

SG 215 BG/RR, A NEW HIGH-YIELDING, EARLY MATURING PICKER VARIETY

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Abstract

Delta and Pine Land Company is introducing a new high-yielding, early-maturing picker variety that possesses the Bollgard[®] (BG) and Roundup Ready[®] (RR) technologies. SG 215 BG/RR was developed at Delta and Pine Land's breeding facilities at Leland, MS, and Scott, MS, by Dr. Bob Bridge and Robert McGowen. SG 215 BG/RR is well-adapted to all the picker cotton growing regions across the belt. Delta and Pine Land data and state official variety trial data show that SG 215 BG/RR has produced more lint yield per acre than other early-maturing BG/RR varieties across the Cotton Belt. Delta and Pine Land data also show that SG 215 BG/RR generated more crop revenue per acre than the other commercially-available BG/RR varieties across the Cotton Belt. Seed supplies of SG 215 BG/RR are expected to be limited for the 2002 growing season.

Introduction

Delta and Pine Land Company has continually developed and successfully marketed high-yielding, early-maturing transgenic cotton varieties. In the 2002 season, we will introduce a new picker variety that has the Bollgard[®] and Roundup Ready[®] transgenic traits. SG 215 BG/RR is a widely adapted, early-maturing picker variety that has produced high yields in a wide range of environments, and will provide growers with a new tool with top-end yield potential.

Materials and Methods

SG 215 BG/RR is a sister-line of Sure-Grow 125BR, which is a bulk of lines originating from a cross between Sure-Grow 125 and the Bollgard[®] and Roundup Ready[®] donor parents. SG 215 BG/RR was selected in breeder nurseries at Leland, MS, and Scott, MS, by Dr. Bob Bridge and designated SGX125BR-457 in 1999; further development was done by Robert McGowen at Leland, MS. Seed supply of SG 215 BG/RR is expected to be limited for the 2002 growing season.

Data reported herein are from either Delta and Pine Land Company Technical Services Agronomic Service Trials (ASTs) and/or from various state university official variety trials (OVTs). Crop values, expressed in \$/acre based on a loan value of \$0.50/lb. +/- premiums and discounts, are shown for the subset of data for which all necessary HVI data were collected and reported. All data reported are from all trials available in Delta and Pine Land Company's Agronomic Information System as of 20 December, 2001.

Results and Discussion

The characteristics of SG 215 BG/RR (Table 1) are conducive to many production systems across the Belt, enabling the variety to be widely-adapted. Averaged across 402 plots over the last three years and over the entire Belt, turnout was 36.5 %, staple averaged 33.87, micronaire 4.51, leaf grade 2.3, strength 26.57, and uniformity averaged 81.86 for SG 215 BG/RR (Table 2). The highest turnout values were from the Southeast regions, the longest fibers were recorded in the West and Lower Mid-South regions, the highest micronaire readings were in the West region, and the highest uniformity was found in the Southwest and Upper Mid-South regions for SG 215 BG/RR.

Beltwide Performance

Performance of SG 215 BG/RR relative to alternative early-maturing BG/RR varieties is shown by region on Tables 3-9). Table 2 shows Beltwide comparisons between SG 215 BG/RR and Sure-Grow 125 BR, Sure-Grow 501 BR, PM 1218 BG/RR, DP 451 B/RR, and ST4892BR. SG 215 BG/RR yielded higher than all the comparison varieties across the Belt, and generated higher crop values, despite having consistently shorter staple values than all the comparison varieties. SG 215 BG/RR outyielded its sister line, Sure-Grow 125BR, by nearly 100 lbs/acre, and generated \$27 more per acre in crop value.

Performance in the West Region

In AZ and CA trials, SG 215 BG/RR produced more lint per acre and more crop value per acre than Sure-Grow 125BR, Sure-Grow 501BR, PM 1218 BG/RR, or DP 451 B/RR (Table 4). Micronaire values of SG 215 BG/RR were higher than that for

Sure-Grow 125 BR and DP 451 B/RR, but lower than PM 1218 BG/RR; the micronaire for SG 215 BG/RR and Sure-Grow 501BR were very similar.

Performance in the Southwest Region

Averaged over numerous trials over a two-year period in the picker areas of NM, OK, and TX, SG 215 BG/RR produced substantially more lint per acre and more crop value per acre than the comparison varieties (Table 5). Staple values for SG 215 BG/RR in this region averaged between 32.6 and 32.8, strength ranged from 25.0 to 25.2 g/tex, and micronaire readings ranged from 4.06 to 4.36.

Performance in the Lower Mid-South Region

SG 215 BG/RR outyielded all comparison varieties in the Lower Mid-South region (southern AR, LA, and southern MS), except PM 1218 BG/RR. Similarly, crop values were higher for SG 215 BG/RR relative to other varieties except for PM 1218 BG/RR (Table 6).

Performance in the Upper Mid-South Region

The predominant variety planted in the Upper Mid-South region (northern AL, northern AR, MO, northern MS, and TN) in 2001 was PM 1218 BG/RR (USDA-AMS, 2001), which is a very high-yielding, early-maturing variety. This was the only variety within this region in which SG 215 BG/RR did not outperform (Table 7). Crop values were higher for SG 215 BG/RR than for Sure-Grow 125 BR, DP 451 B/RR, and ST4892BR, but lower compared to PM 1218 BG/RR. Crop values were similar for SG 215 BG/RR and Sure-Grow 501BR in the Upper Mid-South.

Performance in the Lower Southeast Region

Although PM 1218 BG/RR has performed very well in the Mid-South regions, it is not well-adapted to the Lower Southeast (southern AL, FL, GA, and southern SC). Growers in this region have been demanding a high-yielding, early-maturing variety that will help spread risk by planting some early-maturing varieties on a portion of their acreage, while planting most of their acreage with the well-adapted mid-full season varieties that typify the region, like DP 458 B/RR. The performance of SG 215 BG/RR in this region indicates that it has the potential to fit this need. SG 215 BG/RR has produced more lint per acre and generated more crop value per acre than all the comparison varieties in the Lower Southeast region (Table 8).

Performance in the Upper Southeast Region

SG 215 BG/RR has outperformed Sure-Grow 125BR and ST4892BR in the Upper Southeast region (NC, northern SC, and VA), both in terms of lint yield and crop value (Table 9). While SG 215 BG/RR produced more lint per acre than Sure-Grow 501BR, the crop revenue generated per acre was the same for the two varieties in this region. Similarly, SG 215 BG/RR outyielded DP 451 B/RR by 29 lbs/acre in the Upper Southeast, but DP 451 B/RR generated \$19 more per acre in crop revenue, due to the better fiber quality of DP 451 B/RR. PM 1218 BG/RR, historically a variety with very good performance in this region, produced more yield than SG 215 BG/RR in the Upper Southeast, but SG 215 BG/RR generated \$3 more per acre in crop value.

Summary

SG 215 BG/RR is an early-maturing, high-yielding variety that is well-adapted to all regions of the Cotton Belt. It has good fiber strength, micronaire, and uniformity, but often has slightly shorter fiber than other early-maturing BG/RR varieties. Despite the shorter staple values, SG 215 BG/RR has typically produced enough lint per acre to offset any discounts for staple values below 34, and ultimately has generated more crop value per acre than the other comparison varieties. While PM 1218 BG/RR slightly outyielded SG 215 BG/RR in the regions dominated by PM 1218 BG/RR, the characteristics of SG 215 BG/RR are conducive to growing conditions in those areas; in addition, bronze wilt has not been observed in SG 215 BG/RR, while bronze wilt has been observed in PM 1218 BG/RR. Moreover, SG 215 BG/RR has had better adaptability in the Lower Southeast, where PM 1218 BG/RR has not had good performance. Supplies of SG 215 BG/RR seed are expected to be limited for the 2002 season.

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References

USDA-AMS. 2001. Cotton Varieties Planted, 2001 Crop. USDA-AMS Cotton Program, Memphis, TN.

Table 1. Characteristics of SG 215 BG/RR.

Characteristic	Description or Rating
Maturity	Early
Plant Height	Medium-Tall
Leaf Pubescence	Smooth
Range of Seed Size (#/lb.)	4,300-4,900
Storm Resistance	Very Good
<i>Fusarium</i> Resistance	Very Good
<i>Verticillium</i> Resistance	Good
Bronze Wilt	Not Observed
Node of 1 st Fruiting Branch	5.9
Total No. Fruiting Branches	13.0

Table 2. Means of fiber quality parameters by region for SG 215 BG/RR. Data are means of D&PL ASTs and state university OVTs as of 20 December, 2001.

Region [†]	Year(s)	No. plots	% Turnout	Staple (1/32 in)	Micronaire	Leaf Grade	Strengt h (g/tex)	% Uniformity
Beltwide	1999-2001	402	36.5	33.87	4.51	2.3	26.57	81.86
West	2000	4	37.4	34.91	4.95	1.5	24.40	82.53
Southwest	2000-2001	91	35.0	33.81	4.40	2.3	26.00	82.16
Lower Mid-South	2000-2001	99	35.5	33.74	4.62	2.7	26.60	81.64
Upper Mid-South	1999-2001	105	36.6	34.18	4.33	2.2	27.25	82.11
Lower Southeast	1999-2001	59	38.5	33.63	4.72	2.1	26.27	81.41
Upper Southeast	1999-2001	44	38.9	33.80	4.63	1.9	26.66	81.66

[†] West = AZ & CA; Southwest = picker areas of NM, OK, & TX; Lower Mid-South = southern AR, LA, & southern MS; Upper Mid-South = northern AL, northern AR, MO, northern MS, and TN; Lower Southeast = southern AL, FL, GA, and southern SC; Upper Southeast = NC, northern SC, & VA.

Table 3. Head-to-head comparisons of SG 215 BG/RR and early-mid maturity BG/RR alternatives across the Belt in D&PL ASTs and state university OVTs, as of 20 December, 2001.

Varieties	Lbs. lint/acre	% Wins	Staple (1/32 in)	Strengt h (g/tex)	Micro-naire	Leaf Grade	% Turn-out	% Uni-formity	Crop Value [†]
SG 215 BG/RR	1001	83	33.4	26.0	4.41	2.3	36.6	81.7	457
Sure-Grow 125 BR	905	17	34.1	27.1	4.32	2.2	35.2	81.8	430
No. of tests: 127 (1999-2001 data)									
SG 215 BG/RR	1015	75	33.5	26.2	4.56	2.3	36.8	81.6	470
Sure-Grow 501 BR	962	25	34.0	28.3	4.66	2.2	36.6	82.2	457
No. of tests: 169 (1999-2001 data)									
SG 215 BG/RR	990	50	33.5	26.2	4.41	2.3	36.5	81.4	455
PM 1218 BG/RR	978	50	33.7	26.3	4.54	2.2	37.7	81.6	458
No. of tests: 151 (2000-2001 data)									
SG 215 BG/RR	1021	81	33.5	26.1	4.51	2.3	36.7	81.6	468
DP 451 B/RR	940	19	34.8	26.4	4.38	1.8	34.5	81.8	457
No. of tests: 170 (1999-2001 data)									
SG 215 BG/RR	981	70	33.5	26.2	4.50	2.2	36.9	81.4	459
ST4892BR	918	30	34.3	27.8	4.54	2.3	37.8	81.9	435
No. of tests: 144 (2000-2001 data)									

[†] Based on loan value of \$0.50/lb +/- premiums and discounts, expressed as \$/acre gross revenue. Data are means of crop value of individual plots.

Table 4. Head-to-head comparisons of SG 215 BG/RR and early-mid maturity BG/RR alternatives across the West region (AZ & CA) in D&PL ASTs and state university OVTs, as of 20 December, 2001.

Varieties	Lbs. lint/acre	% Wins	Staple (1/32 in)	Strength (g/tex)	Micro-naire	Leaf Grade	% Turn-out	% Uniformity	Crop Value [†]
SG 215 BG/RR	1921	100	34.5	24.4	4.95	1.5	37.4	82.5	952
Sure-Grow 125 BR	1741	0	35.3	25.8	4.65	1.0	35.3	83.1	896
No. of tests: 4 (2000 data)									
SG 215 BG/RR	1921	100	34.5	24.4	4.95	1.5	37.4	82.5	952
Sure-Grow 501 BR	1769	0	35.0	27.5	4.93	2.0	36.5	83.6	892
No. of tests: 4 (2000 data)									
SG 215 BG/RR	1738	100	34.5	25.1	4.70	1.5	34.6	82.4	851
PM 1218 BG/RR	1546	0	34.0	26.0	4.80	1.5	34.5	82.7	797
No. of tests: 2 (2000 data)									
SG 215 BG/RR	1921	75	34.5	24.4	4.95	1.5	37.4	82.5	952
DP 451 B/RR	1826	25	36.0	25.0	4.83	1.0	33.9	82.5	935
No. of tests: 4 (2000 data)									

[†] Based on loan value of \$0.50/lb +/- premiums and discounts, expressed as \$/acre gross revenue. Data are means of crop value of individual plots.

Table 5. Head-to-head comparisons of SG 215 BG/RR and early-mid maturity BG/RR alternatives across the Southwest region (picker areas of NM, OK, & TX) in D&PL ASTs and state university OVTs, as of 20 December, 2001.

Varieties	Lbs. lint/acre	% Wins	Staple (1/32 in)	Strength (g/tex)	Micro-naire	Leaf Grade	% Turn-out	% Uniformity	Crop Value [†]
SG 215 BG/RR	1034	86	32.8	25.0	4.06	2.6	34.4	81.2	363
Sure-Grow 125 BR	906	14	33.4	26.0	4.05	2.7	32.9	81.6	325
No. of tests: 28 (2000-2001 data)									
SG 215 BG/RR	1043	77	32.7	25.2	4.32	2.5	35.3	81.1	374
Sure-Grow 501 BR	959	23	33.3	27.3	4.42	2.5	34.5	81.9	356
No. of tests: 30 (2000-2001 data)									
SG 215 BG/RR	1030	76	32.8	25.2	4.25	2.5	35.1	81.2	381
PM 1218 BG/RR	905	24	33.3	25.3	4.35	2.9	35.4	81.7	357
No. of tests: 33 (2000-2001 data)									
SG 215 BG/RR	1020	85	32.7	25.1	4.23	2.6	35.1	81.1	363
DP 451 B/RR	904	15	34.0	25.1	4.26	2.2	32.6	81.6	340
No. of tests: 33 (2000-2001 data)									
SG 215 BG/RR	854	67	32.6	25.0	4.36	2.6	35.4	81.1	331
ST4892BR	815	33	33.5	25.8	4.30	2.3	35.7	81.8	320
No. of tests: 24 (2000-2001 data)									

[†] Based on loan value of \$0.50/lb +/- premiums and discounts, expressed as \$/acre gross revenue. Data are means of crop value of individual plots.

Table 6. Head-to-head comparisons of SG 215 BG/RR and early-mid maturity BG/RR alternatives across the Lower Mid-South region (southern AR, LA, & southern MS) in D&PL ASTs and state university OVTs, as of 20 December, 2001.

Varieties	Lbs. lint/ acre	% Wins	Staple (1/32 in)	Strength (g/tex)	Micro -naire	Leaf Grade	% Turn- out	% Uni- formity	Crop Value[†]
SG 215 BG/RR	986	95	33.5	26.7	4.61	2.5	35.7	81.7	453
Sure-Grow 125 BR	845	5	34.3	27.8	4.49	2.4	34.1	81.9	401
No. of tests: 20 (1999-2001 data)									
SG 215 BG/RR	970	76	33.8	26.9	4.70	2.6	35.6	81.8	447
Sure-Grow 501 BR	897	24	34.2	29.1	4.74	2.5	35.3	82.5	439
No. of tests: 38 (1999-2001 data)									
SG 215 BG/RR	933	37	33.8	26.9	4.64	2.6	35.7	81.6	446
PM 1218 BG/RR	988	63	34.0	26.9	4.71	2.5	37.3	81.8	477
No. of tests: 38 (2000-2001 data)									
SG 215 BG/RR	971	74	33.8	26.9	4.70	2.6	35.8	81.8	448
DP 451 B/RR	890	26	35.1	27.3	4.55	2.1	33.4	81.9	443
No. of tests: 39 (1999-2001 data)									
SG 215 BG/RR	948	59	33.8	26.9	4.69	2.5	35.8	81.7	449
ST4892BR	870	41	34.9	28.9	4.69	2.5	36.5	82.4	432
No. of tests: 32 (2000-2001 data)									

[†] Based on loan value of \$0.50/lb +/- premiums and discounts, expressed as \$/acre gross revenue. Data are means of crop value of individual plots.

Table 7. Head-to-head comparisons of SG 215 BG/RR and early-mid maturity BG/RR alternatives across the Upper Mid-South region (northern AL, northern AR, MO, northern MS, and TN) in D&PL ASTs and state university OVTs, as of 20 December, 2001.

Varieties	Lbs. lint/ acre	% Wins	Staple (1/32 in)	Strength (g/tex)	Micro -naire	Leaf Grade	% Turn- out	% Uni- formity	Crop Value[†]
SG 215 BG/RR	925	81	33.8	26.3	4.40	2.2	36.5	82.2	428
Sure-Grow 125 BR	836	19	34.3	27.6	4.30	2.0	35.7	82.0	407
No. of tests: 26 (1999-2001 data)									
SG 215 BG/RR	954	68	33.8	26.4	4.47	2.2	36.7	82.0	446
Sure-Grow 501 BR	924	32	34.2	28.6	4.56	2.1	37.3	82.5	447
No. of tests: 31 (1999-2001 data)									
SG 215 BG/RR	963	19	33.8	26.4	4.32	2.1	36.4	81.7	443
PM 1218 BG/RR	1015	81	34.1	26.7	4.37	1.7	38.2	81.7	474
No. of tests: 27 (2000-2001 data)									
SG 215 BG/RR	977	81	33.8	26.4	4.42	2.2	36.6	82.0	448
DP 451 B/RR	900	19	34.9	26.9	4.20	1.7	34.8	82.0	429
No. of tests: 31 (1999-2001 data)									
SG 215 BG/RR	963	70	33.8	26.4	4.32	2.1	36.4	81.7	443
ST4892BR	925	30	34.6	28.5	4.30	2.2	37.7	82.1	437
No. of tests: 27 (2000-2001 data)									

[†] Based on loan value of \$0.50/lb +/- premiums and discounts, expressed as \$/acre gross revenue. Data are means of crop value of individual plots.

Table 8. Head-to-head comparisons of SG 215 BG/RR and early-mid maturity BG/RR alternatives across the Lower Southeast region (southern AL, FL, GA & southern SC) in D&PL ASTs and state university OVTs, as of 20 December, 2001.

Varieties	Lbs. lint/ acre	% Wins	Staple (1/32 in)	Strengt h (g/tex)	Micro- naire	Leaf Grade	% Turn- out	% Uni- formity	Crop Value[†]
SG 215 BG/RR	1023	54	33.5	26.1	4.63	2.5	38.6	82.2	468
Sure-Grow 125 BR	986	46	34.0	27.1	4.56	2.3	37.2	81.8	469
No. of tests: 13 (1999-2001 data)									
SG 215 BG/RR	1076	70	33.7	25.8	4.71	2.0	38.5	81.8	515
Sure-Grow 501 BR	1060	30	33.9	28.0	4.82	2.1	38.4	81.9	492
No. of tests: 20 (1999-2001 data)									
SG 215 BG/RR	1040	89	33.5	26.0	4.36	2.3	37.9	81.9	495
PM 1218 BG/RR	887	11	33.5	25.7	4.38	2.1	39.4	81.8	402
No. of tests: 9 (2000-2001 data)									
SG 215 BG/RR	1127	89	33.7	25.5	4.62	2.0	38.3	81.4	532
DP 451 B/RR	1061	11	34.7	25.6	4.45	1.5	36.4	81.3	515
No. of tests: 18 (1999-2001 data)									
SG 215 BG/RR	1145	65	33.7	25.5	4.62	1.8	38.0	81.4	550
ST4892BR	1107	35	34.3	27.3	4.86	2.2	39.8	81.9	517
No. of tests: 17 (2000-2001 data)									

[†] Based on loan value of \$0.50/lb +/- premiums and discounts, expressed as \$/acre gross revenue. Data are means of crop value of individual plots.

Table 9. Head-to-head comparisons of SG 215 BG/RR and early-mid maturity BG/RR alternatives across the Upper Southeast region (NC, northern SC, & VA) in D&PL ASTs and state university OVTs, as of 20 December, 2001.

Varieties	Lbs. lint/ Acre	% Wins	Staple (1/32 in)	Strength (g/tex)	Micro -naire	Leaf Grade	% Turn- out	% Uni- formity	Crop Value[†]
SG 215 BG/RR	977	92	33.1	25.8	4.46	1.9	38.4	81.3	482
Sure-Grow 125 BR	898	8	33.8	26.6	4.36	1.6	37.4	81.2	463
No. of tests: 12 (1999-2001 data)									
SG 215 BG/RR	994	69	33.3	26.2	4.57	2.0	38.6	81.2	494
Sure-Grow 501 BR	962	31	34.0	28.0	4.78	1.9	38.6	82.0	494
No. of tests: 16 (1999-2001 data)									
SG 215 BG/RR	1075	43	33.2	26.1	4.45	2.0	38.5	81.1	517
PM 1218 BG/RR	1098	57	33.9	26.4	4.85	1.8	40.0	81.0	514
No. of tests: 14 (2000-2001 data)									
SG 215 BG/RR	1004	73	33.2	26.2	4.51	2.0	38.6	81.2	503
DP 451 B/RR	975	27	35.1	26.5	4.32	1.6	37.0	81.6	522
No. of tests: 15 (1999-2001 data)									
SG 215 BG/RR	1059	88	33.4	26.2	4.60	2.1	38.7	81.2	505
ST4892BR	977	12	33.8	27.8	4.70	2.4	39.9	81.4	461
No. of tests: 16 (2000-2001 data)									

† Based on loan value of \$0.50/lb +/- premiums and discounts, expressed as \$/acre gross revenue. Data are means of crop value of individual plots.