Statewide Cotton Educational and Applied Research Program for Texas
Project #03-345TX

FINAL PROJECT REPORT

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to

COTTON INCORPORATED

Principal Investigator: Dr. Robert Lemon

Department of Soil and Crop Sciences
Texas A&M University
Texas Cooperative Extension
College Station, Texas

Project Summary
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Applied research and educational programs designed to evaluate new technology, and assist growers solve cotton production problems were conducted across the state. The report herein contains results from numerous applied research studies addressing near-term issues. Field studies were conducted in the Upper Gulf Coast in Colorado and Wharton counties to evaluate deep profile N and its influence on cotton yield and fiber quality. Soil sample results from both locations showed significant deep profile N. At the Colorado County location 154 lbs N were found to the 24 inch depth. N treatments were 0 and 80 lbs N/acre. No differences were observed for cotton lint yield or fiber quality between the two N fertility treatments. Yields were very high (2.69 bales/acre) and fiber quality was excellent (loan value over $0.56/lbs) for this location. Field observations indicated that the 0 N plots could have been defoliated about 10 days prior to the 80 N plots and also would have required less defoliant/boll opener. From an input cost perspective, the 0 N plots required less N and also would have required less defoliant, thereby reducing the overall cost of production for this treatment. Additionally, the 0 N treatment was much earlier in maturity which suggests significant risk aversion from inclement weather. In 2006, nine stacked-gene cotton varieties were planted at eight different locations to compare lint yield and fiber quality. Varieties included in the trials were DPL 445 BR, DPL 143 B2RF, DPL 164 B2RF, Croplan Genetics 3520 B2RF, Beltwide Cotton Genetics 4630 B2RF, Stoneville 4554 B2RF, DynaGro 2242 B2RF, FiberMax 9063 B2RF, and Phytogen 485 WRF. Phytogen 485 WRF significantly out-yielded all other varieties, and showed the highest lint value/acre when averaged across locations (1316 lbs./acre and $731/acre, respectively). DPL 143 B2RF ranked second for lint yield and lint value/acre. Stoneville 4554 B2RF, DPL 164 B2RF, FM 9063 B2RF, and DPL 445 BR (trial standard variety) ranked statistically in the third tier behind Phytogen 485 WRF and DPL 143 BR. DPL 143 B2RF had the longest staple length (1.20 inches), with FM 9063 B2RF ranking second (1.19 inches). DPL 445 BR showed the highest turnout percentage across varieties, with Phytogen 485 WRF ranking second. All other varieties were significantly lower in turnout percentage (2%) than DPL 445 BR and Phytogen 485 WRF. Over the past three years several companies have suggested that applications of mepiquat chloride products applied at cut-out would increase cotton lint yields. A study was conducted in the Coastal Bend to assess this application strategy. Treatments included in the study were Mepex Ginout (24 product/acre), Pentia (24 oz product/acre), Stance (8 oz product/acre) and an untreated control. Applications were made at cut-out (Nodes Above White Flower = 4.5). No significant differences were observed among the treatments for lint yield or any fiber quality parameters. Applications of plant growth regulators (mepiquat chloride products) at cut-out are not recommended as a means of increasing lint yield or improving fiber quality. Due to the drought conditions experienced in the Rio Grande Valley and the Coastal Bend in 2006, thousands of acres were dry planted to comply with crop insurance guidelines. Following crop insurance adjustment, widespread rainfall was received across the regions. As a result, producers were faced with destroying the emerged cotton. Due to wind erosion and economic issues, herbicidal control of emerged cotton seedlings was viewed as a best alternative to tillage. Gramoxone Max (9-11 oz./acre) and Ignite 280 (16.5-33 oz./acre) all provided greater than 95% plant destruction. Considering both effectiveness and economics, Gramoxone Max was the superior product in the study.

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Texas ranks first in the U.S. in upland cotton production, with 5.5 to 6.0 million acres planted annually. Cotton represents about 12% of all cash receipts for Texas agricultural commodities, second only to cattle and calves, and in 2003 cotton supported a farm-gate value of more than $1.2 billion. In 2004 Texas cotton growers produced over 7.6 million bales – a new record high production. Production problems that limit yield, reduce production efficiency, and restrict profitability affect cotton producers across Texas. Many problems are common to all production regions; however, some problems are of regional or local scope. Implementation of agronomic management strategies designed to solve current and anticipated problems, evaluation of new and emerging technologies, and development and delivery of agronomic educational programs are the primary responsibility of the Extension Agronomy program

Applied research and educational programs designed to evaluate new technology, and assist growers solve cotton production problems were conducted across the state in cooperation with regional Texas Cooperative Extension and Texas Agricultural Experiment Station scientists, Extension Agents - Integrated Pest Management, and Extension Agents - Agriculture. The report herein contains results from numerous applied research studies addressing near-term issues.

Managing Deep Profile Nitrogen in the Upper Gulf Coast of Texas

Nitrogen (N) is the most heavily applied and most expensive nutrient used for cotton production in Texas, and is also the most difficult to properly manage because of its reactivity and mobility in the soil environment. Inadequate N reduces the number of fruiting sites and potential yield, whereas excessive N can create rank growth, actually lower yields and quality, delay maturity, increase problems with disease, insects, and defoliation, and pollute ground and surface water resources. Recommended N rates are based on the N required to produce a crop at a realistic yield goal, and are reduced by credits for the estimated residual soil nitrate (NO3) to a specified depth in the profile. Texas Cooperative Extension recommends 50 lbs N per bale yield goal.

A six-year study conducted across the major cotton production regions of Texas showed that cotton lint yields at only 13 of 55 sites, or about 24%, responded positively to the addition of supplemental fertilizer N. The major contributing factor appeared to be high residual soil NO3. Amounts greater than 100 lbs of residual NO3-N/acre were found in 33 of the 55 profiles sampled. Results indicated that where residual NO3-N was greater than 100 lbs N/acre to a depth of three or four feet, lint response to N fertilization was minimal. The quantity of soil nitrate above which no response to fertilizer N may be expected can be even lower for dryland locations where water is limiting. Annual soil testing for nitrate to a depth of at least 12 inches will improve fertilizer recommendations, production economics, and be more protective of the environment.

Field studies were conducted in the Upper Gulf Coast in Colorado and Wharton counties to evaluate deep profile N and its influence on cotton yield and fiber quality. Results from deep profile sampling prior to planting showed the following:

Colorado County Location - Dryland

0 - 6 inches – 52 lbs N
6 - 12 inches – 47 lbs N **99 lbs to 12 inches**

12 - 24 inches – 54 lbs N **153 lbs to 24 inches**

According to Texas Cooperative Extension recommendations, 125 lbs of N would be required to meet the 2.5 bale yield goal. Based upon soil N levels (153 lbs N to 24 inches) and the desired yield goal, it was concluded that no supplemental N would be applied to these plots. The remainder of the study area received 80 lbs. N fertilizer per grower practice. All other management factors were treated similarly across the N treated and untreated plots. The study was designed as a randomized complete block with three replications. Plot dimensions were 8 rows wide (36 inch rows) x 500 feet long. Soil at the location was a silt loam and variety was DPL 455 BR. Plots were harvested with a four row cotton picker and a weighing boll buggy was used to determine seed cotton weights. Subsamples were obtained for fiber quality analysis.

Results for lint yield and fiber quality parameters are presented in Tables 1 and 2. No differences were observed for cotton lint yield or fiber quality between the two N fertility treatments. Yields were very high (2.69 bales/acre) and fiber quality was excellent (loan value over $0.56/lbs) for this location. Field observations indicated that the 0 N plots could have been defoliated about 10 days prior to the 80 N plots and also would have required less defoliant/boll opener. From an input cost perspective, the 0 N plots required less N and also would have required less defoliant, thereby reducing the overall cost of production for this treatment. Additionally, the 0 N treatment was much earlier in maturity which suggests significant risk aversion from inclement weather.

Table 1. Lint Yields, Loan Value and Net Returns/acre as Affected by N Treatments, Colorado County, 2006.

Treatment	Lint Yield Lbs/acre	Loan Value cents/lb	Net Return/acre
80 lbs N/acre	1286	56.57	728
0 lbs N/acre	1281	57.68	739
P>F	0.7146	0.1790	0.5143
LSD	NS	NS	NS
CV%	1.21	1.18	2.34

Table 2. Turnout and Fiber Quality Parameters as Affected by N Treatments, Colorado County, 2006.

Treatment	Turnout %	Micronaire	Length inches	Strength g/tex	Uniformity %
80 lbs N/acre	35.0	3.93	1.12	32.0	81.87
0 lbs N/acre	34.3	3.93	1.13	31.0	82.27
P>F	0.5286	1.000	0.6047	0.3854	0.5825
LSD	NS	NS	NS	NS	NS
CV%	3.12	0.0	2.38	3.52	0.91

Wharton County Location - Dryland

0 - 6 inches –37 lbs N
6 - 12 inches – 12 lbs N **49 lbs to 12 inches**

12 - 24 inches – 18 lbs N **67 lbs to 24 inches**

According to Texas Cooperative Extension recommendations, 100 lbs of N would be required to meet the 2.0 bale yield goal. Based upon soil N levels, an additional 40 lbs of N would be required to meet the 2.0 bale yield goal. Consequently, a N rate study was implemented at this location (20, 40 and 60 lbs N/acre). All other management factors were treated similarly across the study. The study was designed as a randomized complete block with four replications. Plot dimensions were 8 rows wide (36 inch rows) x 200 feet long. Soil at the location was classified as a Lake Charles clay and the variety was DPL 445 BR. Plots were harvested with a two row cotton picker and subsamples were obtained for fiber quality analysis.

Results for lint yield and fiber quality parameter are presented in Tables 3 and 4. No significant differences were observed for cotton lint yield among the N treatments, but there was a numeric trend favoring the 40 and 60 lbs N treatments. Calculated net returns/acre favored the 40 and 60 N treatments. Statistical analysis indicated that the 60 N treatment was significantly greater than the 20 N treatment.

Table 3. Lint Yields, Loan Value and Net Returns/acre as Affected by N Treatments, Wharton County, 2006.

Treatment	Lint Yield Lbs/acre	Loan Value cents/lb	Net Return/acre
20 lbs N/acre	1015	53.88	547 b
40 lbs N acre	1074	54.90	590 ab
60 lbs N/acre	1117	55.07	615 a
P>F	0.1723	0.2414	0.0804
LSD	NS	NS	47.9
CV%	6.22	1.76	5.97

Table 4. Turnout and Fiber Quality Parameters as Affected by N Treatments, Wharton County, 2006.

Treatment	Turnout %	Micronaire	Length inches	Strength g/tex	Uniformity %
20 lbs N/acre	40.3	4.43	1.14	30.17	83.5
40 lbs N/acre	40.8	4.40	1.14	28.95	83.6
60 lbs N/acre	40.3	4.38	1.17	30.45	82.9
P>F	0.5120	0.8473	0.0444	0.1657	0.6527
LSD	NS	NS	0.0189	NS	NS
CV%	1.65	2.76	1.19	3.41	1.29

Based upon these results and the results from previous studies, it is recommended that producers take an annual soil test for nitrate determination to a depth of at least 12 inches. This will improve N fertilizer recommendations and reduce input costs.

Uniform Stacked-Gene Cotton Variety Trials

Each year the choice of which cotton varieties to plant is a major decision each grower must make. To assist Texas cotton producers in remaining competitive in the Upper Gulf Coast area, cotton varieties are evaluated annually at locations that represent the soil and weather conditions of this region. Due to the limited amount of information regarding Bollgard II/Widestrike/Roundup Ready Flex varieties and because of significant grower interest, the focus of our trials was on varieties containing these new technologies.

In 2006, nine stacked-gene cotton varieties were planted at eight different locations (Fort Bend, Wharton, Colorado, Matagorda, Jackson, Calhoun, Refugio and Burleson Counties) to compare lint yield and fiber quality. Varieties included in the trials were DPL 445 BR, DPL 143 B2RF, DPL 164 B2RF, Croplan Genetics 3520 B2RF, Beltwide Cotton Genetics 4630 B2RF, Stoneville 4554 B2RF, DynaGro 2242 B2RF, FiberMax 9063 B2RF, and Phytogen 485 WRF. Planting and harvest dates and plot dimensions are presented in Table 5.

Phytogen 485 WRF significantly out-yielded all other varieties, and showed the highest lint value/acre when averaged across locations (1316 lbs./acre and $731/acre, respectively). DPL

143 B2RF ranked second for lint yield and lint value/acre. Stoneville 4554 B2RF, DPL 164 B2RF, FM 9063 B2RF, and DPL 445 BR (trial standard variety) ranked statistically in the third tier behind Phytogen 485 WRF and DPL 143 BR. DPL 143 B2RF had the longest staple length (1.20 inches), with FM 9063 B2RF ranking second (1.19 inches). DPL 445 BR showed the highest turnout percentage across varieties, with Phytogen 485 WRF ranking second. All other varieties were significantly lower in turnout percentage (2%) than DPL 445 BR and Phytogen 485 WRF.

Table 5. Planting and Harvest Dates, and Plot Dimensions for Uniform Stacked Gene Cotton Variety Trials, 2006.

County	Planting Date	Harvest Date	Row Spacing	Plot Dimensions	Area Harvested/plot	Field Area
Refugio	April 4	August 23	38 inches	6 rows x 500 ft.	0.22 acres	5.3 acres
Calhoun	April 4	Sept. 22	32 inches	5 rows x 2645 ft.	0.81 acres	24.3 acres
Jackson	April 10	Sept. 17	38 inches	8 rows x 795 ft.	0.46 acres	13.8 acres
Matagorda	April 6	Sept. 2	40 inches	8 rows x 1170 ft.	0.72 acres	19.5 acres
Wharton	April 7	Sept. 3	39 inches	8 rows x 1300 ft.	0.78 acres	23.4 acres
Colorado	April 3	August 31	36 inches	8 rows x 907 ft.	0.50 acres	13.0 acres
Fort Bend	April 13	Sept. 29	36 inches	10 rows x 1363 ft.	0.94 acres	25.4 acres
Burleson	April 25	Sept. 12	40 inches	4 rows x 575 ft.	0.18 acres	8.7 acres

Table 6. Fort Bend County Uniform Stacked Gene Cotton Variety Trial, 2006
Cooperator: Stazney Farms

VARIETY	YIELD	TURNOUT	MIC	LENGTH	STRENGTH	UNIFORMITY	LOAN VALUE	LINT VALUE
	lbs/A	%		inches	g/tex	%	cents/lb	$/A
Phytogen 485 WRF	1393.3 a	36.0 a	4.73 a	1.13 b	29.23 ab	83.60 a	54.80 a	763.3 a
FiberMax 9063 B2RF	1371.3 ab	33.7 cd	4.33 cd	1.17 a	29.93 ab	82.33 bcd	55.65 a	761.3 a
Delta Pine 143 B2RF	1366.0 ab	35.0 ab	4.23 def	1.19 a	29.27 ab	82.10 cd	54.68 a	747.7 ab
Stoneville 4554 B2RF	1285.0 bc	34.3 bc	4.57 b	1.10 d	29.80 ab	82.27 bcd	54.28 a	697.7 bcd
Delta Pine 164 B2RF	1262.3 cd	33.3 cd	4.43 c	1.14 b	28.73 b	82.03 cd	55.40 a	699.3 bc
Beltwide Cotton Genetics 4630 B2RF	1250.0 cd	33.0 d	4.20 ef	1.13 b	26.87 c	82.93 abc	56.63 a	707.3 ab
Delta Pine 445 BR	1220.7 cd	35.7 a	4.67 ab	1.12 bc	30.90 a	83.10 ab	56.57 a	691.3 bcd
DynaGro 2242 B2RF	1187.3 cd	33.0 d	4.30 de	1.10 cd	26.93 c	81.63 d	54.68 a	649.3 cd
CropLan 3520 B2RF	1174.7 d	32.7 d	4.17 f	1.12 bcd	26.93 c	82.80 abc	54.53 a	640.7 d
Location Mean	**1279**	**34.1**	**4.40**	**1.13**	**28.73**	**82.53**	**55.25**	**706**
P>F	0.0083	0.0006	0.0001	0.0001	0.0055	0.0463	0.1569	0.0136
LSD (P=.10)	99.82	1.16	0.115	0.0201	1.750	0.935	NS	57.80
Standard Deviation	70.02	0.81	0.081	0.0141	1.227	0.656	1.1383	40.54
CV%	5.47	2.39	1.83	1.24	4.27	0.79	2.06	5.74

Loan based on $0.5170/lb +/- premiums/discounts according to the 2006 USDA loan chart. Planting date: April 13 Harvest date: September 29 Row Spacing: 36 inches

Table 7. Colorado County Uniform Stacked Gene Cotton Variety Trial, 2006
Cooperator: Mahalitc Farms

VARIETY	YIELD	TURNOUT	MIC	LENGTH	STRENGTH	UNIFORMITY	LOAN VALUE	LINT VALUE
	lbs/A	%		inches	g/tex	%	cents/lb	$/A
Phytogen 485 WRF	1497.3 a	35.0 a	4.37 a	1.193 abc	33.40 a	83.43 a	55.27 cd	827.7 a
Delta Pine 143 B2RF	1339.3 b	32.3 cd	3.53 cd	1.223 a	30.23 cd	81.03 b	56.37 bc	754.7 b
FiberMax 9063 B2RF	1299.0 bc	34.7 ab	3.87 b	1.203 ab	33.23 ab	81.90 b	58.10 a	754.7 b
Stoneville 4554 B2RF	1294.7 bc	33.7 abc	3.80 bc	1.117 e	31.03 c	81.50 b	57.25 ab	741.0 b
Delta Pine 164 B2RF	1229.0 cd	32.3 cd	3.75 bc	1.170 bcd	31.55 bc	81.80 b	57.80 ab	710.3 bc
Delta Pine 445 BR	1173.3 de	34.7 ab	3.87 b	1.150 de	33.13 ab	83.17 a	58.30 a	684.0 c
Beltwide Cotton Genetics 4630 B2RF	1134.3 ef	33.0 bcd	3.17 e	1.160 cd	30.47 cd	81.13 b	53.75 d	609.7 d
Croplan Genetics 3520 B2RF	1125.3 ef	31.3 d	3.23 de	1.140 de	28.93 d	80.93 b	54.08 d	608.7 d
DynaGro 2242 B2RF	1086.7 f	32.3 cd	3.50 cd	1.163 cd	30.20 cd	81.70 b	55.28 cd	600.7 d
Location Mean	**1242.1**	**33.3**	**3.68**	**1.169**	**31.35**	**81.84**	**56.24**	**699**
P>F	0.0001	0.0202	0.0003	0.0024	0.0029	0.0035	0.0006	0.0001
LSD (P=.10)	78.52	1.77	0.317	0.0351	1.726	0.990	1.63	50.24
Standard Deviation	55.08	1.24	0.222	0.0245	1.206	0.691	1.14	35.24
CV%	4.43	3.73	6.03	2.1	3.85	0.84	2.03	5.04

Loan based on $0.5170/lb +/- premiums/discounts according to the 2006 USDA loan chart. Planting date: April 3 Harvest date: August 31 Row Spacing: 36 inches

Table 8. Wharton County Uniform Stacked Gene Cotton Variety Trial, 2006
Cooperator: Michael Beard Farms

VARIETY	YIELD	TURNOUT	MIC	LENGTH	STRENGTH	UNIFORMITY	LOAN VALUE	LINT VALUE
	lbs/A	%		inches	g/tex	%	cents/lb	$/A
Delta Pine 555 BR	1532.7 a	39.0 a	4.37 cd	1.11 de	30.10 cde	81.23 d	56.95 de	872.7 ab
Phytogen 485 WRF	1523.0 ab	36.7 bc	4.67 a	1.14 bc	33.70 b	84.57 a	57.88 abc	881.7 a
Delta Pine 143 B2RF	1476.7 b	35.3 cd	4.00 e	1.18 a	31.00 cd	81.13 d	57.68 bcd	851.7 b
Stoneville 4554 B2RF	1374.7 c	34.7 de	4.47 bc	1.08 e	31.70 c	81.47 d	56.28 e	773.3 cd
FiberMax 9063 B2RF	1360.0 c	35.3 cd	4.33 cd	1.20 a	34.50 b	83.87 abc	58.28 ab	792.7 c
Delta Pine 445 BR	1354.3 c	37.0 b	4.53 ab	1.14 bc	36.40 a	84.17 ab	58.68 a	795.0 c
Delta Pine 164 B2RF	1328.0 cd	35.0 de	4.30 d	1.11 cd	29.90 de	81.53 d	57.20 cd	759.7 de
DynaGro 2242 B2RF	1298.3 de	33.7 ef	4.07 e	1.11 d	29.17 e	81.57 d	57.32 cd	744.7 ef
Croplan Genetics 3520 B2RF	1270.0 e	32.7 f	4.07 e	1.12 cd	31.27 cd	83.27 bc	57.55 bcd	730.7 f
Beltwide Cotton Genetics 4630 B2RF	1258.0 e	33.7 ef	4.03 e	1.15 b	30.63 cde	82.73 c	58.35 ab	734.0 ef
Location Mean	**1378**	**35.3**	**4.28**	**1.13**	**31.84**	**82.55**	**57.62**	**794**
P>F	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0047	0.0001
LSD (P=.10)	48.81	1.37	0.143	0.0273	1.679	1.163	0.8645	25.95
Standard Deviation	34.47	0.97	0.101	0.0193	1.186	0.821	0.6106	18.33
CV%	2.5	2.74	2.37	1.7	3.73	0.99	1.06	2.31

Loan based on $0.5170/lb +/- premiums/discounts according to the 2006 USDA loan chart. Planting date: April 7 Harvest date: September 3 Row Spacing: 39 inches

Table 9. Matagorda County Uniform Stacked Gene Cotton Variety Trial, 2006
Cooperator: Bill Hanson Farms

VARIETY	YIELD	TURNOUT	MIC	LENGTH	STRENGTH	UNIFORMITY	LOAN VALUE	LINT VALUE
	lbs/A	%		inches	g/tex	%	cents/lb	$/A
Phytogen 485 WRF	1069.3 a	31.7 b	4.23 a	1.17 d	32.07 a	83.33 a	56.20 a	602.0 a
Beltwide Cotton Genetics 4630 B2RF	1024.7 ab	31.0 b	3.93 b	1.21 abc	30.77 a	82.83 a	58.15 a	596.0 a
DynaGro 2242 B2RF	1021.0 ab	31.0 b	3.97 b	1.18 cd	29.17 a	82.80 a	57.83 a	590.0 a
Delta Pine 164 B2RF	999.7 abc	33.7 a	4.33 a	1.16 d	32.27 a	82.80 a	58.05 a	580.0 a
Delta Pine 445 BR	948.0 bcd	34.0 a	4.37 a	1.18 cd	33.43 a	82.73 a	58.12 a	551.3 ab
Croplan Genetics 3520 B2RF	909.7 cd	30.7 b	3.87 bc	1.19 bcd	28.53 a	81.50 a	57.50 a	523.0 b
Delta Pine 143 B2RF	897.0 d	31.0 b	3.70 c	1.23 a	32.17 a	82.33 a	56.88 a	509.3 b
Stoneville 4554 B2RF	865.3 d	31.3 b	4.03 b	1.19 bcd	30.70 a	82.17 a	58.25 a	504.0 b
FiberMax 9063 B2RF	742.3 e	30.7 b	4.03 b	1.22 ab	33.00 a	82.87 a	58.08 a	431.0 c
Location Mean	**942**	**31.7**	**4.05**	**1.19**	**31.35**	**82.60**	**57.67**	**543**
P>F	0.0005	0.0041	0.0001	0.0316	0.1903	0.1734	0.1094	0.0009
LSD (P=.10)	93.47	1.45	0.168	0.0325	NS	NS	NS	55.74
Standard Deviation	65.56	1.01	0.118	0.0228	2.271	0.700	0.8524	39.10
CV%	6.96	3.2	2.9	1.92	7.25	0.85	1.48	7.2

Loan based on $0.5170/lb +/- premiums/discounts according to the 2006 USDA loan chart. Planting date: April 6 Harvest date: September 2 Row Spacing: 40 inches

Table 10. Jackson County Uniform Stacked Gene Cotton Variety Trial, 2006
Cooperator: Dale Allen Farms

VARIETY	YIELD	TURNOUT	MIC	LENGTH	STRENGTH	UNIFORMITY	LOAN VALUE	LINT VALUE
	lbs/A	%		inches	g/tex	%	cents/lb	$/A
Phytogen 485 WRF	1097.0 a	34.0 a	4.90 a	1.13 a	28.30 a	82.50 a	53.03 a	581.5 a
Delta Pine 143 B2RF	1014.0 b	34.0 a	4.30 cd	1.18 a	26.45 a	80.05 a	54.45 a	552.0 ab
Delta Pine 164 B2RF	1010.0 b	33.5 a	4.85 a	1.10 a	27.50 a	80.85 a	54.10 a	546.0 abc
Stoneville 4554 B2RF	993.0 bc	33.0 a	4.55 bc	1.14 a	28.75 a	80.95 a	56.60 a	562.0 a
Delta Pine 445 BR	969.0 bcd	34.5 a	4.70 ab	1.10 a	28.90 a	81.35 a	56.63 a	548.5 abc
CropLan 3520 B2RF	925.5 cde	33.0 a	4.10 d	1.11 a	27.30 a	81.00 a	55.38 a	512.5 bcd
Delta Pine 455 BR	920.0 de	34.0 a	4.45 bc	1.10 a	26.30 a	80.50 a	55.40 a	509.5 cd
DynaGro 2242 B2RF	897.0 e	31.0 a	4.30 cd	1.12 a	26.20 a	81.20 a	53.60 a	481.0 d
FiberMax 9063 B2RF	894.0 e	31.5 a	4.45 bc	1.15 a	26.65 a	81.30 a	53.63 a	479.0 d
Beltwide Cotton Genetics 4630 B2RF	893.5 e	30.5 a	4.15 d	1.12 a	27.80 a	81.00 a	54.78 a	489.5 d
Location Mean	**962**	**32.9**	**4.48**	**1.13**	**27.42**	**81.07**	**54.76**	**526**
P>F	0.0069	0.1563	0.0060	0.2396	0.5025	0.2165	0.1049	0.0083
LSD (P=.10)	71.58	NS	0.287	NS	NS	NS	NS	39.78
Standard Deviation	39.05	1.41	0.157	0.0288	1.431	0.684	1.1331	21.70
CV%	4.06	4.27	3.5	2.56	5.22	0.84	2.07	4.12

Loan based on $0.5170/lb +/- premiums/discounts according to the 2006 USDA loan chart. Planting date: April 10 Harvest date: September 17 Row Spacing: 38 inches
*** Two replications harvested for trial

Table 11. Calhoun County Uniform Stacked Gene Cotton Variety Trial, 2006
Cooperator: David Hahn

VARIETY	YIELD	TURNOUT	MIC	LENGTH	STRENGTH	UNIFORMITY	LOAN VALUE	LINT VALUE
	lbs/A	%		inches	g/tex	%	cents/lb	$/A
Delta Pine 455 BR	968.7 a	32.7 b	4.63 a	1.13 a	28.90 ab	83.53 a	54.27 a	526.0 a
Stoneville 4554 B2RF	947.0 ab	32.3 bc	4.20 a	1.12 a	27.60 a-d	82.27 bcd	53.92 a	510.7 ab
Delta Pine 164 B2RF	942.0 ab	31.7 bc	3.97 a	1.16 a	27.00 bcd	82.73 ab	54.63 a	515.0 ab
FiberMax 9063 B2RF	939.0 ab	32.3 bc	4.40 a	1.19 a	29.43 a	81.87 cde	54.42 a	511.3 ab
Phytogen 485 WRF	938.0 ab	34.3 a	4.43 a	1.14 a	29.67 a	81.60 de	54.72 a	513.0 ab
Delta Pine 445 BR	916.7 ab	32.3 bc	4.50 a	1.13 a	27.97 abc	82.53 bc	53.38 a	498.7 ab
DynaGro 2100 B2RF	892.0 ab	31.3 bc	4.03 a	1.13 a	25.67 d	81.07 e	53.73 a	479.3 bc
Beltwide Cotton Genetics 4630 B2RF	885.7 bc	31.0 c	4.17 a	1.15 a	26.30 cd	82.30 bcd	53.92 a	477.7 bc
CropLan 3520 B2RF	876.3 bc	31.0 c	4.13 a	1.16 a	27.60 a-d	82.30 bcd	53.98 a	473.0 bc
Delta Pine 143 B2RF	806.3 c	31.7 bc	4.27 a	1.18 a	27.13 bcd	82.07 bcd	54.25 a	437.3 c
Location Mean	**911.2**	**32.1**	**4.27**	**1.15**	**27.73**	**82.23**	**54.12**	**494**
P>F	0.0870	0.0775	0.1934	0.2164	0.0557	0.0058	0.7196	0.0630
LSD (P=.10)	80.46	1.65	NS	NS	2.071	0.810	NS	43.62
Standard Deviation	56.83	1.17	0.294	0.0337	1.463	0.572	0.6849	30.81
CV%	6.24	3.64	6.88	2.93	5.28	0.7	1.26	6.73

Loan based on $0.5170/lb +/- premiums/discounts according to the 2006 USDA loan chart. Planting date: April 4 Harvest date: September 22 Row Spacing: 32 inches

Table 12. Refugio County Uniform Stacked Gene Cotton Variety Trial, 2006
Cooperator: Jimmy Rathcamp Farms

VARIETY	YIELD	TURNOUT	MIC	LENGTH	STRENGTH	UNIFORMITY	LOAN VALUE	LINT VALUE
	lbs/A	%		inches	g/tex	%	cents/lb	$/A
Delta Pine 445 BR	930.3 a	36.0 a	4.73 a	1.11 c	27.17 d	82.57 a	55.90 a	520.0 a
Phytogen 485 WRF	881.0 ab	33.0 bc	4.70 a	1.17 b	30.07 b	82.97 a	54.95 a	484.0 ab
Croplan Genetics 3520 B2RF	842.0 bc	33.0 bc	4.40 b	1.13 c	27.87 cd	81.97 a	56.20 a	473.3 b
Delta Pine 164 B2RF	841.3 bc	32.3 bc	4.37 b	1.13 c	26.50 d	81.53 a	56.60 a	476.0 b
Stoneville 4554 B2RF	838.7 bc	33.3 b	4.77 a	1.11 c	29.27 bc	82.63 a	55.83 a	468.0 b
Beltwide Cotton Genetics 4630 B2RF	834.7 bc	32.0 cd	4.13 c	1.18 ab	30.03 b	82.30 a	57.67 a	481.3 ab
Delta Pine 143 B2RF	808.7 c	32.7 bc	4.27 bc	1.21 a	30.70 ab	81.63 a	55.80 a	451.7 b
FiberMax 9063 B2RF	701.0 d	31.0 d	4.33 b	1.20 ab	32.40 a	82.30 a	55.88 a	392.0 c
Location Mean	**834.7**	**32.9**	**4.46**	**1.16**	**29.25**	**82.24**	**56.10**	**468**
P>F	0.0017	0.0001	0.0001	0.0009	0.0027	0.2366	0.4807	0.0039
LSD (P=.10)	64.75	1.05	0.137	0.0358	2.039	NS	NS	0.137
Standard Deviation	45.03	0.73	0.095	0.0249	1.418	0.701	1.3668	0.095
CV%	5.39	2.21	2.14	2.15	4.85	0.85	2.44	2.14

Loan based on $0.5170/lb +/- premiums/discounts according to the 2005 USDA loan chart. Planting date: April 4 Harvest date: August 23 Row Spacing: 38 inches

Table 13. Burleson County Uniform Stacked Gene Cotton Variety Trial, 2006
Cooperator: Texas Cooperative Extension

VARIETY	YIELD	TURNOUT	MIC	LENGTH	STRENGTH	UNIFORMITY	LOAN VALUE	LINT VALUE
	lbs/A	%		inches	g/tex	%	cents/lb	$/A
Delta Pine 555 BR	970.0 a	38.0 a	4.10 abc	1.04 h	25.10 e	81.00 bc	52.45 fg	511.0 a
Delta Pine 143 B2RF	918.7 ab	34.0 c	3.53 f	1.13 a	25.53 e	80.20 cd	55.72 abc	510.7 a
Phytogen 485 WRF	908.7 abc	34.0 c	4.17 ab	1.09 bc	28.00 bc	82.27 ab	54.42 b-f	494.7 ab
Delta Pine 444 BR	858.0 bcd	35.0 bc	3.70 ef	1.04 gh	26.13 de	80.87 bcd	51.12 g	438.7 cde
Delta Pine 445 BR	856.0 bcd	36.3 ab	4.00 bc	1.07 cde	29.70 a	82.27 ab	54.75 a-f	467.7 abc
Delta Pine 164 B2RF	826.7 cd	33.7 cd	3.93 cd	1.08 cd	25.87 de	80.23 cd	55.17 a-d	455.3 abc
FiberMax 9063 B2RF	824.7 cd	32.0 de	3.63 ef	1.11 ab	27.20 cd	80.23 cd	57.13 a	470.3 abc
Phytogen 470 WR	814.3 d	34.7 bc	4.03 abc	1.05 d-h	27.83 bc	81.87 ab	54.47 b-f	443.7 bcd
Location Mean	**804**	**33.2**	**3.83**	**1.07**	**26.87**	**80.95**	**53.92**	**434**
P>F	0.0001	0.0001	0.0001	0.0001	0.0001	0.0277	0.0044	0.0001
LSD (P=.10)	86.74	1.91	0.186	0.0269	1.497	1.479	2.4227	55.67
Standard Deviation	62.45	1.38	0.134	0.0194	1.079	1.066	1.7465	40.09
CV%	7.77	4.15	3.5	1.82	4.02	1.32	3.24	9.25

Loan based on $0.5170/lb +/- premiums/discounts according to the 2006 USDA loan chart. Planting date: April 25 Harvest date: September 12 Row Spacing: 40 inches

Burleson County Uniform Stacked Gene Cotton Variety Trial, 2006
Cooperator: Texas Cooperative Extension

VARIETY	YIELD	TURNOUT	MIC	LENGTH	STRENGTH	UNIFORMITY	LOAN VALUE	LINT VALUE
	Lbs/A	%		inches	g/tex	%	cents/lb	$/A
Delta Pine 455 BR	812.3 d	34.3 c	3.77 de	1.04 fgh	26.17 de	79.50 d	53.12 d-g	430.7 c-f
Phytogen 370 WR	782.0 de	34.7 bc	4.20 a	1.07 c-g	27.97 bc	81.17 abc	54.98 a-e	430.0 c-f
Phytogen 480 WR	773.7 de	33.7 cd	4.13 ab	1.08 bc	29.30 ab	82.63 a	56.28 ab	434.0 c-f
Stoneville 4554 B2RF	723.5 ef	31.3 ef	4.00 bc	1.05 e-h	27.23 cd	80.10 cd	52.60 efg	380.5 fgh
Stoneville 4700 B2RF	720.3 ef	30.7 ef	3.57 f	1.07 c-f	25.43 e	81.53 abc	53.52 c-g	386.0 e-h
Beltwide Cotton Genetics 4630 B2RF	715.0 ef	30.3 efg	3.57 f	1.08 bc	26.23 de	80.87 bcd	55.68 abc	398.7 d-g
Croplan Genetics 3020 B2RF	696.0 ef	28.7 g	3.10 g	1.04 fgh	24.87 e	80.27 cd	48.03 h	333.0 h
Stoneville 6611 B2RF	659.3 f	29.7 fg	3.77 de	1.05 e-h	27.30 cd	80.20 cd	53.30 c-g	351.3 gh
Location Mean	**804**	**33.2**	**3.83**	**1.07**	**26.87**	**80.95**	**53.92**	**434**
P>F	0.0001	0.0001	0.0001	0.0001	0.0001	0.0277	0.0044	0.0001
LSD (P=.10)	86.74	1.91	0.186	0.0269	1.497	1.479	2.4227	55.67
Standard Deviation	62.45	1.38	0.134	0.0194	1.079	1.066	1.7465	40.09
CV%	7.77	4.15	3.5	1.82	4.02	1.32	3.24	9.25

Loan based on $0.5170/lb +/- premiums/discounts according to the 2006 USDA loan chart. Planting date: April 25 Harvest date: September 12 Row Spacing: 40 inches

Table 14. Texas Cooperative Extension Uniform Stacked Gene Cotton Variety Trials
Upper Gulf Coast Combined Locations, 2006
Fort Bend, Colorado, Wharton, Matagorda and Jackson Counties

Variety	Lint Yield	Turnout %	Mic	Length inches	Strength g/tex	Unif. %	Loan Value ¢/lb	Lint Value $/A
PHY 485 WRF	1316 a	34.7 b	4.58 a	1.15 c	31.34 b	83.49 a	55.44 d	731 a
DPL 143 B2RF	1219 b	33.5 c	3.95 f	1.20 a	29.82 c	81.33 f	56.01 cd	683 b
DPL 164 B2RF	1166 c	33.6 c	4.33 c	1.14 d	29.99 c	81.78 e	56.51 b	659 c
STV 4554 B2RF	1163 c	33.4 c	4.28 c	1.12 e	30.40 c	81.67 ef	56.53 bc	656 c
DPL 445 BR	1133 cd	35.2 a	4.43 b	1.14 d	32.55 a	82.90 b	57.66 a	654 c
FM 9063 B2RF	1133 cd	33.2 c	4.20 d	1.19 b	31.46 b	82.45 c	56.75 b	644 cd
BCG 4630 B2RF	1112 de	32.2 d	3.90 f	1.15 c	29.31 d	82.13 d	56.33 bc	627 de
DG 2242 B2RF	1098 de	32.2 d	4.03 e	1.13 d	28.33 e	81.78 e	55.74 d	613 ef
CG 3520 B2RF	1081 e	32.1 d	3.89 f	1.13 d	28.59 e	81.90 de	55.81 d	603 f
Regional Mean	1158	33	4.18	1.15	30.20	82.16	56.31	652.25
P>F	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Effects of Selected Mepiquat Chloride Products Applied at Cut-Out on Yield and Fiber Quality

Over the past three years several companies have suggested that applications of mepiquat chloride products applied at cut-out would increase cotton lint yields. Studies were conducted in 2005 and 2006 at numerous locations to assess this strategy. This report addresses a study conducted in 2006 in the Coastal Bend to assess this application strategy.

Treatments included in the study were Mepex Ginout (24 product/acre), Pentia (24 oz product/acre), Stance (8 oz product/acre) and an untreated control. Applications were made at cut-out (Nodes Above White Flower = 4.5) on June 20 to an irrigated field in San Patricio county. The variety was DPL 455 BR. Soil was classified as a Victoria clay and the previous crop was corn. Treatments were applied with a self-propelled sprayer delivering 11 gallons/acre. The stand density was 36,500 plants/acre. Prior to these applications, plant growth regulator use had been managed by the grower. The study was arranged as a randomized complete block with four replications. Plot dimensions were 6 rows (30 inch row spacing) x 300 ft. long. The study was harvested with a 6-row John Deere 9986 picker on August 15 and a weighing boll buggy was used to determine seed cotton weights. Subsamples were obtained for fiber quality analysis.

Lint yields and fiber quality results are presented in Table 15. Lint yields were exceptional for this region, yielding over 3.75 bales/acre. No significant differences were observed among the treatments for lint yield or any fiber quality parameters. Final plant heights (31.5 inches) and total nodes (21 nodes) did not differ among the treatments.

Based on this study and previous research, applications of plant growth regulators (mepiquat chloride products) at cut-out are not recommended as a means of increasing lint yield or improving fiber quality.

Table 15. Effects of Cut-Out Applications of Selected Mepiquat Chloride Products on Lint Yield and Fiber Quality, San Patricio County 2006.

Treatment	Lint yield (lbs/acre	Micronaire	Length (inches)	Strength (g/tex)	Uniformity%
Untreated	1779	3.83	1.16	29.65	82.75
Mepex Ginout 24 oz	1829	3.83	1.15	30.15	81.90
Pentia 24 oz	1771	3.65	1.14	29.52	82.27
Stance 8 oz	1831	3.77	1.15	29.30	82.43
P>F	0.4446	0.2728	0.8182	0.7424	0.3947
$LSD_{p=0.10}$	NS	NS	NS	NS	NS
CV%	3.52	3.54	1.96	3.74	0.81

Effects of Selected Mepiquat Chloride Products on Yield, Fiber Quality and Plant Growth

Several new plant growth regulator products have been introduced into the market-place over the past two years. A study was conducted in Burleson county to assess several products for their influence on lint yield, fiber quality and plant growth regulation.

Products included in the study were Mepex Ginout (mepiquat chloride 4.2% + kinetin 0.0025%), Pentia (mepiquat pentaborate 9.6%), Pix Plus (mepiquat chloride 4.2% + bacillus cereus), and Stance (mepiquat chloride 8.4% + cyclanilide 2.1%). The variety was DPL 445 BR, the soil at this location was classified as a Ships clay, and the study was dryland. Treatments were applied at match-head square stage (June 12) and at first bloom (June 26). The study was arranged as a randomized complete block with six replications. Plot dimensions were four rows (40 inch row spacing) x 800 ft. long. Treatments were applied with a self-propelled sprayer delivering 11 gallons/acre. The previous crop was corn. Stand density was 42,000 plants/acre. Plots were harvested with a four row picker on September 8 and a weighing boll buggy was used to determine seed cotton weights. Subsamples were obtained for fiber quality determinations.

Lint yields, fiber quality parameters and final plant height results are presented in Table 16. Lint yields were not significantly different among the treatments ($P>F = 0.1253$). Staple length was increased by all products when compared to the untreated control. Differences in length uniformity were also noted among products. Final plant height was significantly reduced by all products when compared to the untreated. Final plant height in the untreated control was 43.4 inches. Pentia, Pix Plus, and Stance reduced plant height by 10 inches (33 inches tall) compared to the untreated.

Results from this study are similar to past research and indicate that all products in this class of plant growth regulators are very similar in their ability to reduce plant growth. Although popular culture purport lint yield increases associated with the use of these products, results from controlled field research studies seldom corroborate this alleged attribute.

Table 16. Effects of Selected Mepiquat Chloride Products on Yield, Fiber Quality and Plant Height, 2006.

Treatment	Lint Yield lbs/A	Mic	Length inches	Strength g/tex	Unif %	Height inches 7-27-06
Untreated	980	4.00	1.083 c	29.75	83.28 c	43.4 a
Mepex Ginout 6 oz/A	987	3.97	1.107 b	30.43	83.68 bc	35.3 b
Pentia 6 oz/A	1068	4.03	1.122 ab	30.42	83.92 ab	33.0 c
Pix Plus 6 oz/A	1036	3.97	1.125 ab	30.47	84.35 a	32.8 c
Stance 2 oz/A	987	4.05	1.130 a	30.58	83.83 abc	32.9 c
P>F	0.1253	0.8365	0.0075	0.7720	0.0898	0.0001
LSDP=0.10	NS	NS	0.02	NS	0.617	1.77
CV%	6.54	3.89	1.91	3.99	0.74	5.0

Cotton Seedling Control with Herbicides

Due to the drought conditions experienced in the Rio Grande Valley and the Coastal Bend in 2006, thousands of acres were dry planted to comply with crop insurance guidelines. Following crop insurance adjustment, widespread rainfall was received across the regions. As a result, producers were faced with destroying the emerged cotton. Due to wind erosion and economic issues, herbicidal control of emerged cotton seedlings was viewed as a best alternative to tillage. Consequently, to respond to this need a field study was established to identify the most effective and economical herbicides for destroying emerged cotton.

A field study was established in Burleson county on May 12, 2006, to determine the most effective products for terminating cotton seedling growth. Sixteen treatments were applied to DPL 143 BGIIRF cotton at the 2-3 true leaf stage of growth. All treatments were applied in 15 gallons of water per acre to insure adequate plant coverage which is essential to most of the herbicides examined. Treatments were replicated three times and arranged in a randomized complete block design. The control ratings (expressed in table 17) were based upon the percent of plant tissue in the plots that was desiccated (destroyed) for all treatments, except those containing 2,4-D. Regarding the 2,4-D treatments, the control is expressed as percentage of plant injury. Final ratings were taken 21 days after initial applications.

Gramoxone Max (9-11 oz./acre) and Ignite 280 (16.5-33 oz./acre) all provided greater than 95% plant destruction. It should be noted that these evaluation ratings were made taking into consideration the entire plant (leaves, stem, terminal). Generally most plants were completely

destroyed, but a few might have had a small percentage of green terminal or stem growth. When comparing the herbicides in this test, it should be noted that only Valor offers residual control of weeds and can affect certain crop rotations. Considering both effectiveness and economics, Gramoxone Max was the superior product in the study.

Table 17. Cotton Seedling Control with Various Herbicides, 2006.

Treatment	Rate (product/acre)	Control %
Aim	0.33 oz	48
Aim	0.50 oz	65
ET 751	0.75 oz	68
ET 751	1.0 oz	75
Gramoxone Max	9 oz	96
Gramoxone Max	11 oz	98
Gramoxone Max	13 oz	99
2,4-D amine	12 oz	67
2,4-D amine	16 oz	82
2,4-D amine	20 oz	83
Valor	0.75 oz	94
Valor	1.0 oz	92
Valor	1.5 oz	94
Ignite	16.5 oz	97
Ignite	22 oz	97
Ignite	33 oz	99

Boll Opener x Harvest Timing Study

Most growers use boll openers (ethephon products) to speed the boll opening process and insure an earlier harvest. The rate of boll opening is determined by several factors, but it primarily related to temperature and ethephon rate. Generally in the south Texas environment, suitable temperatures (>90F) for rapid boll opening are the norm and the value of boll openers may be minimized when applied to cotton that is greater than 70% open. The objective of this project was to conduct three harvest timings following the application of harvest aids (with and without boll openers) to cotton at 50% open boll, and evaluate yield at each harvest.

Products included in the study were Dropp SC (3.2 oz), Dropp SC (1.6 oz) + Prep (24 oz – 1.13 lbs ethephon), and Dropp SC (1.6 oz) + First Pick (64 oz – 1.14 lbs ethephon). The variety was DPL 445 BR, the soil at this location was classified as a Ships clay, and the study was dryland. Harvest aid treatments were applied at 50% open boll on August 26 and harvests were conducted 7, 11, and 14 days after application using a two row cotton picker. Seed cotton weights were determined and subsamples were obtained for fiber quality analysis. The study was arranged as a randomized complete block with four replications. Plot dimensions were four rows (40 inch row spacing) x 80 ft. long. Harvest aid treatments were applied with a self-propelled sprayer delivering 11 gallons/acre. The previous crop was corn. Stand density was 42,000 plants/acre. The open boll percentage was determined at each harvest.

Figure 1 illustrates the results from the study. The first, second, and third bar represent Dropp alone, Dropp + Prep, and Dropp + First Pick, respectively. Harvest at 7 days after application indicated that the boll opener treatments increased yield by about 100 lbs./acre over Dropp alone (705 vs. 800 lbs/acre). At 7 days after application, the Dropp alone treatment was 81% open compared to the ethephon treatments that were 94% open. Harvest conducted 11 days after application showed no significant differences in yield associated with the three treatments, although there was a positive trend favoring the ethephon treatments (P>F=0.1878). At 11 days after application, all three treatments were 97% open. At the 14 day harvest, no differences were noted for yield or percent open bolls (P>F=0.5690).

Figure 1. Effects of Different Harvest Aid Treatments on Lint Yield and Open Boll Percentage.