

Williamson County Result Demonstration Report



2004 WILLIAMSON COUNTY TRANSGENIC COTTON VARIETY DEMONSTRATION

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SUMMARY:

Twenty-three Roundup Ready cotton varieties were evaluated near Granger, TX. Fourteen were stacked varieties, and four of the stacked contained Bollgard II technology. Average yields for stacked varieties ranged from 724 to 977 lbs/acre for DP 424 BG2RR and DP 555 BGRR, respectively. The average per acre lint value ranged from \$373.26 to \$543.06 for DP 424 BG2RR and FM 991 B2R, respectively. Average yields for Roundup Ready varieties ranged from 469 to 805 for ST 2448 RR and FM 960 RR, respectively. The average per acre lint value ranged from \$265.92 to \$455.63 for ST 2448 RR and FM 960 RR, respectively. Worm pressure was relatively high in 2004, thus causing significant damage to the non- *B.t.* cotton which was sprayed two times for worms between early and mid-July.

OBJECTIVE:

Roundup Ready cotton varieties have been the predominant type of cotton grown in the Central Blacklands of Texas for the past several years. Therefore, the objective of this project was to evaluate Roundup Ready and/or stacked varieties which contain the Bt transgenic technology for earliness, yield potential and fiber characteristics such as micronaire, fiber length, uniformity and fiber strength, all of which influence the market value of the crop.

MATERIALS & METHODS:

The demonstration was planted on May 5, 2004. The test was comprised of 23 Roundup Ready cotton varieties, some of which contained *Bt* technology. Varieties were planted on land farmed by Greg, Mitchell and Bradley Shirocky 9 miles east of Granger on CR 361. Each plot was 12 rows wide (30 inches) and covered an area of 1.1 acre. The field was sprayed with Roundup Ultra @ 1 qt/ac at-planting. Fertility consisted of 300 lbs per acre of 4-11-11 applied in December 2003 plus a side-dress application in late May of 85 lbs per acre of 30-0-0-2.

The non-Bt varieties were sprayed for worms on July 3 with Baythroid 2E @ 1.5oz/ac + Larvin @ 32 oz/ac and on July 10 with Karate Z @ 2.0 oz/ac and 32 oz/ac Larvin. On July 15, the cotton was sprayed with Trimax @ 0.5 oz/ac for aphids which flared following the previous two applications.

The field was also sprayed as needed by the Boll Weevil Eradication Foundation with Malathion ULV @ 12 oz/ac.

Six plants randomly selected from each treatment were plant mapped on June 19 and July 25. Data collected included plant height, number of vegetative nodes along with mapping each fruiting position for square, green boll, open boll, or abscised fruit. The data were analyzed in PMAP Ver. 6.2.

The cotton was treated with Ginstar @ 3 oz/ac and Finish 6 Pro @ 16 oz/ac on September 13. The field was sprayed again on September 18 with Ginstar @ 6 oz per acre.

The plots were harvested on September 24. During harvest, 0.46 acres of each plot was harvested with a 6-row stripper. The seed cotton was dumped into a weigh buggy, seed cotton weight was obtained and small samples were pulled which were ginned on a small lab gin and total fiber yield and grades for each variety were obtained based on gin results.

RESULTS AND DISCUSSION:

Stacked Varieties:

Yields of the stacked varieties ranged from 977 to 724 lbs per acre for DP 555 BR and DP 424BG2RR, respectively, with a mean yield of 859 lb per acre (Table 1). Micronaire ranged from 3.8 to 4.6 with a mean of 4.2. Staple length ranged from 1.04 to 1.15 inches with a mean of 1.10 inches. Strength ranged from 27.9 to 34.8 gm/tx with a mean of 31.0 gm/tx. Lint values per acre of the varieties based on yield and fiber properties ranged from \$373.26 to \$543.06 for DP 424 BG2RR and FM 991 B2R, respectively with a mean per acre lint value of \$475.98.

Table 1. Average Yield and Fiber Data and per Acre Loan Value for Stacked Varieties in the Williamson County Cotton Variety Demonstration, Granger, TX 2004

Variety	Lint Yield lbs /Acre	Mic	Staple (in)	Unif.	Strength (gm/tx)	Color	Loan Value/lb	Loan Value/Acre
FM 991 B2R	970	4.1	1.10	81.7	31.5	31-1	0.5600	\$543.06
DP 555 BR	977	4.5	1.10	82.0	27.9	31-1	0.5525	\$539.52
DP 444 BGRR	927	3.8	1.11	81.4	30.6	31-1	0.5650	\$523.94
ST 5242 BR	954	4.4	1.05	80.9	30.9	21-2	0.5450	\$519.67
FM 960 B2RR	883	4.5	1.10	80.7	30.6	31-2	0.5575	\$492.34
SG 215 BR	878	4.6	1.09	81.7	31.2	31-1	0.5575	\$489.23
ST 5599	899	4.1	1.07	81.3	31.4	31-2	0.5425	\$487.59
FM 800	834	3.9	1.12	81.7	32.5	31-1	0.5670	\$472.62
DP 488 BGRR	825	4.2	1.14	82.0	29.9	31-1	0.5650	\$466.17
ST 4892	812	4.1	1.08	81.8	31.8	31-2	0.5600	\$454.84
FM 989	792	4.2	1.08	80.3	30.7	31-1	0.5600	\$443.76
FM 800	803	3.9	1.15	82.8	34.8	41-1	0.5485	\$440.59
ST 4646 B2R	752	4.2	1.10	81.9	28.8	31-2	0.5550	\$417.18
DP 424 B2R	724	3.8	1.04	80.0	30.8	31-2	0.5155	\$373.26
Mean	859	4.2	1.10	81.4	31.0		0.5540	\$475.98

Roundup Ready Varieties:

Yields of the Roundup Ready varieties ranged from 805 to 469 lbs per acre for FM 960 RR and ST 2448 RR, respectively, with a mean yield of 671 lb per acre (Table 2). Micronaire ranged from 3.9 to 5.0 with a mean of 4.4. Staple length range from 1.08 to 1.14 inches with a mean of 1.10 inches. Strength ranged from 29.9 to 34.1 gm/tx with a mean of 32.7 gm/tx. Lint values per acre of the Roundup Ready varieties based on yield and fiber properties ranged from \$265.92 to \$455.63 for ST 2448 RR and FM 960 RR, respectively, with a mean per acre loan value of \$372.22.

Table 2. Average Yield and Fiber Data and per Acre Loan Value Roundup Ready Varieties in the Williamson County Cotton Variety Demonstration, Granger, TX 2004

Variety	Lint Yield lbs /Acre	Mic	Staple (in)	Unif.	Strength (gm/tx)	Color	Loan Value/lb	Loan Value/Acre
FM 960 RR ¹	805	4.1	1.13	81.6	32.2	31-2	0.5660	\$455.63
DP 432 RR	734	4.4	1.10	81.8	33.6	31-2	0.5585	\$409.94
BCG 28R	765	5.0	1.08	83.4	30.3	31-1	0.5215	\$398.95
PHY 410 RR	716	4.6	1.08	82.1	33.3	31-4	0.5430	\$388.79
DP 434 RR	690	4.2	1.10	81.5	29.9	21-2	0.5625	\$388.13
DP 494 RR	680	4.7	1.09	81.2	32.9	31-1	0.5585	\$379.64
PHY 510 RR	612	4.5	1.09	80.6	34.1	31-3	0.5585	\$341.80
DP 436 RR	569	4.4	1.14	82.8	33.8	31-2	0.5645	\$321.20
ST 2448 RR	469	3.9	1.12	82.3	33.9	31-2	0.5670	\$265.92
Mean	671	4.4	1.10	81.9	32.7		0.5556	\$372.22

¹Yield for the Roundup Ready varieties listed in table 2 were reduced 15% from the calculated yields adjust for moisture content in those varieties when weighed following harvested as a result of green bolls in all of the Roundup Ready varieties.

All Varieties:

Tables 3 and 4 list plant mapping information for June 25 and July 28 . On June 25, the mean inter-node length, mean plant height, nodes above white bloom, mean reproductive nodes, mean squares per plant, and mean green bolls per plant for each variety was 1.9, 24.8, 0.0, 7.5, 10.4 and 0.0, respectively. Mean fruit retention was 64.1 and 60.0 for first and second positions, respectively. On July 28, the mean inter-node length, mean plant height, nodes above white bloom (NAWB), mean reproductive nodes, means squares per plant, and mean green bolls per plant for each variety was 2.3, 40.8, 3.7, 12.1, 6.6, and 5.4, respectively. Mean fruit retention was 47.1 and 39.2 for first and second positions, respectively.

ACKNOWLEDGMENTS:

Appreciation is expressed to Mr. Greg, Mitchell, and Bradley Shirocky for work in putting in, maintaining, and harvesting this trial. Also, thanks goes out to the seed companies that varieties seed for this trial Bayer CropSciences, Beltwide Cotton Genetics, Dow Agrosiences, Delta and Pineland, and Stoneville.

Trade names of commercial products used in this report are included only for better understanding and clarity. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas A&M University System is implied. Readers should realize that results from one experiment do not represent conclusive evidence that the same response would occur where conditions vary.

Table 3. Plant Mapping Summary, Williamson County Transgenic Cotton Variety Trial, Granger, TX June 25, 2004.

Variety	Mean Inter Length (inches)	Mean Plant Height (inches)	NAWB	Mean Rep Nodes	Mean Square/Plant	Mean green bolls/plant	Fruit Retention By position	
							1st	2nd
FM 800 BG2RR	1.8	23.7	0.0	7.4	10.4	0.0	70.3	71.4
FM 800 BGRR	1.3	19.5	0.0	7.6	10.6	0.0	68.4	53.8
DP 444 BGRR	2.2	27.8	0.0	8.4	13.4	0.0	69.0	72.7
ST 4646 BG2RR	1.8	26.2	0.0	8.8	12.0	0.0	61.4	48.5
FM 989 BGRR	1.7	24.1	0.0	8.0	12.2	0.0	75.0	86.2
DP 488 BGRR	1.9	25.3	0.0	8.0	10.0	0.0	60.0	60.7
ST 4892 BGRR	2.0	25.4	0.0	7.8	9.6	0.0	56.4	58.6
FM 991 B2R	2.0	23.7	0.0	6.5	8.3	0.0	59.0	55.6
DP 555 BR	1.8	25.7	0.0	8.8	14.4	0.0	81.8	65.7
ST 5599 BR	2.3	29.1	0.0	7.6	9.6	0.0	50.0	54.8
SG 215 BR	2.0	25.1	0.0	7.2	10.2	0.0	72.2	69.2
ST 5242 BR	2.1	25.6	0.0	7.6	10.6	0.0	73.7	64.3
PHY 410 RR	2.0	25.4	0.0	7.8	9.2	0.0	59.0	62.1
PHY 510 R	1.9	26.3	0.0	8.2	9.8	0.0	63.4	45.2
BCG 28R	2.0	23.5	0.0	6.8	10.2	0.0	70.0	70.0
FM 960 RR	2.0	25.2	0.0	7.0	10.7	0.0	64.3	71.9
ST 2448 R	1.9	23.3	0.0	7.8	11.3	0.0	74.5	48.6
DP 436 RR	1.9	25.5	0.0	8.4	13.6	0.0	69.0	52.8
DP 494 RR	2.8	24.3	0.0	3.8	4.1	0.0	35.0	40.0
DP 434 RR	2.2	26.2	0.0	6.8	10.2	0.0	61.8	72.4
DP 432 RR	1.8	24.0	0.0	7.6	10.2	0.0	50.0	62.5
DP 424 BG2RR	1.8	23.7	0.0	8.0	11.4	0.0	72.5	56.7
FM 960 B2RR	1.6	21.1	0.0	6.6	7.6	0.0	57.6	36.4
Mean	1.9	24.8	0.0	7.5	10.4	0.0	64.1	60.0

Table 4. Plant Mapping Summary, Williamson County Transgenic Cotton Variety Trial, Shirocky, TX July 28, 2004.

Variety	Mean Inter Length (in)	Mean Plant Height (in)	NAWB	Mean Rep Nodes	Mean Square/ Plant	Mean green bolls/plant	Fruit Retention By position	
							1st	2nd
FM 800 B2RR	2.1	40.8	4.0	13.7	6.3	8.2	59.5	38.8
FM 800 BG/BR	2.2	40.2	5.0	13.2	8.8	7.7	50.0	55.9
DP 444 BG/RR	2.6	43.2	5.0	11.2	6.7	6.5	60.9	50.9
ST 4646 B2/RR	2.3	42.5	4.0	13.5	7.5	8.0	54.4	50.7
FM 989 BG/BR	2.2	39.5	3.0	12.7	8.7	5.5	51.3	50.0
DP 488 BG/BR	2.4	42.7	4.0	11.8	5.0	5.8	57.1	32.8
ST 4892 BG/RR	2.7	42.7	3.0	10.3	4.1	4.4	50.7	28.8
FM 991 B2R	2.3	38.4	3.0	10.0	4.6	6.2	54.3	47.2
DP 555 BR	2.4	48.2	5.0	13.8	8.0	7.2	51.2	47.8
ST 5599 BR	2.8	46.8	4.0	11.2	5.3	4.0	51.5	31.5
SG 215 BR	2.5	41.7	4.0	11.7	6.2	6.8	68.1	41.1
ST 5242 BR	2.4	37.8	4.0	10.7	3.3	5.5	53.3	38.8
PHY 410 RR	2.5	45.3	7.0	12.2	5.0	0.3	12.3	17.5
PHY 510 R	2.4	41.0	0.0	11.5	6.7	0.0	20.9	24.1
BCG 28R	2.3	41.0	2.0	12.1	10.1	2.7	31.3	35.6
FM 960 RR	2.1	37.7	4.0	12.0	8.5	5.0	52.8	45.2
ST 2448 R	1.9	36.0	4.0	13.2	9.7	3.5	36.4	37.3
DP 436 RR	2.1	37.8	3.0	12.5	6.5	4.3	23.0	26.9
DP 494 RR	2.3	42.0	4.0	13.0	6.5	3.5	27.3	36.4
DP 434 RR	2.4	41.2	4.0	12.0	7.0	6.2	45.8	45.0
DP 432 RR	2.5	45.7	4.0	13.0	8.2	5.3	44.0	42.2
DP 424 B 2RR	2.1	34.7	4.0	10.8	3.3	7.8	63.1	32.7
FM 960 B2 RR	1.8	32.3	1.0	12.2	5.8	8.7	64.2	43.9
Mean	2.3	40.8	3.7	12.1	6.6	5.4	47.1	39.2