.0	0.0	0.0	0.0	no
Pioneer 2684	10-Mar	10-Apr	30-May	98	2.8	2.1	2.8	0.4	2.5	76.7	0.0	0.9	0.0	0.0	0.0	yes
AgriPro Crawford	10-Mar	9-Apr	30-May	100	2.2	1.2	1.5	0.6	2.0	73.3	1.0	1.5	0.0	0.5	0.5	yes
Pioneer XW01F	14-Mar	13-Apr	30-May	100	2.0	1.4	1.8	0.6	1.5	70.0	0.0	0.3	0.0	0.0	0.0	no
Century II	9-Mar	13-Apr	30-May	103	1.9	1.7	3.3	0.5	1.8	80.0	0.5	1.7	0.0	0.0	0.0	yes
USG 3209	7-Mar	10-Apr	30-May	90	1.8	0.8	2.0	0.3	1.5	66.7	2.5	1.9	0.0	0.5	?	yes
AGS 2000	13-Mar	12-Apr	30-May	100	1.8	0.0	0.5	0.6	2.5	76.7	0.0	0.3	0.0	0.0	0.0	no
Vigoro RC 901	15-Mar	18-Apr	1-Jun	90	2.7	1.9	2.0	0.8	1.5	30.0	1.5	?	0.0	1.5	1.8	no
Vigoro Tribute	12-Mar	15-Apr	2-Jun	95	2.8	0.0	0.0	0.0	1.0	36.7	0.0	1.4	0.0	0.0	0.0	no
Southern States 535	16-Mar	17-Apr	1-Jun	100	1.3	1.9	2.0	0.4	2.5	50.0	0.0	0.3	1.0	1.0	?	no
GA 931233E17	7-Mar	11-Apr	30-May	105	1.2	1.0	2.0	1.3	2.5	76.7	0.5	2.4	0.0	1.5	?	no
GA 931241E16	11-Mar	15-Apr	31-May	110	1.2	2.3	2.5	0.3	2.3	70.0	2.0	2.3	0.0	0.0	0.0	no
Coker 9152	9-Mar	12-Apr	30-May	115	2.0	3.8	4.5	0.7	2.5	86.7	0.0	0.8	0.5	0.0	0.0	no
Pioneer 26R38	9-Mar	13-Apr	30-May	110	1.0	1.0	0.0	0.6	1.0	57.7	0.0	1.0	0.0	0.0	0.0	yes
LSD (P=0.05)	--	--	--	--	0.5	0.5	--	0.2	--	3.1	--	--	--	--	--	--

Wheat was planted 25 Nov; triticale was planted 5 Dec. Harvest was delayed by significant rainy weather (June 23), which attributed to yield loss and variability.

* Standability rating based on 1 – 3 scale. 1 = low, 3 = high. Scores below 2.5 indicate significant lodging.

** Disease ratings based on 0-5 scale. 0 = none observed; 5 = leaves or heads 100% affected.

Table 2. Wheat varietal characteristics, yield, and test weight, Blackville, SC 2002-2003.

Variety	Awns ?	Hessian Fly % stem inf.	Pooled 3 Fung. Reps + 2 Untrt. Reps		3 Fung Reps Only		2 Untrt. Reps Only		1 Axiom Rep (no fung)	
			Yield bu/ac	Test Weight lb/bu	Yield bu/ac	Test Weight lb/bu	Yield bu/ac	Test Weight lb/bu	Yield bu/ac	Test Weight lb/bu
RSI 314 (triticale)	yes	1.3	92.5	45.2	101.7	46.1	78.8	43.8	81.3	42.6
Pioneer 26R61	yes	0.0	72.5	54.2	73.8	54.3	71.1	54.1	66.4	53.7
Pioneer 26R12	yes	1.9	68.5	54.1	69.1	54.1	67.9	54.1	58.0	53.5
Southern States 524	no	2.5	67.3	49.8	69.2	50.4	64.5	48.9	61.7	49.8
AGS 2485	yes	2.5	67.2	53.9	68.2	54.2	64.4	53.3	53.3	52.7
Coker 9835	no	3.8	66.6	52.1	68.7	52.4	60.3	51.1	50.5	49.1
Pioneer 26R58	yes	1.3	64.9	49.3	66.5	49.3	62.5	49.3	48.6	47.8
Pioneer 2684	yes	2.5	64.6	53.8	67.0	53.6	61.0	54.1	52.7	52.0
AgriPro Crawford	no	1.3	64.3	51.9	66.9	51.8	60.4	52.0	63.0	51.7
Pioneer XW01F	yes	2.5	64.1	53.3	63.4	53.0	65.1	53.7	61.5	52.2
Century II	no	3.8	63.8	53.9	67.7	54.3	57.9	53.3	42.8	52.6
USG 3209	no	0.0	62.7	52.2	61.9	52.0	64.3	52.4	52.2	49.8
AGS 2000	yes	0.0	62.1	53.4	74.5	54.5	49.7	52.4	43.2	51.5
VigoroRC 901	no	2.5	61.7	51.9	63.2	52.3	59.4	51.4	56.0	51.3
Vigoro Tribute	no	1.3	61.6	55.2	61.8	55.2	61.1	55.4	45.9	54.4
Southern States 535	no	3.8	60.0	53.8	65.4	54.0	57.3	53.7	64.4	53.7
GA 931233E17	no	1.3	55.9	54.0	64.3	54.7	47.4	53.3	56.0	52.8
GA 931241E16	no	1.3	52.7	51.7	50.6	51.6	55.9	51.8	50.7	51.8
Coker 9152	yes	0.0	51.8	50.6	51.3	50.5	53.4	51.1	42.1	48.8
Pioneer 26R38	yes	1.3	51.3	52.3	54.5	52.5	48.2	52.2	52.3	52.1
LSD ($P=0.05$)	--	N.S.	7.7	0.8	11.5	0.8	10.8	1.6	--	--

Wheat was planted 25 Nov; triticale was planted 5 Dec. Harvest was delayed by significant rainy weather (June 23), which attributed to yield loss and variability.

Table 3. Effects of variety and fungicide on leaf blotch, lodging, wheat yield and test weight and possible yield and test weight effects of Axiom herbicide, Blackville, SC 2002-2003.

Variety	With 6 oz Headline /ac				No Fungicide				Fung. Response		Axiom Effect	
	Yield bu/ac	Test Weight lb/bu	Stand- ability Score	% Leaf Blotch 14 May	Yield bu/ac	Test Weight lb/bu	Stand- ability Score	% Leaf Blotch 14 May	Yield bu/ac	Test Weight lb/bu	Yield bu/ac	Test Weight lb/bu
RSI 314 (triticale)	101.7	46.1	3.0	43.3	78.8	43.8	3.0	86.7	22.9	2.3	2.5	-1.2
Pioneer 26R61	73.8	54.3	3.0	26.7	71.1	54.1	3.0	50.0	2.7	0.2	-4.7	-0.4
Pioneer 26R12	69.1	54.1	3.0	23.3	67.9	54.1	3.0	23.0	1.2	0	-9.9	-0.6
Southern States 524	69.2	50.4	3.0	40.0	64.5	48.9	3.0	76.7	4.7	1.5	-2.8	0.9
AGS 2485	68.2	54.2	2.3	73.3	64.4	53.3	2.5	83.3	3.8	0.9	-11.1	-0.6
Coker 9835	68.7	52.4	2.8	30.0	60.3	51.1	3.0	60.0	8.4	1.3	-9.8	-2.0
Pioneer 26R58	66.5	49.3	3.0	46.7	62.5	49.3	3.0	53.0	4.0	0	-13.9	-1.5
Pioneer 2684	67.0	53.6	2.7	50.0	61.0	54.1	3.0	76.7	6.0	-0.5	-8.3	-2.1
AgriPro Crawford	66.9	51.8	2.0	60.0	60.4	52.0	2.3	73.3	6.5	-0.2	2.6	-0.3
Pioneer XW01F	63.4	53.0	1.3	50.0	65.1	53.7	2.5	70.0	-1.7	-0.7	-3.6	-1.5
Century II	67.7	54.3	2.0	60.0	57.9	53.3	1.8	80.0	9.8	1	-15.1	-0.7
USG 3209	61.9	52.0	1.3	40.0	64.3	52.4	2.3	66.7	-2.4	-0.4	-12.1	-2.6
AGS 2000	74.5	54.5	1.7	63.3	49.7	52.4	1.3	76.7	24.8*	2.1	-6.5	-0.9
VigoroRC 901	63.2	52.3	3.0	16.7	59.4	51.4	2.0	30.0	3.8	0.9	-3.4	-0.1
Vigoro Tribute	61.8	55.2	2.7	20.0	61.1	55.4	2.8	36.7	0.7	-0.2	-15.2	-1.0
Southern States 535	65.4	54.0	1.0	36.7	57.3	53.7	1.5	50.0	8.1	0.3	7.1	0
GA 931233E17	64.3	54.7	1.0	70.0	47.4	53.3	1.5	76.7	16.9	1.4	8.6	-0.5
GA 931241E16	50.6	51.6	1.0	53.3	55.9	51.8	1.5	70.0	-5.3	-0.2	-5.2	0
Coker 9152	51.3	50.5	1.7	76.7	53.4	51.1	2.3	86.7	-2.1	-0.6	-11.3	-2.3
Pioneer 26R38	54.5	52.5	1.0	40.0	48.2	52.2	1.0	57.7	6.3	0.3	4.1	-0.1
LSD ($P=0.05$)	11.5	0.8	0.6	4.6	10.8	1.6	0.8	3.1	--	--	--	--

Wheat was planted 25 Nov; triticale was planted 5 Dec. Harvest was delayed by significant rainy weather (June 23), which attributed to yield loss and variability.

* AGS 2000 yield was negatively correlated (Pearson's $R=-0.954$, $P=0.046$) with disease symptoms, however, fungicide yield response was also affected by severe lodging. Yield was significantly correlated to standability also (Pearson's $R=0.971$, $P=0.03$).

All other correlations by variety between standability and yield were non-significant ($P=0.15$).