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DP 393, A NEW EARLY-MATURING, CONVENTIONAL PICKER VARIETY WITH HIGH YIELD AND FIBER QUALITY POTENTIAL

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Abstract

A new, early-maturing, conventional picker variety, DP 393, will be available in significant, commercial quantities by Delta and Pine Land Company in the 2005 season. DP 393 was developed from elite germplasm by Robert McGowen in Scott, MS. Plant structure and maturity of DP 393 were very similar to that of SG 105; however, the first fruiting branch was initiated earlier than SG 105. DP 393 had fewer total nodes and initiated the first fruiting branch earlier than DP 491. Yield and crop value for DP 393 was significantly higher than SG 105 and BCG295. DP 393 had higher gin turnout than SG 105, BCG 245, and BCG295. Staple length was significantly longer for DP 393 compared to SG 105, DP 493, and DP 444 BG/RR. DP 393 had significantly stronger fiber than SG 105 and DP 444 BG/RR, and micronaire was not different from SG 105, DP 493, FM958, and BCG295. DP 393 had significantly higher uniformity index than DP 491, DP 493, DP 444 BG/RR, and FM958. Loan values were significantly higher for DP 393 versus SG 105 and DP 444 BG/RR. Data suggest DP 393 has the yield and fiber quality potential to meet the demands of U.S. growers and mills, as well as those of the international mills. Introgression of new and upcoming transgenes has begun for lines with this germplasm background.

Introduction

Delta and Pine Land Company (D&PL) is making available in significant, commercial quantities a new early-maturing, picker conventional variety with high yield potential, and excellent fiber quality potential. DP 393 has shown impressive yield and fiber quality potential in trials in many areas of the U.S. Cotton Belt. In addition, DP 393 represents one of the few conventional varieties recently released that has potential adaptation across the U.S. Cotton Belt.

DP 393 is the latest release from D&PL that provides growers with high yield potential and fiber quality demanded by domestic and international textile mills. Recent variety releases, such as DP 444 BG/RR (Lege' and Williams, 2004), DP 494 RR (Albers et al., 2004), DP 488 BG/RR (Albers et al., 2005), DP 432 RR and DP 434 RR (Speed et al., 2005), have also provided variety choices that have represented simultaneous improvement in yield and quality (Keim, 2002; Lege' et al., 2003).

The percentage of U.S. production that is exported has increased in the last few years; industry leaders have indicated more importance should be placed on fiber quality for export markets. In general, export markets are demanding fiber with better quality than what domestic mills have required (Dunavant, 2004). These recent variety releases from D&PL have the potential to produce the quality of fiber demanded by the export markets, while providing U.S. growers with the yield potential they have demanded.

Materials and Methods

DP 393 is the result of the breeding of elite Delta and Pine Land germplasm at Scott, MS, by Robert McGowen. Prior designations of DP 393 included 12-27-62-10 and DPLX00W12. DP 393 was first tested broadly by university researchers and by D&PL technical service agronomists in 2003. In 2004, DP 393 was tested in state university official variety trials and in large-scale, on-farm D&PL agronomic service trials across the U.S. Cotton Belt. All data reported within are as of 20 December, 2004, from D&PL research and agronomic service trials (ASTs), as well as state university official variety trials (OVTs), Extension county agent trials (CATs), and consultant trials (CSTs).

Results and Discussion

General Characteristics and Plant Growth

DP 393 is an early-maturing variety that has medium plant stature, with smooth leaves and seed that ranges 4,700-5,300 per pound (Table 1). The boll type of DP 393 is open, often allowing a once-over harvest, but has fair-good storm resistance. Tolerances to *Fusarium* spp. and *Verticillium* spp. were rated as good.

Compared to SG 105 at 14 locations throughout the Cotton Belt during 2003-2004, DP 393 matured an average of 6 degree days (DD_{60}s) after SG 105, had statistically the same final height, total mainstem and fruiting nodes, and height-to-node ratio, but initiated fruiting 0.7 nodes sooner than SG 105 (Table 2).
Plant height, total fruiting nodes, and height-to-node ratio did not differ between DP 393 and DP 491, but DP 393 had statistically fewer total mainstem nodes, and initiated fruiting sooner than DP 491. The node of the uppermost harvestable boll was at a significantly lower mainstem node number for DP 393 compared to DP 491, suggesting an earlier maturity for DP 393; however, the number of heat units to reach 100% open boll was not significantly lower for DP 393 versus DP 491 (Table 3).

Yield and Fiber Quality Performance

DP 393 had significantly higher crop value and yield than SG 105, when averaged across 94 beltwide locations over a three-year period (Table 4). Across the Cotton Belt, DP 393 had superior turnout, staple length, strength, and loan value compared to SG 105. Yield was numerically increased for DP 393 and fiber quality was numerically better or equal to SG 105 in each region of the following regions: central Texas Blacklands (Table 5), South Texas (Table 6), northern Mid-South (Table 7), southern Mid-south (Table 8), northern Southeast (Table 9), and southern Southeast (Table 10). Turnout for DP 393 was significantly higher than SG 105 in the northern mid-south (Table 7), staple length for DP 393 was significantly longer than SG 105 in the southern Mid-South (Table 8) and southern Southeast (Table 10) regions. In the southern Mid-South (Table 8), DP 393 had significantly stronger fiber than SG 105.

Averaged over 70 locations across the Cotton Belt over a three-year period, DP 393 had numerically higher crop value, yield, and loan value, but lower turnout and strength than DP 491. DP 491 staple length and micronaire were significantly better than DP 393; however, DP 393 had significantly higher uniformity index than DP 491 (Table 4). Yield and crop values were numerically higher for DP 393 versus DP 491 at each of the regions in Tables 5-9. Staple length for DP 491 was significantly longer than DP 393 in both regions of the Mid-South (Tables 7-8); in other regions, the numerical trend was the same (Tables 5, 6, and 9). Micronaire for DP 393 was significantly higher than DP 491 in the northern Southeast (Table 9), but did not differ between the varieties in other regions. The other fiber quality parameters did not differ between the varieties in any of the regions.

Yield, crop value, strength, micronaire, and loan value did not differ between DP 393 and DP 493, when averaged over 77 locations across the Cotton Belt over a three-year period. However, turnout was significantly lower, and staple length and uniformity index were significantly improved for DP 393 compared to DP 493 across the Cotton Belt (Table 4). Turnout was significantly lower for DP 393 versus DP 493 in the southern Mid-South region (Table 8). Staple length did not differ between the two varieties in any region, but fiber strength was significantly better for DP 393 versus DP 493 in the central Texas Blackland (Table 5) and southern Mid-South (Table 8) regions. Uniformity index was significantly higher for DP 393 compared to DP 493 in the central Texas Blackland (Table 5), northern Mid-South (Table 7), and southern Mid-South (Table 8) regions.

Yield, crop value, and turnout did not differ between DP 393 and DP 444 BG/RR, when averaged across 130 beltwide locations over a two-year period, but staple length, strength, uniformity index, and loan value were significantly improved for DP 393 versus DP 444 BG/RR. DP 444 BG/RR had significantly better micronaire than DP 393 when averaged across the Cotton Belt (Table 4). Staple length was significantly higher for DP 393 compared to DP 444 BG/RR for the northern Mid-South (Table 7), southern Mid-South (Table 8), and southern Southeast (Table 10) regions. Strength was significantly better for DP 393 versus DP 444 BG/RR in the central Texas Blackland (Table 5), northern Mid-South (Table 7), southern Mid-South (Table 8), and southern Southeast (Table 10) regions. However, micronaire was significantly better for DP 444 BG/RR versus DP 393 in the South Texas (Table 6), northern Mid-South (Table 7), southern Mid-South (Table 8), and northern Southeast (Table 9) regions. Uniformity index did not differ between the two varieties in any region, but loan value was significantly better for DP 444 BG/RR compared to DP 393 in the South Texas region (Table 6).

Averaged over 140 locations across the Cotton Belt in 2003, yield, crop value, turnout, staple length, strength, micronaire, and loan value did not differ between DP 393 and FM958. Uniformity index was significantly better for DP 393 compared to FM958 across the Cotton Belt (Table 4). Neither yield nor any of the fiber quality parameters differed between DP 393 and FM958 in any region tested (Tables 5-11), with the exception of micronaire in the southern mid-south, for which DP 393 had significantly better values than FM958 (Table 8).

Yield and crop value were numerically higher for DP 393 versus FM832 when averaged across the Cotton Belt and when averaged across all Texas locations. Staple length, strength, and micronaire were significantly better for FM832 versus DP 393; however, uniformity index and loan value did not differ between the two varieties (Table 12).

Summary

The maturity and growth habit of DP 393 was very similar to that of SG 105, although DP 393 initiated fruiting earlier. Yield performance of DP 393 was equal to or superior to that of leading conventional commercial varieties. Yield of DP 393 was statistically the same as DP 444 BG/RR in western and southern areas of the Cotton Belt, but DP 444 BG/RR tended to yield numerically higher than DP 393 in northern areas that DP 444 BG/RR have historically performed well (Lege' and Williams, 2004). Fiber quality of DP 393 was very similar to FM958 in all regions of the belt, but had superior uniformity index compared to FM958 when averaged across the Cotton Belt. Our data suggest that the yield and fiber quality potential of DP 393 enables growers to produce the quantity they demand and the quality demanded by domestic and international mills. Transgenes of the new and upcoming technologies are currently being introgressed into DP 393 germplasm. A good supply of DP 393 seed is expected to be available for the 2005 growing season.

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References

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Table 1. Characteristics of DP 393.

Characteristic	***Description or Rating***
Maturity	Early
Plant Height	Medium

Leaf Pubescence	Smooth
Range of Seed Size (#/lb.)	4,700-5,300
Storm Resistance	Fair-Good
Fusarium Tolerance	Good
Verticillium Tolerance	Good
Bronze Wilt	Not observed

Table 2. Plant mapping parameters for DP 393 and SG 105 averaged over 14 locations of Delta and Pine Land Company agronomic service trials across the U.S. Cotton Belt in 2003-2004.

Parameter	***DP 393***	***SG 105***	***T test†***
Plant Height (in)	35.2	34.8	ns
Total Mainstem Nodes	18.5	19.3	ns
Total Fruiting Nodes	9.6	10.3	ns
Height-to-Node Ratio (in/internode)	1.91	1.81	ns
Node of 1st Fruiting Branch	5.5	6.2	**
Node of Uppermost Cracked Boll	10.8	12.2	ns
Node of Uppermost Harvestable Boll	14.1	15.4	ns
DD60s to 100% Open Boll¶	166	160	ns

† Prob >|t| that values for each variety are not different; *, **, *** indicate significance at alpha = 0.05, 0.01, 0.001, respectively; ns=not significant.

¶ Calculated as the number of fruiting nodes between the uppermost cracked boll and the uppermost harvestable boll multiplied by 50 DD60s/node.

Table 3. Plant mapping parameters for DP 393 and DP 491 averaged over 15 locations of Delta and Pine Land Company agronomic service trials across the U.S. Cotton Belt in 2003-2004.

Parameter	***DP 393***	***DP 491***	***T test†***
Plant Height (in)	35.3	36.8	ns
Total Mainstem Nodes	17.7	19.9	**
Total Fruiting Nodes	9.3	10.7	ns
Height-to-Node Ratio (in/internode)	1.99	1.83	ns
Node of 1st Fruiting Branch	5.4	6.2	*
Node of Uppermost Cracked Boll	10.2	10.9	ns
Node of Uppermost Harvestable Boll	13.7	15.8	*
DD60s to 100% Open Boll¶	177	249	ns

† Prob >|t| that values for each variety are not different; *, **, *** indicate significance at alpha = 0.05, 0.01, 0.001, respectively; ns=not significant.

¶ Calculated as the number of fruiting nodes between the uppermost cracked boll and the uppermost harvestable boll multiplied by 50 DD60s/node.

Table 4. Head-to-head comparisons of DP 393 and comparison varieties across the Cotton Belt in D&PL agronomic service trials, research trials, state university official variety trials, county agent trials, and consultant trials, as of 20 December, 2004.

Variety Comparison	***Crop Value† ($/acre)***	***Lbs. lint/ acre***	***% Turnout***	***Staple (1/32 in)***	***Strength (g/tex)***	***Micro-naire***	***% Uni-formity***	***Loan Value ($/lb)***
DP 393	694	1272	39.5	37.0	31.7	4.37	84.5	0.5454
SG 105	622	1155	37.6	36.4	30.7	4.45	84.4	0.5385
t test¶ (2002-2004 data)	*	*	***	***	***	ns	ns	*

No. of tests:	94	94	94	94	94	94	94	94
DP 393	684	1259	37.6	36.6	31.3	4.37	83.4	0.5433
DP 491	629	1159	38.1	37.6	31.7	4.16	82.6	0.5424
t test	ns	ns	ns	***	ns	*	***	ns
(2002-2004 data)								
No. of tests:	68	70	70	69	69	69	69	68
DP 393	736	1352	37.9	36.7	31.4	4.38	83.4	0.5443
DP 493	720	1340	39.9	36.1	30.8	4.34	82.2	0.5376
t test	ns	ns	**	**	ns	ns	***	ns
(2002-2004 data)								
No. of tests:	64	77	77	76	76	76	75	64
DP 393	701	1287	38.9	36.9	31.7	4.40	84.0	0.5446
DP 444 BG/RR	700	1296	39.5	36.0	30.1	4.02	83.3	0.5398
t test	ns	ns	ns	***	***	***	***	*
(2002-2003 data)								
No. of tests:	115	130	130	115	115	115	113	115
DP 393	684	1269	39.3	37.0	31.9	4.41	84.1	0.5394
FM958	645	1195	39.1	37.1	31.9	4.49	83.4	0.5400
t test	ns	ns	ns	ns	ns	ns	*	ns
(2003 data)								
No. of tests:	124	140	140	139	139	139	137	124
DP 393	696	1319	40.8	36.4	31.4	4.77	83.9	0.5281
BCG245	604	1102	36.6	37.5	33.3	4.35	84.1	0.5483
t test	ns	ns	***	**	*	*	ns	*
(2003 data)								
No. of tests:	8	8	8	8	8	8	8	8
DP 393	693	1278	40.8	37.3	31.8	4.52	84.9	0.5417
BCG295	609	1122	37.9	37.9	31.9	4.38	84.5	0.5431
t test	*	**	***	**	ns	ns	ns	ns
(2003 data)								
No. of tests:	56	62	62	56	56	56	56	56

† Based on 2004 USDA CCC loan value of $0.52/lb +/- premiums and discounts, expressed as $/acre gross revenue. Data are means of crop value of individual plots. Base leaf grade, color grade, and uniformity values were used in the crop value calculation for data points for which those data were not reported by the cooperator.

¶ Prob >|t| that values for each variety are not different; *, **, *** indicate significance at alpha = 0.05, 0.01, 0.001, respectively; ns=not significant.

Table 5. Head-to-head comparisons of DP 393 and comparison varieties in the central TX blacklands in D&PL agronomic service trials, state university official variety trials, and county agent trials, as of 20 December, 2004.

Variety Comparison	***Crop Value† ($/acre)***	***Lbs. lint/ acre***	***% Turnout***	***Staple (1/32 in)***	***Strength (g/tex)***	***Micro-naire***	***% Uni-formity***	***Loan Value ($/lb)***
DP 393	453	845	37.0	34.9	30.4	4.18	82.5	0.5345
SG 105	387	736	35.8	34.3	29.3	4.32	82.1	0.5180
t test¶	ns	ns	ns	ns	ns	ns	ns	ns
(2003 data)								
No. of tests:	5	5	5	5	5	5	5	5
DP 393	525	963	35.7	35.5	30.8	4.20	83.1	0.5440
DP 491	485	891	37.3	36.2	29.5	4.29	81.7	0.5405

t test	ns	ns	ns	ns	ns	ns	ns	ns
(2003-2004 data)								
No. of tests:	10	10	10	10	10	10	10	10
DP 393	472	871	35.0	35.1	30.4	4.24	82.6	0.5405
DP 493	455	887	37.9	34.4	28.8	4.53	80.5	0.5111
t test	ns	ns	ns	ns	*	ns	*	ns
(2003 data)								
No. of tests:	7	7	7	7	7	7	7	7
DP 393	514	940	35.5	35.4	31.1	4.22	82.9	0.5459
DP 444 BG/RR	485	903	35.7	34.6	28.9	3.92	81.9	0.5348
t test	ns	ns	ns	ns	**	ns	ns	ns
(2003-2004 data)								
No. of tests:	11	11	11	11	11	11	11	11
DP 393	511	942	38.2	35.7	30.7	4.33	83.4	0.5415
FM958	445	828	37.8	36.0	30.7	4.58	82.4	0.5325
t test	ns	ns	ns	ns	ns	ns	ns	ns
(2002-2004 data)								
No. of tests:	6	6	6	6	6	6	6	6

† Based on 2004 USDA CCC loan value of $0.52/lb +/- premiums and discounts, expressed as $/acre gross revenue. Data are means of crop value of individual plots. Base leaf grade, color grade, and uniformity values were used in the crop value calculation for data points for which those data were not reported by the cooperator.
¶ Prob >|t| that values for each variety are not different; *, **, *** indicate significance at alpha = 0.05, 0.01, 0.001, respectively; ns=not significant.

Table 6. Head-to-head comparisons of DP 393 and comparison varieties in south TX in D&PL agronomic service trials, research trials, state university official variety trials, and county agent trials, as of 20 December, 2004.

Variety Comparison	***Crop Value† ($/acre)***	***Lbs. lint/ acre***	***% Turnout***	***Staple (1/32 in)***	***Strength (g/tex)***	***Micro-naire***	***% Uni-formity***	***Loan Value ($/lb)***
DP 393	735	1366	40.0	36.8	30.9	4.73	83.8	0.5359
SG 105	657	1236	38.9	35.8	30.7	4.83	84.2	0.5280
t test¶	ns	ns	ns	ns	ns	ns	ns	ns
(2003 data)								
No. of tests:	7	7	7	7	7	7	7	7
DP 393	701	1314	40.1	36.6	31.1	4.71	83.8	0.5336
DP 491	692	1272	40.0	37.4	31.9	4.59	83.4	0.5434
t test	ns	ns	ns	ns	ns	ns	ns	ns
(2003-2004 data)								
No. of tests:	16	16	16	16	16	16	16	16
DP 393	737	1382	40.5	36.4	30.8	4.86	83.8	0.5321
DP 493	764	1442	42.7	35.9	30.8	4.85	82.9	0.5283
t test	ns	ns	ns	ns	ns	ns	ns	ns
(2003 data)								
No. of tests:	8	8	8	8	8	8	8	8
DP 393	691	1294	40.2	36.7	31.1	4.71	84.0	0.5347
DP 444 BG/RR	694	1272	40.5	36.0	30.3	4.32	83.4	0.5452
t test	ns	ns	ns	ns	ns	*	ns	*
(2003-2004 data)								
No. of tests:	15	15	15	15	15	15	15	15

DP 393	652	1226	39.4	36.2	30.5	4.87	83.8	0.5268
FM958	599	1107	38.6	36.6	31.4	4.75	83.5	0.5379
t test	ns	ns	ns	ns	ns	ns	ns	ns
(2002-2003 data)								
No. of tests:	12	12	12	12	12	12	12	12

† Based on 2004 USDA CCC loan value of $0.52/lb +/- premiums and discounts, expressed as $/acre gross revenue. Data are means of crop value of individual plots. Base leaf grade, color grade, and uniformity values were used in the crop value calculation for data points for which those data were not reported by the cooperator.
¶ Prob >|t| that values for each variety are not different; *, **, *** indicate significance at alpha = 0.05, 0.01, 0.001, respectively; ns=not significant.

Table 7. Head-to-head comparisons of DP 393 and comparison varieties in the northern mid-south (north AL, north AR, MO, north MS, TN) in D&PL agronomic service trials, research trials, state university official variety trials, and county agent trials, as of 20 December, 2004.

Variety Comparison	***Crop Value† ($/acre)***	***Lbs. lint/ acre***	***% Turnout***	***Staple (1/32 in)***	***Strength (g/tex)***	***Micro-naire***	***% Uni-formity***	***Loan Value ($/lb)***
DP 393	573	1063	39.4	37.3	32.2	4.19	84.6	0.5455
SG 105	524	981	37.3	37.0	31.5	4.26	84.5	0.5414
t test¶	ns	ns	**	ns	ns	ns	ns	ns
(2002-2004 data)								
No. of tests:	27	28	28	27	27	27	27	27
DP 393	580	1061	37.9	37.0	31.2	3.82	83.2	0.5472
DP 491	481	901	37.3	38.5	32.6	3.50	82.5	0.5347
t test	ns	ns	ns	*	ns	ns	ns	ns
(2003 data)								
No. of tests:	9	9	9	9	9	9	9	9
DP 393	545	994	37.2	36.9	31.7	3.86	83.0	0.5491
DP 493	504	930	38.9	36.1	31.4	3.97	81.9	0.5410
t test	ns	ns	ns	ns	ns	ns	*	ns
(2003 data)								
No. of tests:	11	11	11	11	11	11	11	11
DP 393	639	1212	39.0	37.2	31.7	4.12	84.0	0.5476
DP 444 BG/RR	699	1322	40.2	36.3	30.2	3.77	83.5	0.5424
t test	ns	ns	ns	***	**	***	ns	ns
(2003-2004 data)								
No. of tests:	28	33	33	28	28	28	28	28
DP 393	586	1117	39.2	37.4	32.6	4.32	84.1	0.5404
FM958	581	1102	38.9	37.2	32.2	4.47	83.0	0.5411
t test	ns	ns	ns	ns	ns	ns	ns	ns
(2002-2004 data)								
No. of tests:	24	26	26	26	26	26	26	24

† Based on 2004 USDA CCC loan value of $0.52/lb +/- premiums and discounts, expressed as $/acre gross revenue. Data are means of crop value of individual plots. Base leaf grade, color grade, and uniformity values were used in the crop value calculation for data points for which those data were not reported by the cooperator.
¶ Prob >|t| that values for each variety are not different; *, **, *** indicate significance at alpha = 0.05, 0.01, 0.001, respectively; ns=not significant.

Table 8. Head-to-head comparisons of DP 393 and comparison varieties in the southern mid-south (south AR, LA, south MS) in D&PL agronomic service trials, research trials, and state university official variety trials, as of 20 December, 2004.

Variety Comparison	*Crop Value† ($/acre)*	*Lbs. lint/ acre*	*% Turnout*	*Staple (1/32 in)*	*Strength (g/tex)*	*Micro-naire*	*% Uni-formity*	*Loan Value ($/lb)*
DP 393	715	1309	39.7	36.9	32.2	4.60	85.1	0.5464
SG 105	655	1222	38.4	35.8	30.6	4.72	84.5	0.5357
t test¶	ns	ns	ns	***	**	ns	ns	*
(2002-2004 data)								
No. of tests:	23	23	23	23	23	23	23	23
DP 393	706	1319	36.4	37.0	32.4	4.53	83.4	0.5364
DP 491	653	1215	37.8	38.7	32.7	4.29	82.7	0.5411
t test	ns	ns	ns	***	ns	ns	ns	ns
(2003-2004 data)								
No. of tests:	11	11	11	11	11	11	11	11
DP 393	706	1516	38.4	37.1	32.9	4.51	83.7	0.5364
DP 493	771	1571	41.7	36.4	31.8	4.54	82.7	0.5318
t test	ns	ns	*	ns	*	ns	**	ns
(2002-2004 data)								
No. of tests:	11	16	16	16	16	16	16	11
DP 393	726	1320	39.4	36.8	32.3	4.61	84.4	0.5449
DP 444 BG/RR	721	1303	40.1	36.0	30.4	4.15	83.8	0.5411
t test	ns	ns	ns	**	***	***	ns	ns
(2003-2004 data)								
No. of tests:	24	27	27	24	24	24	24	24
DP 393	720	1343	40.1	37.2	33.0	4.49	84.6	0.5440
FM958	705	1309	40.4	37.1	32.9	4.63	84.0	0.5421
t test	ns	ns	ns	ns	ns	*	ns	ns
(2002-2004 data)								
No. of tests:	27	30	30	30	30	30	30	27

† Based on 2004 USDA CCC loan value of $0.52/lb +/- premiums and discounts, expressed as $/acre gross revenue. Data are means of crop value of individual plots. Base leaf grade, color grade, and uniformity values were used in the crop value calculation for data points for which those data were not reported by the cooperator.

¶ Prob >|t| that values for each variety are not different; *, **, *** indicate significance at alpha = 0.05, 0.01, 0.001, respectively; ns=not significant.

Table 9. Head-to-head comparisons of DP 393 and comparison varieties in the northern southeast (NC, north SC, VA) in D&PL agronomic service trials, research trials, state university official variety trials, and county agent trials, as of 20 December, 2004.

Variety Comparison	*Crop Value† ($/acre)*	*Lbs. lint/ acre*	*% Turnout*	*Staple (1/32 in)*	*Strength (g/tex)*	*Micro-naire*	*% Uni-formity*	*Loan Value ($/lb)*
DP 393	530	981	39.4	36.6	31.4	4.29	85.4	0.5429
SG 105	447	840	37.6	35.8	30.6	4.22	84.9	0.5322
t test¶	ns	ns	ns	ns	ns	ns	ns	ns
(2002-2004 data)								
No. of tests:	9	9	9	9	9	9	7	7
DP 393	508	943	38.2	35.9	30.7	4.30	82.7	0.5470
DP 491	489	919	39.8	36.6	30.8	3.91	81.8	0.5301
t test	ns	ns	ns	ns	ns	*	ns	ns
(2003-2004 data)								
No. of tests:	5	7	7	6	6	6	6	5

DP 393	508	943	38.2	35.9	30.7	4.30	82.7	0.5470
DP 493	554	1047	40.8	35.4	30.5	4.14	81.3	0.5384
t test	ns	ns	ns	ns	ns	ns	ns	ns
(2002-2004 data)								
No. of tests:	5	7	7	6	6	6	6	5
DP 393	638	1207	41.1	37.3	32.2	4.25	84.0	0.5467
DP 444 BG/RR	664	1253	41.9	36.6	31.2	3.89	83.6	0.5426
t test	ns	ns	ns	ns	ns	*	ns	ns
(2003-2004 data)								
No. of tests:	13	16	16	13	13	13	11	13
DP 393	536	1021	40.2	36.9	31.9	4.29	84.2	0.5389
FM958	515	987	40.4	36.9	32.1	4.31	83.5	0.5416
t test	ns	ns	ns	ns	ns	ns	ns	ns
(2002-2004 data)								
No. of tests:	20	25	25	24	24	24	22	20

† Based on 2004 USDA CCC loan value of $0.52/lb +/- premiums and discounts, expressed as $/acre gross revenue. Data are means of crop value of individual plots. Base leaf grade, color grade, and uniformity values were used in the crop value calculation for data points for which those data were not reported by the cooperator.
¶ Prob >|t| that values for each variety are not different; *, **, *** indicate significance at alpha = 0.05, 0.01, 0.001, respectively; ns=not significant.

Table 10. Head-to-head comparisons of DP 393 and comparison varieties in the southern southeast (south AL, FL, GA, south SC) in D&PL agronomic service trials, research trials, state university official variety trials, county agent trials, and consultant trials, as of 20 December, 2004.

Variety Comparison	*Crop Value† ($/acre)*	*Lbs. lint/ acre*	*% Turnout*	*Staple (1/32 in)*	*Strength (g/tex)*	*Micro-naire*	*% Uni-formity*	*Loan Value ($/lb)*
DP 393	762	1418	39.6	37.4	29.8	4.33	84.0	0.5365
SG 105	645	1194	37.7	36.0	30.2	4.22	84.9	0.5387
t test¶	ns	ns	ns	**	ns	ns	ns	ns
(2002-2003 data)								
No. of tests:	5	5	5	5	5	5	5	5
DP 393	536	971	38.8	36.6	32.0	4.17	82.7	0.5215
DP 493	607	1115	41.4	35.5	31.6	4.33	82.4	0.5315
t test	ns	ns	ns	ns	ns	ns	ns	ns
(2003-2004 data)								
No. of tests:	3	5	5	5	5	5	5	3
DP 393	651	1274	40.5	37.2	32.1	4.68	84.6	0.5352
DP 444 BG/RR	607	1201	41.9	35.9	30.0	4.30	83.8	0.5282
t test	ns	ns	ns	*	**	ns	ns	ns
(2003-2004 data)								
No. of tests:	13	15	15	13	13	13	13	13
DP 393	782	1340	40.6	37.2	31.8	4.05	84.0	0.5468
FM958	750	1316	41.2	37.4	31.6	4.18	84.4	0.5476
t test	ns	ns	ns	ns	ns	ns	ns	ns
(2002-2004 data)								
No. of tests:	6	8	8	8	8	8	8	6

† Based on 2004 USDA CCC loan value of $0.52/lb +/- premiums and discounts, expressed as $/acre gross revenue. Data are means of crop value of individual plots. Base leaf grade, color grade, and uniformity values were used in the crop value calculation for data points for which those data were not reported by the cooperator.

¶ Prob >|t| that values for each variety are not different; *, **, *** indicate significance at alpha = 0.05, 0.01, 0.001, respectively; ns=not significant.

Table 11. Head-to-head comparison of DP 393 and FM958 in three High Plains regions (southern High Plains: portions of NM and TX; northern High Plains: portions of OK and TX; rolling plains: portions of OK and TX) in D&PL agronomic service trials, research trials, and state university official variety trials, as of 20 December, 2004.

Variety Comparison	*Crop Value† ($/acre)*	*Lbs. lint/ acre*	*% Turnout*	*Staple (1/32 in)*	*Strength (g/tex)*	*Micro-naire*	*% Uni-formity*	*Loan Value ($/lb)*
N. High Plains								
DP 393	607	1126	32.1	37.2	29.7	3.55	82.9	0.5367
FM958	622	1148	33.2	38.2	31.1	3.82	82.5	0.5420
t test¶	ns	ns	ns	ns	ns	ns	ns	ns
(2002-2003 data)								
No. of tests:	5	5	5	5	5	5	5	5
S. High Plains								
DP 393	832	1502	30.6	36.9	30.6	4.36	83.4	0.5528
FM958	715	1323	30.3	36.9	31.8	4.63	82.2	0.5389
t test	ns	ns	ns	ns	ns	ns	ns	ns
(2002-2003 data)								
No. of tests:	5	5	5	5	5	5	5	5
Rolling Plains								
DP 393	702	1373	40.5	36.9	31.5	4.32	82.6	0.5310
FM958	708	1413	40.9	37.6	31.2	4.38	82.5	0.5272
t test	ns	ns	ns	ns	ns	ns	ns	ns
(2002-2004 data)								
No. of tests:	8	9	9	9	9	9	9	8

† Based on 2004 USDA CCC loan value of $0.52/lb +/- premiums and discounts, expressed as $/acre gross revenue. Data are means of crop value of individual plots. Base leaf grade, color grade, and uniformity values were used in the crop value calculation for data points for which those data were not reported by the cooperator.

¶ Prob >|t| that values for each variety are not different; *, **, *** indicate significance at alpha = 0.05, 0.01, 0.001, respectively; ns=not significant.

Table 12. Head-to-head comparisons of DP 393 and FM832 across the Cotton Belt, and in all areas in TX in D&PL agronomic service trials, research trials, state university official variety trials, county agent trials, and consultant trials, as of 20 December, 2004.

Variety Comparison	*Crop Value† ($/acre)*	*Lbs. lint/ acre*	*% Turnout*	*Staple (1/32 in)*	*Strength (g/tex)*	*Micro-naire*	*% Uni-formity*	*Loan Value ($/lb)*
Beltwide data								
DP 393	700	1308	38.9	36.5	30.9	4.69	83.8	0.5356
FM832	625	1143	36.9	37.9	33.2	4.27	84.2	0.5466
t test¶	ns	ns	ns	***	**	**	ns	ns
(2002-2004 data)								
No. of tests:	17	18	18	17	17	17	17	17
Texas data								
DP 393	715	1332	38.5	36.5	30.8	4.67	83.7	0.5371
FM832	631	1155	36.5	37.8	33.1	4.24	84.0	0.5464
t test	ns	ns	ns	**	**	*	ns	ns
(2002-2004 data)								
No. of tests:	16	16	16	16	16	16	16	16

† Based on 2004 USDA CCC loan value of $0.52/lb +/- premiums and discounts, expressed as $/acre gross revenue. Data are means of crop value of individual plots. Base leaf grade, color grade, and uniformity values were used in the crop value calculation for data points for which those data were not reported by the cooperator.

¶ Prob >|t| that values for each variety are not different; *, **, *** indicate significance at alpha = 0.05, 0.01, 0.001, respectively; ns=not significant.