Evaluation of New Technology and Production Practices for the Texas Blacklands
Project #06-822TX

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Project Summary

Applied research and educational programs designed to evaluate new technology, and assist growers solve cotton production problems were conducted in the Blacklands region of Texas. The report herein contains results from numerous applied research studies addressing near-term issues. A project was conducted to evaluate the effectiveness of different application timings of 2,4-D amine and Weedmaster in controlling shredded and standing cotton stalks following stripper-harvest. Weedmaster and 2,4-D amine were equally effective in controlling stalks under all three timing scenarios (three days after shredding, 30 minutes after shredding and standing stalks). None of the herbicide treated plots developed hostable fruit during the 71 day duration of the study. 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 (Pentia, Stance, Pix Plus, and Mepex Ginout) for their influence on lint yield, fiber quality and plant growth regulation. Treatments were applied at match-head square stage (June 12) and at first bloom (June 26). Lint yields were not significantly different among the treatments. Staple length was increased by all products when compared to the untreated control. Differences in length uniformity were also noted among products. 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 purported lint yield increases with this type of plant growth regulator are common in popular culture, results from controlled field research studies seldom corroborate this alleged attribute. Field studies were conducted in Williamson County at the Stiles Farm to evaluate deep profile N and its influence on cotton yield and fiber quality. Deep profile soil samples taken prior to planting indicated 66 lbs. N to a depth of 24 inches. A N rate study (0, 20, 40 and 60 lbs of supplemental N) was implemented. No differences were observed for cotton lint yield or fiber quality among the N fertility treatments. Results from this and other deep profile N studies show the economic benefits of deeper profile sampling for determination of residual N. The winter of 2005/2006 was very mild and extremely dry across south and central Texas. Because of these unusual environmental conditions, volunteer cotton was observed across the region in cotton, corn and grain sorghum fields. A herbicide study was conducted to evaluate herbicidal control of mature cotton stalks. Final rating taken 50 days after application showed that 2,4-D amine and Weedmaster at several rates provided 100% control of mature cotton. Field studies were conducted from 2003 to 2006 at the Stiles Farm Foundation to assess the effects of humic acid on cotton lint yield and fiber quality. Treatments included an untreated, 1 gal/acre humic acid, and 3 gal/acre humic acid applied prior to planting. Results from the three-year study indicated that the humic acid treatments (1 or 3 gal/acre) did not significantly affect lint yield or fiber quality parameters in any year. Growers and consultants continue to request third-party information regarding new seed treatment insecticides. A large-plot field study was implemented to assess the effects of Cruiser, Gaucho Grande, and Temik on thrips control and cotton lint yield. Visual differences were evident between the untreated plots and all others. No visual differences were observed among the treated plots and no significant differences in yield were detected among treatments. All products performed similarly for thrips control.

Evaluation of New Technology and Production Practices for the Texas Blacklands
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Evaluation of 2,4-D and Weedmaster for Cotton Stalk Destruction in the Northern Blacklands – Hill County 2006

In its native habitat cotton is a perennial shrub. The perennial growth habit of cotton allows it to regrow following harvest, providing the potential for development of hostable fruit (squares and bolls) for boll weevil feeding and reproduction. Under optimum environmental conditions, cotton plants can generate hostable fruit in three to five weeks following harvest. This provides overwintering weevils with additional food resources, enabling them to survive the winter and infest cotton fields the following spring.

Early harvest and stalk destruction on an area-wide basis are the most effective practices for managing overwintering boll weevils. This is especially important in the eastern/southern regions engaged in the Texas Boll Weevil Eradication Foundation (TBWEF) Program (1,000,000 acres) because timely stalk destruction limits post-harvest spraying operations and saves the Boll Weevil Eradication Program significant funds, funds which are supported with grower assessments. In 2006, TBWEF spent a total of $4,000,000 spraying harvested cotton fields in the Rio Grande Valley ($120,533), South Texas Wintergarden ($505,499), Upper Coastal Bend ($2,354,535), Southern Blacklands ($767,858), and the Northern Blacklands ($252,017) zones.

Shredding and mechanical tillage have been the normal means for destroying stalks, but late summer/early fall rainfall in the Rio Grande Valley, Coastal Bend, Upper Gulf Coast and Blacklands regions generally prolong the stalk destruction process, providing weevils additional food resources. In the Western regions, freezing temperatures generally kill plants before hostable fruit is developed.

Several herbicides have been registered for cotton stalk destruction. Herbicides available include 2,4-D (ester and salt formulations), several dicamba products (Weedmaster, Clarity, Banvel), and Harmony Extra (thifensulfuron-methyl + tribenuron-methyl). For these products to be legal for cotton stalk destruction, the label must contain a section addressing “crop stubble” or specify cotton as the target pest following harvest.

Literature is limited with regard to the best approach for using herbicides for cotton stalk destruction. Sparks et al. (2002) working in the Texas Rio Grande Valley reported that Harmony Extra reduced regrowth and delayed squaring, but only 2,4-D provided acceptable regrowth control. Herbicide applications made shortly after shredding showed the best results, potentially due to the wounding effect and the lack of callus formation. Once the tissue “heals”, and the callus layer is formed, efficacy was reduced. Effectiveness of 2,4-D in non-shredded stalks was generally much less than where stalks were shredded.

Lemon et al. (2004) working in the Upper Gulf Coast of Texas reported excellent control of both shredded and unshredded (standing) stalks with 2,4-D amine at the rate of one pound of active ingredient (a.i.)/acre.

The objective of this project was to evaluate the effectiveness of different application timings of 2,4-D amine and Weedmaster in controlling shredded and standing cotton stalks following stripper-harvest in the northern Blacklands production region.

The study was conducted in the northern Blacklands, near Hillsboro, Texas and was initiated on August 21, 2006. The study design was a randomized complete block with four replications. Each plot was four rows wide x 50 ft. in length. The cotton variety was DPL 445 BR.

Timing treatments included the following: untreated shredded and standing stalks, shredded stalks sprayed three days after shredding, shredded stalks sprayed 30 minutes after shredding, and standing stalks sprayed five days after stripper-harvest. Spray treatments consisted of an untreated, 2,4-D Amine at the rate of 32 oz. product/acre + COC 0.5% v/v (1.0 lbs. of 2,4-D/acre), and Weedmaster 32 oz. product/acre + COC 0.5% v/v (0.25 lbs. of dicamba/acre + 0.72 lbs. of 2,4-D/acre). Due to the spatial inability to randomize the three timings within the study area, this was statistically analyzed as three different studies.

Spray treatments were broadcast applied with a hand-held boom at a volume of 11 gal./acre. Nozzles were TurboT-Jet 11002 spaced 20 inches apart and spray pressure was 35 psi. Ratings were taken 14, 28, 42 and 71 days after treatment (DAT). The total number of live plants present in the second row of each plot was divided by the total number of stalks in the same row to determine the percentage of live plants within each plot. Plants were deemed “live” if they exhibited any green leaf tissue.

Tables 1 – 3 show the results of application timing and herbicides on cotton stalk control 71 DAT. Herbicide treatments applied three days after shredding averaged 18% live plants compared to the untreated check showing 73% live stalks (Table 1). Treatments applied 30 minutes post-shredding had less than 5% live stalks compared to the check which showed 69% live plants (Table 2). Treatments applied to standing stalks harvested five days prior to herbicide application showed only 1% live plants compared to the untreated plots having 76% live stalks.

Weedmaster and 2,4-D amine were equally effective in controlling stalks under all three timing scenarios (three days after shredding, 30 minutes after shredding and standing stalks). None of the herbicide treated plots developed hostable fruit during the 71 day duration of the study. Hostable fruit was observed in the untreated plots as early as 28 days after study initiation. Leaves and branches that were present in the herbicide treated plots were unhealthy, and exhibited classical hormone herbicide symptomology (leaf strapping, tissue thickening, twisting and curling). Most of the regrowth in the herbicide treatments occurred within the first three weeks of the study, with limited growth occurring beyond that point. Emerging seedlings were not controlled by either the 2,4-D amine or the Weedmaster.

Weedmaster and 2,4-D amine were extremely effective in controlling cotton stalks. Regardless of timing, none of the herbicide treatments developed hostable fruit. Final live stalk ratings taken 71 DAT indicated that the 30 minutes after shredding and the standing stalk timings were more effective in controlling regrowth than the three days after shredding timing. Results from this study further indicate how herbicides can be more effective than tillage for cotton stalk destruction.

Table 1. Effects of herbicides on shredded cotton stalks 71 DAT- sprayed three days after shredding.

Treatment	**Herbicide Rate (product/acre)**	**Live Stalk %**
Untreated	---	73
2,4-D amine	32 oz.	22
Weedmaster	32 oz.	16
P>F		0.0001
$LSD_{P=0.10}$		9
CV%		17

Table 2. Effects of herbicides on shredded cotton stalks 71 DAT - sprayed 30 minutes after shredding.

Treatment	**Herbicide Rate (product/acre)**	**Live Stalk %**
Untreated	---	69
2,4-D amine	32 oz.	4
Weedmaster	32 oz.	5
P>F		0.0001
$LSD_{P=0.10}$		12
CV%		35

Table 3. Effects of herbicides on standing cotton stalks 71 DAT - sprayed five days after harvest.

Treatment	Herbicide Rate (product/acre)	Live Stalk %
Untreated	---	76
2,4-D amine	32 oz.	1
Weedmaster	32 oz.	1
P>F		0.0001
$LSD_{P=0.10}$		5
CV%		14

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 purported lint yield increases with this type of plant growth regulator are common in popular culture, results from controlled field research studies seldom corroborate this alleged attribute.

Table 4. 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

Texas Cooperative Extension Blacklands Stacked Gene Cotton Variety Trials – Combined Locations, 2006

Cotton variety trials are annually conducted in the southern and northern Blacklands by the Extension Agents – Integrated Pest Management and the cotton agronomy program. Common varieties from each trial are incorporated into a combined statistical analysis using each location as a replication. Trials were conducted in Williamson and Milam Counties by Dale Mott – EA-IPM, Hill County by Marty Jungman – EA-IPM, and Elllis and Navarro Counties by Glen Moore – EA-IPM.

Results are presented in Table 5. Considering the drought conditions in 2006, yields were better than expected. However, stressful conditions during boll fill negatively affected fiber quality development. Staple, strength and length uniformity were low compared to recent seasons.

Table 5. Texas Cooperative Extension Uniform Stacked Gene Cotton Variety Trials
Combined Locations, 2006
Williamson, Milam, Hill, Ellis and Navarro Counties

Variety	Lint Yield	Mic	Length inches	Strength g/tex	Unif. %	Loan Value ¢/lb	Lint Value $/A
DPL 445 BR	661	3.9 a	33.0	27.9 a	80.3	50.98	344
DPL 444 BR	659	3.3 c	32.9	24.8 bc	80.5	48.42	324
DPL 143 B2RF	650	3.2 c	33.7	22.2 d	77.7	47.42	312
PHY 370 WR	629	3.9 ab	31.1	24.1 cd	78.6	48.32	308
CG 3520 B2RF*	622	3.3 c	32.9	22.7 cd	78.4	47.67	309
STV 4554 B2RF	614	3.4 c	32.5	26.4 ab	78.4	48.81	308
BCG 4630 B2RF**	592	3.2 c	33.1	23.0 cd	79.0	48.57	295
FM 960 B2R	578	3.5 bc	33.5	24.5 bc	78.7	50.32	297
FM 9063 B2RF	573	3.3 c	34.3	26.4 ab	79.3	51.17	298
STV 4357 B2RF**	539	3.3 c	33.2	23.2 cd	78.9	47.99	267
P>F	0.9998	0.0179	0.4317	0.0002	0.5682	0.6085	0.9999
$LSD_{P=0.10}$	NS	0.4	NS	2.06	NS	NS	NS

* Variety 530001G – Sold as brand names CG 3520 B2RF, STV 4700 B2RF, and DG 2242 B2RF
** Variety 450001G – Sold as brand names BCG 4630 B2RF, DG 2520 B2RF, CG 4020 B2RF, STV 4357 B2RF, Americot 1532 B2RF

Managing Deep Profile Nitrogen in the Blacklands 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 Williamson County at the Stiles Farm 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:

Stiles Farm County Location - Dryland

0 - 6 inches – 22 lbs N
6 - 12 inches – 18 lbs N **40 lbs to 12 inches**

12 - 24 inches – 26 lbs N **66 lbs to 24 inches**

According to Texas Cooperative Extension recommendations, 75 lbs of N would be required to meet the 1.5 bale yield goal. Based upon soil N levels (66 lbs N to 24 inches) and the desired yield goal, it was concluded to install a N rate study, with 0, 20, 40 and 60 lbs of supplemental N. All other management factors were treated similarly across the N treated and untreated plots. The study was designed as a randomized complete block with four replications. Plot dimensions were 8 rows wide (38 inch rows) x 200 feet long. Soil at the location was a clay and variety was DPL 444 BR. Plots were harvested with a two row cotton stripper 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 Table 6. No differences were observed for cotton lint yield or fiber quality among the N fertility treatments. Yields were below the desired 1.5 bale yield goal due to very stressful conditions during the growing season (1.27 bales/acre). However, results indicated that the residual N to the 24 inch depth was adequate to meet seasonal needs. Based upon yield and soil test information from this site and assuming a 1.5 bale yield goal the following scenarios can be proposed:

1. If no soil sampling was conducted the grower would have applied 75 to 90 lbs of N fertilizer at a cost of $32/acre (based on $0.40/lbs of N fertilizer).

2. If the grower had sampled to a 6 inch depth (22 lbs N found) he would have applied about 50 lbs N fertilizer at a cost of $20/acre.

3. If the grower had sampled to a 12 inch depth (40 lbs N found), he would have applied about 30 lbs N fertilizer a cost of $12/acre.

4. If the grower had sampled to a 24 inch depth (66 lbs N found) he may applied no N fertilizer at $0/acre.

Results from this and other deep profile N studies show the economic benefits of deeper profile sampling for determination of residual N.

Table 6. Effects of Differing N Rates on Cotton Lint Yield and Fiber Quality, Stiles Farm 2006.

Treatment	Lint Yield (lbs/acre)	Turnout %	Mic	Length (inches)	Strength (g/tex)	Unif %
0 lbs. N	617	35.8	3.83	1.08	26.68	83.78
20 lbs. N	649	35.8	3.55	1.09	26.62	82.47
40 lbs. N	605	36.2	3.70	1.08	27.40	83.15
60 lbs. N	576	35.6	3.47	1.06	25.72	82.43
P>F	0.3349	0.6558	0.2842	0.1862	0.6221	0.1425
$LSD_{P=0.10}$	NS	NS	NS	NS	NS	NS
CV%	8.74	2.6	7.05	1.76	2.96	1.01

Volunteer Cotton Control Study

The winter of 2005/2006 was very mild and extremely dry across south and central Texas. Because of these unusual environmental conditions, volunteer cotton was observed across the region in cotton, corn and grain sorghum fields. This is the first occurrence of this phenomenon experienced by this researcher in over 10 years of conducting cotton programs in the region.

The most significant problems occurred in corn fields and were not discovered until after corn harvest (July – August). Cotton in these corn fields was in various stages of growth, but primarily in the boll fill to open boll stage. Many growers and practitioners had questions regarding chemical control of this mature cotton. Consequently, a study was conducted to evaluate several herbicides and their effectiveness in destroying mature cotton. Due to active Boll Weevil Eradication programs across the region, this was an important issue and several thousands of acres of "corn fields" were treated by the Boll Weevil program.

The study was conducted near College Station in a recently harvested corn field. Cotton stand density was 19,000 plants/acre and plants were in various stages of growth – mid-bloom, late boll fill, and 50 to 100% open boll stages. Treatments were applied August 15 with a hand-held CO_2 backpack sprayer at a volume of 15 gallons/acre. Herbicide treatments and rates are listed in Table 7.

Table 7. Products and Rates Evaluated in Volunteer Cotton Control Study, 2006.

Product	Rate (oz. product/acre)	Rate (lbs. active ingredient/acre)
2,4-D amine	32	1
2,4-D amine	64	2
2,4-D amine	96	3
Weedmaster	32	0.25 dicamba + 0.72 2,4-D
Weedmaster	48	0.375 dicamba + 1.08 2,4-D
Weedmaster	64	0.50 dicamba + 1.44 2,4-D
Ignite 280	29	0.53

Results are presented in Table 8. Visual injury ratings were taken at 7, 14, 21, 28, 35, 40 and 50 days after application. The final rating taken 50 days after application showed that all treatments with the exception of Ignite 280 provided 100% control of volunteer cotton. Final ratings were conducted by selecting 5 random plants/plot and severing the plants three inches above the soil surface. Plants were considered destroyed if no live stalk tissue was observed.

Table 8. Volunteer Cotton Control Study - Ratings for Herbicide Treatments, 2006.

		Rating Dates (control %)						
Treatment	**Rate oz.**	**8-22**	**8-29**	**9-6**	**9-14**	**9-20**	**9-25**	**10-5**
2,4-D	32	52	73	82	100	100	100	**100**
2,4-D	64	55	78	88	100	100	100	**100**
2,4-D	96	62	88	97	100	100	100	**100**
Weedmaster	32	57	77	92	99	100	100	**100**
Weedmaster	48	58	88	97	100	100	100	**100**
Weedmaster	64	62	89	97	99	99	100	**100**
Ignite 280	29	95	95	90	92	92	90	**73**
P>F		0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
$LSD_{P=0.05}$		3.8	7.1	7.3	2.4	2.0	7.2	7.2
CV%		3.9	5.4	5.1	1.6	1.3	4.7	4.8

Effects of Humic Acid on Cotton Lint Yield and Fiber Quality

There are a large number of “non-traditional” products available to agricultural producers which claim to increase crop yields. Most of these products contain no or very small quantities of actual nutrients, but rather claim to increase the uptake or utilization of existing nutrients in the soil or those applied as traditional fertilizer. In order to determine the value of these products, research must be done under production situations on the local level.

Humic acid can be extracted from any material containing well-decomposed organic matter (coal-like materials associated with lignite outcrops -- Leonardite). The humic acid is extracted from this material following treatment with sodium hydroxide, which dissolves much of the organic matter that is present. This solution is then treated with strong acid to produce humic and fulvic acid. Humic acid contains about 55% carbon, 35% oxygen, 4% nitrogen, 1% sulfur and 3% ash.

Field studies were conducted from 2003 to 2006 at the Stiles Farm Foundation near Thrall, Texas to assess the effects of humic acid on cotton lint yield and fiber quality. The 2006 study was abandoned due to poor cotton stand density.

The study site was located at the Stiles Farm Foundation near Thrall, Texas and planting date was early April each year. The soil type was a Burleson clay. Treatments consisted of an untreated, 1 gal/acre humic acid, and 3 gal/acre humic acid. The study was arranged in a randomized complete block design with four replications. Plots were stripper harvested and lint sub-samples were obtained for fiber quality analysis.

In 2003, humic acid at rates of 1 and 3 gallons/acre was combined with commercial fertilizer (75-50-0 + 2 quarts 10% Zn) and applied preplant using a knife-type applicator. An untreated check consisting of the same rate of commercial fertilizer was included. The cotton variety was DP 555BR.

In 2004, plots were reestablished in the same location. A commercial fertilizer rate of 75-15-30 + 1 quart 10% Zn was applied initially. Humic acid rates of 1 and 3 gallons/acre were sidedress applied prior to planting with 30-50-0 + 2 quarts 10% zinc. An untreated check consisting of the same rate of commercial fertilizer was included. The cotton variety was DP 424 B2R.

In 2005, the study was moved to a new location due to potential cotton root rot problems. The humic acid treatments were sidedress applied prior to planting with commercial fertilizer at the soil test recommended rate of 75-0-0. An untreated check consisting of the same rate of commercial fertilizer was included. The variety was DP 444BR.

Results from the three-year study indicated that the humic acid treatments (1 or 3 gal/acre) did not significantly affect lint yield or fiber quality parameters in any year (Tables 1-3). Variations in strength and micronaire were observed in 2003 and 2004, respectively but did not appear to be treatment related. There were no differences observed for other fiber quality parameters in 2003 or 2004.

Table 9. Effects of Humic Acid on Cotton Lint Yield and Fiber Quality, Stiles Farm, 2003.

Treatment	**Lint Yield (lbs/acre)**	**Mic**	**Length (inches)**	**Strength (g/tex)**	**Uniformity**
Untreated	550	3.48	1.133	34.20	83.25
1 gal/acre Humic Acid	550	3.45	1.120	33.42	83.10
3 gal/acre Humic Acid	523	3.45	1.107	32.50	83.05
P > F	**0.8687**	**0.7872**	**0.2947**	**0.0493**	**0.9464**
LSD $_{0.05}$	**NS**	**NS**	**NS**	**1.34**	**NS**
CV%	**14.96**	**5.94**	**1.82**	**2.93**	**1.09**

Table 10. Effects of Humic Acid on Cotton Lint Yield and Fiber Quality, Stiles Farm, 2004.

Treatment	**Lint Yield (lbs/acre)**	**Mic**	**Length (inches)**	**Strength (g/tex)**	**Uniformity**
Untreated	667	3.6	1.09	31.4	81.5
1 gal/acre Humic Acid	753	3.4	1.09	32.0	81.2
3 gal/acre Humic Acid	726	3.7	1.07	31.1	80.9
P > F	**0.7254**	**0.0233**	**0.3755**	**0.7624**	**0.3957**
$LSD_{0.05}$	**NS**	**0.177**	**NS**	**NS**	**NS**
CV%	**17.98**	**2.18**	**1.79**	**4.62**	**0.58**

Table 11. Effects of Humic Acid on Cotton Lint Yield and Fiber Quality, Stiles Farm, 2005.

Treatment	Lint Yield (lbs/acre)	Mic	Length (inches)	Strength (g/tex)	Uniformity
Untreated	772	4.8	1.05	27.7	82.8
1 gal/acre Humic Acid	769	4.9	1.07	28.0	82.8
3 gal/acre Humic Acid	782	4.9	1.08	27.9	83.6
P > F	**0.8252**	**0.7469**	**0.2743**	**0.9420**	**0.1560**
$LSD_{0.05}$	**NS**	**NS**	**NS**	**NS**	**NS**
CV%	**4.03**	**1.85**	**2.03**	**4.57**	**0.67**

Effects of At-Planting and Seed Treatment Insecticides for Early Season Insect Management

Several new seed treatment insecticides have been introduced into the market place over the past two years. Because of ease of management and safety issues these products have gained widespread and rapid acceptance. However, growers and consultants continue to request third-party information regarding these new products.

A large-plot field study was implemented near College Station to assess the effects of Cruiser, Gaucho Grande, Temik and an experimental product from Bayer Crop Science (KC791230) on thrips control and cotton lint yield. Soil applied treatments included Temik (aldicarb) at 3.5 and 5.0 lbs. product/acre, and a Bayer CropScience experimental compound, KC791230 (aldicarb + imidacloprid) at 3.5 and 5.0 lbs. product/acre. Seed treatments included Cruiser (thiamethoxam), and Gaucho Grande (imidacloprid). Additional treatments included Cruiser + Temik at 3.5 lbs. product/acre, Cruiser + Temik at 5.0 lbs. product/acre, Gaucho Grande + Temik at 3.5 lbs. product/acre, Gaucho Grande + Temik at 5.0 lbs. product/acre and an untreated check. The variety was DPL 445 BR and all seed was from the same seed lot. One bag was treated with Cruiser, one bag was treated with Gaucho Grande and the other bag was untreated. All seed had a similar fungicide applied by DPL. Study was planted April 15 and plot dimensions were 4 rows x 600 ft. long. The study was arranged as randomized complete block with four replications. Plots were harvested with a four row picker and subsamples obtained for fiber quality analysis. Ten plants/plot were collected and thrips an aphid numbers determined.

Results are presented in Figures 1-6. Thrips and aphid counts were taken 14, 21 and 28 days after emergence. At the first sampling date, thrips numbers ranged from 2.8 thrips/plant in the untreated to 0.4 thrips/plant in the Gaucho Grande + Temik (5 lbs. product/acre). At 21 days after emergence, thrips numbers ranged from 3.0 thrips/plant in the untreated to 0.48 in the KC791123 (3.5 lbs. product/acre). At 28 days after emergence, a similar pattern was observed among treatments. Visual differences were evident between the untreated plots and all others. No visual differences were observed among the treated plots. Lint yields ranged from 784 lbs./acre for the untreated to 890 lbs./acre for the Gaucho Grande + Temik (3.5 lbs. product/acre). However, no significant differences among treatments were observed (P>F=0.1928, CV% 6.11). Earliness (days to cut-out) was not assessed in the study.

Figure 1.

Effects of Temik, Cruiser, Gaucho Grande, and KC791230 on Number of Thrips/Plant 14 Days After Planting

Brazos River Valley, 2006

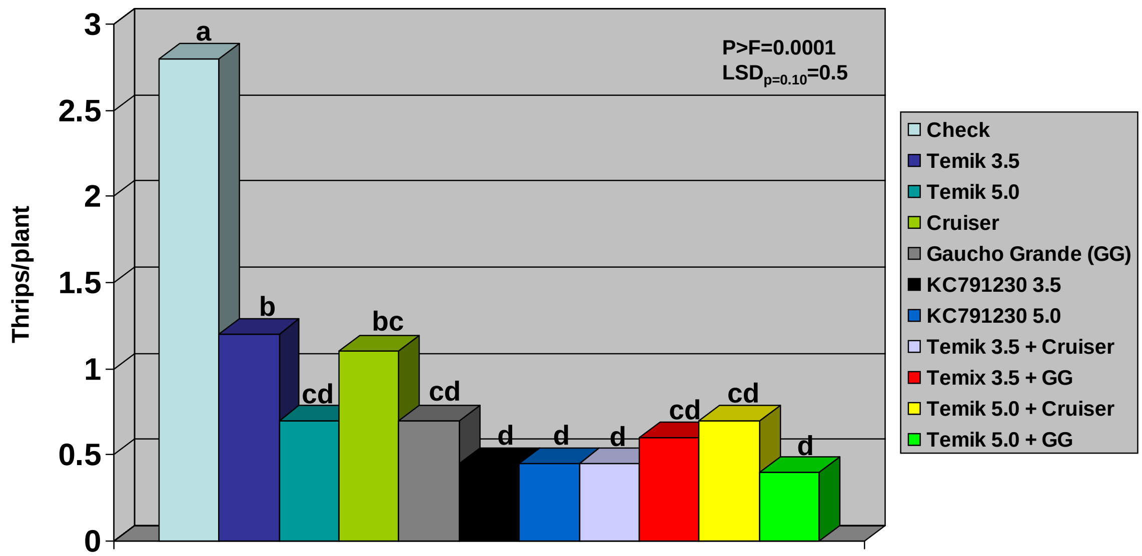

Figure 2.

Effects of Temik, Cruiser, Gaucho Grande, and KC791230 on Number of Thrips/Plant 21 Days After Planting

Brazos River Valley, 2006

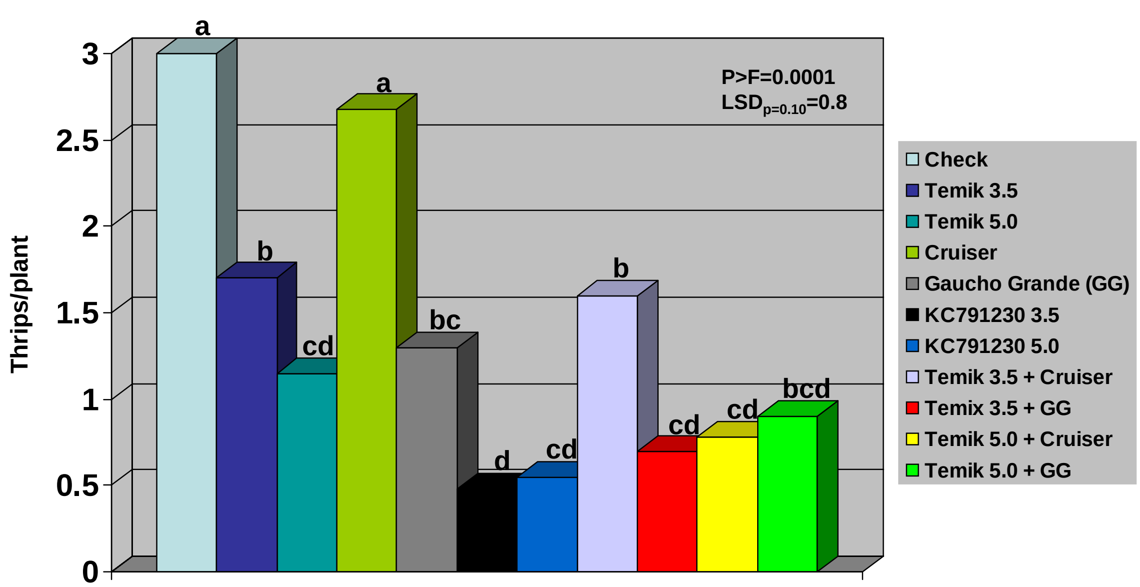

Figure 3.

Effects of Temik, Cruiser, Gaucho Grande, and KC791230 on Number of Thrips/Plant 21 Days After Planting

Brazos River Valley, 2006

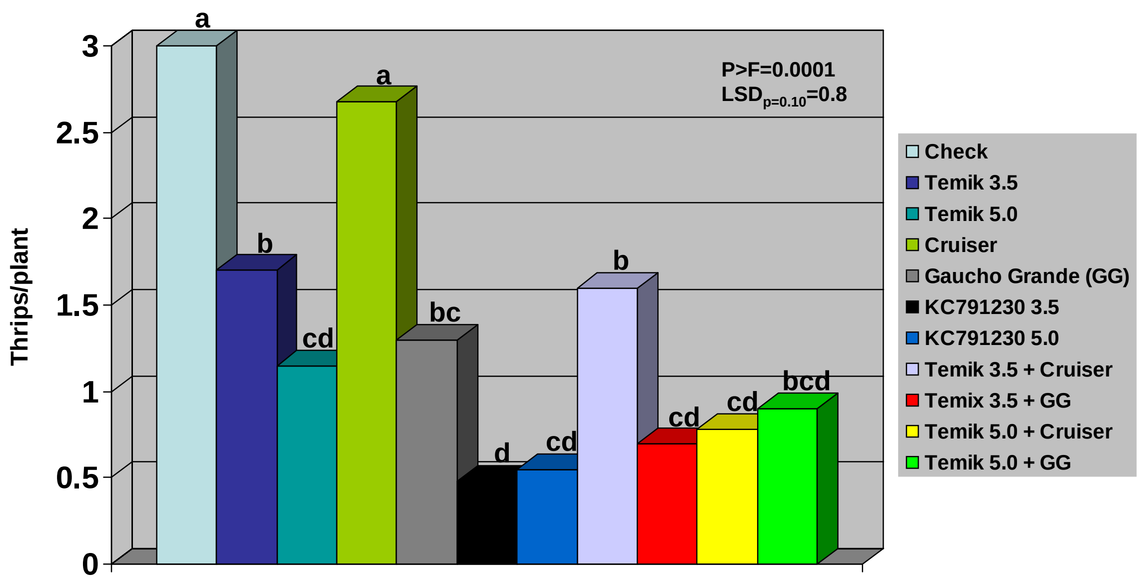

Figure 4.

Effects of Temik, Cruiser, Gaucho Grande, and KC791230 on Number of Thrips/Plant 28 Days After Planting

Brazos River Valley, 2006

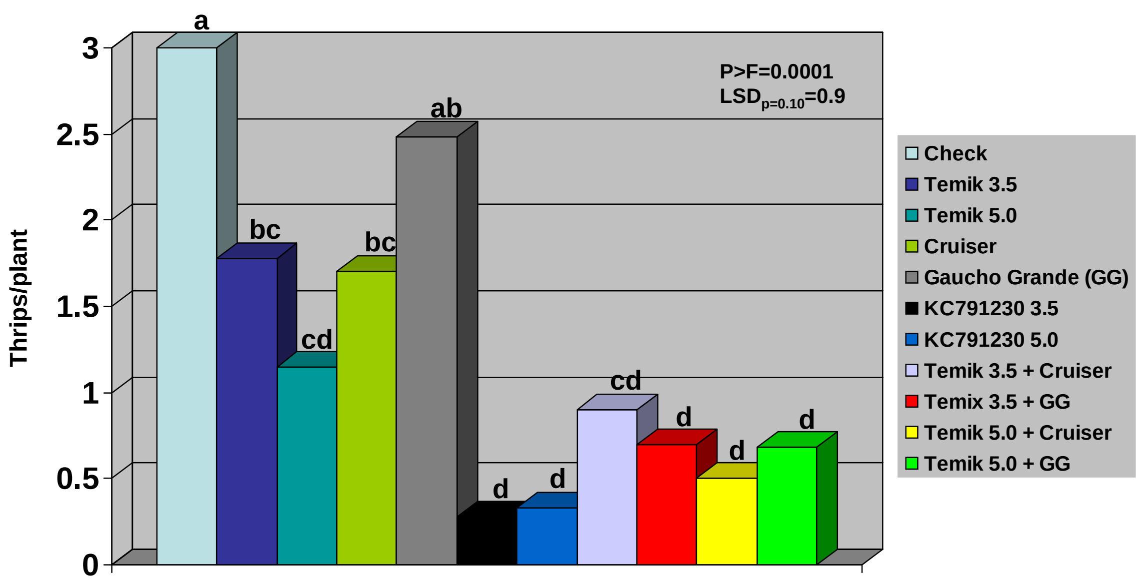

Figure 5.

Effects of Temik, Cruiser, Gaucho Grande, and KC791230 on Number of Aphids/Plant 28 Days After Planting

Brazos River Valley, 2006

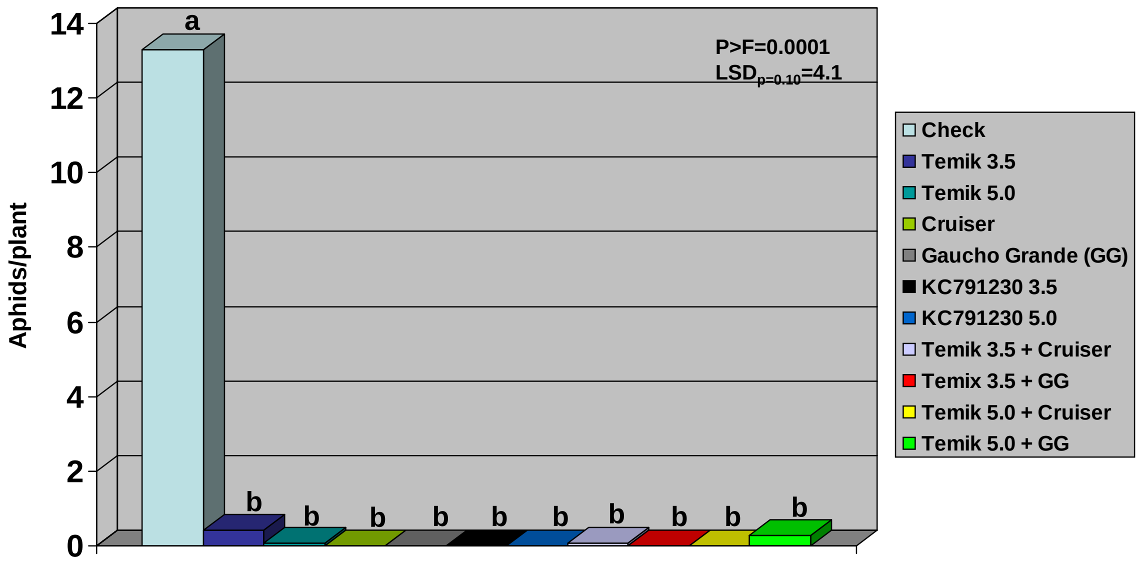

Figure 6.

Effects of Temik, Cruiser, Gaucho Grande, and KC791230 on Cotton Lint Yield

Brazos River Valley, 2006