Texas A&M Agriculture
THE TEXAS A&M UNIVERSITY SYSTEM
Agricultural Research and Extension Center at Lubbock
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Lubbock, TX 79403-6603

The overall mission of AG-CARES is to develop cotton-based cropping systems utilizing new technologies to optimize cotton profitability for the Southern High Plains. This site provides our scientists the ability to scale up their experiments closer to those conditions that producers encounter on their farms. Dawson County is an extremely important location for our research and extension scientists to conduct work on sandy soils in West Texas. We completed our second year on the 20 acres of subsurface drip irrigation at AG-CARES. To date the system has performed well without serious maintenance problems indicative of good water quality. Yields approached 2,000 pounds on higher irrigation treatments in 2006. Work at AG-CARES compliments work conducted at the Helms Farms near Halfway on heavier soils and provides information on management systems for crop production with drip irrigation compared to center pivot systems across the region.

In 2006, there were at least 150 cotton varieties being offered with a few more expected in the coming season. Our Lubbock Center cotton program is addressing this issue through large scale variety tests at multiple locations across the Southern High Plains. We are continuing to look at selected varieties to determine their response under low, medium, and high irrigation levels at AG-CARES. So far our results continue to indicate that all varieties do not respond equally across all irrigation levels. Producers who have farms with differing irrigation capacities may want to carefully choose their varieties.

We thank Lamesa Cotton Growers for their seventeen years of support for the AG-CARES program on behalf of the Texas Agricultural Experiment Station (TAES) and Texas Cooperative Extension (TCE). AG-CARES allows us to leverage funds provided by producers groups, commodities, state agencies, and industries to meet and address agricultural needs of producers in the area. Major funding sources include Lamesa Cotton Growers, Texas State Support Committee for Cotton, Cotton Incorporated, Texas Peanut Producers Board, seed and chemical companies, and businesses in Lamesa. Our federal, state and county elected officials continue to provide strong support for the success of AG-CARES.

Lamesa Cotton Growers continue to provide great support, leadership and direction for our programs through their officers: Matt Farmer, Jerry Chapman, Kevin Pepper and John Farris. Dr. Randy Boman, and Tommy Doederlein (TCE), and Drs. Wayne Keeling (TAES) and Dana Porter (TAES/TCE) provide leadership within the Lubbock Texas A&M Agriculture group. Danny Carmichael has served as our site manager for a number of years. We are indebted to all those mentioned above as well as the many staff members of the Lubbock Research and Extension Center and the Dawson County Extension Office who provided support at this site.

Jaroy Moore *Bob Robinson*

Jaroy Moore
Resident Director of Research

Bob Robinson
Regional Program Director -

Texas Agricultural Experiment Station
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THE LAMESA COTTON GROWERS WOULD LIKE TO THANK THE FOLLOWING FOR THEIR CONTRIBUTIONS TO THE AG-CARES PROJECT:

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Delta & Pine Land Seed Co.
DuPont Crop Protection
Monsanto Co.
National Cotton Council
National Peanut Board
Sam Stevens, Inc.
Stoneville Seed Co.
Syngenta
Texas Peanut Producers Board

TITLE:

Replicated Transgenic Cotton Variety Demonstration Under LEPA Irrigation, AG-CARES, Lamesa, TX - 2006

AUTHORS:

Jeff Wyatt, Tommy Doederlein, Mark Kelley, Randy Boman, and Aaron Alexander; CEA-AG/NR Dawson County, EA-IPM Dawson/Lynn Counties, Extension Program Specialist- I Cotton, Extension Agronomist-Cotton, and Graduate Student Assistant

MATERIALS AND METHODS:

Varieties: Varieties were Roundup Ready Flex, Widestrike/Roundup Ready Flex, or Bollgard II/Roundup Ready Flex "Stacked." Those included All-Tex Summit B2RF, All-Tex Apex B2RF, Deltapine 117B2RF, Deltapine 143B2RF, Stoneville 4554B2RF, FiberMax 9058F, FiberMax 9068F, Beltwide Cotton Genetics 3255B2RF, FiberMax 9063B2RF, Deltapine 147RF, Stoneville 4700B2RF, Beltwide Cotton Genetics 4630B2F, and PhytoGen 485WRF.

Experimental design: Randomized complete block with 3 replications

Seeding rate: 4.0 seeds/row-ft in 40-inch row spacing (John Deere Max Emerge vacuum planter)

Plot size: 4 rows by variable length due to circular pivot rows (357-872 ft long).

Planting date: 3-May

Weed management: Trifluralin was applied preplant incorporated at 1.25 pt/acre across all varieties on 7-April. A preemergence application of glyphosate was made on 11-May at 48 oz/acre to help control volunteer peanuts. Two over-the-top applications of Roundup Original Max at 32 oz/acre with ammonium sulfate (17lb/100 gallons of spray mix) were applied on 3-June and 12-July.

Irrigation: LEPA irrigation

April:	2.25"	May:	1.10"
June:	4.50"	July:	4.50"
August:	3.60"	September:	0.00"
Total irrigation:	15.95"		

Rainfall:

April:	0.60"	July:	0.30"
May:	0.50"	August:	3.50"
June:	0.50"	September:	3.75"
Total rainfall:	9.15"		
Total moisture:	25.10"		

Insecticides: Temik was applied in-furrow at planting at 3.5 lb/acre. No other insecticides were applied at this site. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.

Fertilizer management: Preplant fertilizer consisting of 10-34-0 was applied at a rate of 100 lb/acre on 12-April. An additional 120 lb N/acre using 32-0-0 was fertigated in four 30 lb N/acre increments during the growing season.

Harvest aids:	A custom application of 1.5 pt/a Boll'd (6-lb ethephon/gal) plus 6.0 oz/a Ginstar EC was applied via ground rig at 70 percent open bolls on 29-September. A follow-up application of Gramoxone Max at 16 oz/acre plus 1.5 oz/acre ET with 1% crop oil was aerially applied on 13-October.
Harvest:	Plots were stripper harvested on 6-November using a commercial John Deere 7445 with field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas A&M University Agricultural Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the International Textile Center at Texas Tech University for HVI analysis, and Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning costs were based on $2.45 per cwt. of bur cotton and seed value/acre was based on $125/ton of seed. Ginning costs did not include checkoff.
Seed and technology cost:	Seed and technology costs were calculated using the appropriate seeding rate (seed/row-ft) for the row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet with Monsanto Cap Cost Thresholds. available at: http://www.plainscotton.org/Seed/seedindex.html

RESULTS AND DISCUSSION:

Significant differences were noted for most parameters measured at this location (Tables 1 and 2). Lint turnout ranged from a low of 32.8% for PhytoGen 485WRF to a high of 35.9% for FiberMax 9058F. Lint yields varied from a low of 1048 lb/acre for Beltwide Cotton Genetics (BCG) 4630B2F to a high of 1249 lb/acre for Stoneville 4554B2RF. An average seed turnout of 48.5% was observed at this location and ranged from a high of 49.9% (All-Tex Summit B2RF) to a low of 46.5 (Deltapine 117B2RF). Seed yield was highest for Deltapine 143B2RF (1726 lb/acre) and lowest for Deltapine 117B2RF (1439 lb/acre). Lint loan values ranged from a low of $0.5058/lb to a high of $0.5703/lb for PhytoGen 485WRF and FiberMax 9068F, respectively. Lint value per acre was determined by multiplying lint yield (lb/acre) by lint loan value ($/lb). FiberMax 9058F had the highest lint value of $672.40/acre and the lowest value of $538.88 was observed for PhytoGen 485WRF. Seed value ($/acre), based on $125.00/ton of seed, ranged from $107.86 to $89.94 (Deltapine 143B2RF and Deltapine 117B2RF, respectively). When adding lint and seed values, total values ranged from a high of $771.63/acre for FiberMax 9058F to a low of $633.83/acre for Deltapine 117B2RF. After subtracting ginning cost (based on $2.45/cwt bur cotton) and seed/technology cost, net value per acre ranged from a high of $648.24 (FiberMax 9058F) to a low of $500.92 (Deltapine 117B2RF), a difference of $147.32. Two Roundup Ready Flex varieties and two Bollgard II/Roundup Ready Flex "stacked" gene varieties were in the statistical upper-tier. Micronaire values ranged from a low of 4.3 for Deltapine 147RF to a high of 5.1 for Stoneville 4554B2RF. Staple length averaged 34.9 across all varieties with a low of 33.5, for Stoneville 4554B2RF and All-Tex Summit B2RF, and a high of 36.3 for

FiberMax 9063B2RF. Percent uniformity ranged from a low of 80.3 (Deltapine 143B2RF) to a high of 82.8 (PhytoGen 485WRF). A test average strength of 28.0 g/tex was observed with All-Tex Summit B2RF producing the lowest value (25.7), and FiberMax 9063B2RF producing the highest (30.5). Elongation averaged 6.8% with a high of 8.3% (Stoneville 4554B2RF) and a low of 5.5% (FiberMax 9058F). Leaf grades were lowest for FiberMax 9058F and 9068F, All-Tex Apex B2RF, and BCG 3255B2F (3.0) and highest for PhytoGen 485WRF (5.0). These data indicate that substantial differences can be obtained in terms of gross value/acre due to variety and technology selection. It should be noted that no inclement weather was encountered at this location prior to harvest. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

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Appreciation is expressed to Danny Carmichael, Research Associate - AG-CARES, Lamesa; and John Everitt, Research Associate - Texas Agricultural Experiment Station (TAES), Lubbock, for their assistance with this project. Further assistance with this project was provided by Dr. John Gannaway - TAES, Lubbock, and Dr. Eric Hequet - Associate Director, International Textile Center, Texas Tech University.

DISCLAIMER CLAUSE:

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

Table 1. Harvest results from the irrigated replicated transgenic cotton variety demonstration, AG-CARES, Lamesa, TX, 2006.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value	
	%	%	lb/acre	lb/acre	lb/acre	$/lb	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre	
FiberMax 9058F	35.9	47.9	3315	1190	1588	0.5648	672.40	99.23	771.63	81.21	42.18	648.24	a
Deltapine 143B2RF	34.8	49.5	3484	1213	1726	0.5450	661.03	107.86	768.89	85.37	57.13	626.39	ab
FiberMax 9068F	35.1	49.0	3174	1115	1555	0.5703	635.96	97.19	733.15	77.76	44.31	611.08	abc
Stoneville 4554B2RF	35.3	47.6	3541	1249	1687	0.5072	633.65	105.44	739.09	86.76	55.68	596.65	abcd
Beltwide Cotton Genetics 3255B2F	33.1	48.6	3436	1136	1671	0.5365	609.54	104.45	713.99	84.17	54.90	574.91	bcde
All-Tex Apex B2RF	33.8	47.2	3234	1093	1527	0.5595	610.92	95.43	706.36	79.24	55.91	571.20	bcdef
FiberMax 9063B2RF	34.0	48.9	3207	1091	1566	0.5500	599.88	97.88	697.76	78.56	51.80	567.40	bcdef
Deltapine 147RF	35.0	48.6	3065	1071	1489	0.5457	584.84	93.07	677.90	75.10	47.68	555.12	bcdef
Stoneville 4700B2RF	32.9	48.5	3273	1076	1589	0.5427	584.07	99.27	683.34	80.17	55.68	547.49	cdef
Beltwide Cotton Genetics 4630B2F	34.0	48.7	3084	1048	1499	0.5492	575.27	93.72	668.99	75.56	54.90	538.54	cdef
All-Tex Summit B2RF	34.1	49.9	3236	1103	1612	0.5170	571.01	100.76	671.77	79.28	56.96	535.52	def
PhytoGen 485WRF	32.8	49.0	3249	1066	1593	0.5058	538.88	99.55	638.42	79.59	54.09	504.74	ef
Deltapine 117B2RF	34.3	46.5	3093	1061	1439	0.5122	543.89	89.94	633.83	75.78	57.13	500.92	f
Test average	34.2	48.5	3261	1116	1580	0.5389	601.64	98.75	700.39	79.89	52.95	567.55	
CV, %	1.9	1.5	6.1	6.3	6.3	1.6	6.9	6.3	6.8	6.1	--	7.6	
OSL	<0.0001	0.0005	0.1216	0.0325	0.0680	<0.0001	0.0123	0.0680	0.0238	0.1213	--	0.0079	
LSD	1.1	1.2	NS	119	139†	0.0147	70.43	8.71†	80.51	NS	--	72.81	

For net value/acre, means within a column with the same letter are not significantly different at the 0.05 probability level.

CV - coefficient of variation.

OSL - observed significance level, or probability of a greater F value.

LSD - least significant difference at the 0.05 level, † denotes LSD at the 0.10 level, NS - nonsignificant.

Note: some columns may not add up due to rounding error.

Assumes:

$2.45/cwt ginning cost.

$125/ton for seed.

Value for lint based on CCC loan value from grab samples and ITC HVI results. Color grades set at 31.

Table 2. HVI fiber property results from the irrigated replicated transgenic cotton variety demonstration, AG-CARES, Lamesa, TX, 2006.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf
	units	32nds inches	%	g/tex	%	grade
FiberMax 9058F	4.6	35.4	80.8	28.0	5.5	3.0
Deltapine 143B2RF	4.5	35.7	80.3	27.9	6.7	4.0
FiberMax 9068F	4.6	36.1	81.8	29.9	6.0	3.0
Stoneville 4554B2RF	5.1	33.5	81.9	29.1	8.3	3.7
Beltwide Cotton Genetics 3255B2F	4.6	34.0	82.4	25.8	7.3	3.0
All-Tex Apex B2RF	4.7	35.1	82.2	26.9	6.8	3.0
FiberMax 9063B2RF	4.6	36.3	81.6	30.5	6.1	4.0
Deltapine 147RF	4.3	35.5	80.9	27.6	5.8	4.0
Stoneville 4700B2RF	4.6	35.1	82.7	26.7	7.2	4.0
Beltwide Cotton Genetics 4630B2F	4.7	35.5	82.1	26.3	7.0	3.7
All-Tex Summit B2RF	4.8	33.5	82.3	25.7	7.1	3.3
PhytoGen 485WRF	4.9	34.1	82.8	29.2	8.2	5.0
Deltapine 117B2RF	4.6	33.9	81.3	29.9	6.5	4.7
Test average	4.6	34.9	81.8	28.0	6.8	3.7
CV, %	1.7	1.5	0.8	3.2	3.7	8.6
OSL	<0.0001	<0.0001	0.0029	<0.0001	<0.0001	<0.0001
LSD	0.1	0.9	1.2	1.5	0.4	0.5

CV - coefficient of variation.

OSL - observed significance level, or probability of a greater F value.

LSD - least significant difference at the 0.05 level.

TITLE:

Cotton Variety Performance as Affected by Low-Energy Precision Application (LEPA) Irrigation Levels at AG-CARES, Lamesa, TX, 2003 - 2006.

AUTHORS:

Wayne Keeling, Jim Bordovsky, Randy Boman, and John Everitt; Professor, Agricultural Engineer-Irrigation, Extension Agronomist-Cotton, and Sr. Research Associate

MATERIALS AND METHODS:

Plot Size: 4 rows by 500 feet, 3 replications
Planting Date: May 7, 2003; May 3, 2004; May 9, 2005; May 3, 2006
Varieties: FiberMax 989 BR, Stoneville 5599 BR, Paymaster 2280 BR
Herbicides: Prowl 3 pt/A PPI
Roundup WeatherMax 22 oz/A POST
Roundup WeatherMax 22 oz/A PDIR
Fertilizer: 130-34-0
Irrigation in-season:

	2003	2004	2005	2006	Avg.
Low	6.6”	7.2”	7.5”	8.0”	7.3”
Medium	8.8”	9.6”	10.0”	12.6”	10.25”
High	11.0”	12.0”	12.0”	16.8”	13.0”

Harvest Date: October 14, 2003; October 19, 2004; October 17, 2005; October 30, 2006

RESULTS AND DISCUSSION:

A trial was conducted in 2003, 2004, 2005, and 2006 to compare effects of three irrigation levels on lint yield and gross revenue per acre for three cotton varieties. Two longer-season “picker” type varieties [FiberMax (FM) 989 BR and Stoneville (ST) 5599 BR] were compared to a “stripper” variety [Paymaster (PM) 2280BG/RR]. In each year cotton was planted in early May, fertilized according to soil test recommendations and harvested in October. Irrigation treatments included a base irrigation (medium) which reflected the irrigation available at AG-CARES. Low and high water treatments were + or – 25% of the base quantity.

In 2006, cotton lint yields ranged from 856 to 1226 lbs/A for the three varieties when averaged across irrigation levels. Highest yields were produced with ST 5599 BR, with similar yields from FM 989 BR and PM 2280 BR (Table 1). When varieties were averaged within each irrigation level, higher yields were produced with the medium irrigation level compared to the low. However, additional irrigation input in the high treatment did not increase yield compared to the medium treatment. Gross revenue comparison shows the same results as lint yields, with highest $/A produced with ST 5599 BR, but gross revenues with FM 989 BR were similar (Table 2). Gross revenues increased from the low to medium irrigation levels, but was not increased with the high irrigation treatments.

When results are compared over a four-year period, highest yields and gross revenues were produced with ST 5599 BR (Tables 3 and 4). For all varieties, yield and gross revenues were increased at the medium irrigation treatment compared to the low irrigation treatment. However, ST 5599 BR was the only variety to respond with higher yields and increased gross revenues with the additional irrigation applied in the high water treatments.

The four years of the study includes two dry years (2003, 2006) and two years with more favorable rainfall (2004, 2005). The longer season "picker" type varieties, and especially ST 5599 BR performed best in the terms of yield and gross revenue across this period. The root-knot nematode resistance of ST 5599 BR contributed to its consistent highest yields compared to the other two varieties.

Table 1. Effects of variety and LEPA irrigation levels on cotton lint yields at AG-CARES, Lamesa, TX, 2006.

Variety	L	M	H	Avg.
	----------lbs lint/A----------			
FM 989BR	603	1119	1149	957 B
PM 2280BG/RR	626	1026	915	856 B
ST 5599BR	844	1358	1447	1216 A
	691 b	1168 a	1170 a	

Table 2. Effects of variety and LEPA irrigation levels on gross revenues at AG-CARES, Lamesa, TX, 2006.

Variety	L	M	H	Avg.
	----------$/A----------			
FM 989BR	292	566	582	480 AB
PM 2280BG/RR	306	496	448	417 B
ST 5599BR	355	607	663	542 A
	318 b	557 a	565 a	

Table 3. Average effect of variety and LEPA irrigation levels on cotton lint yields at AG-CARES, Lamesa, TX, 2003 - 2006.

Variety	L	M	H
	----------lbs lint/A----------		
FM 989BR	852 e	1201 c	1201 c
PM 2280BG/RR	804 e	1018 d	994 d
ST 5599BR	982 d	1287 b	1414 a

Table 4. Average effect of variety and LEPA irrigation levels on gross revenues at AG-CARES, Lamesa, TX, 2003 - 2006.

Variety	L	M	H
	----------$/A----------		
FM 989BR	447 de	638 b	649 b
PM 2280BG/RR	409 e	523 c	517 c
ST 5599BR	474 d	626 b	701 a

TITLE:

Cotton Variety Performance as Affected by Low-Energy Precision Application (LEPA) Irrigation Levels at AG-CARES, Lamesa, TX, 2006.

AUTHORS:

Wayne Keeling, Jim Bordovsky, Randy Boman and John Everitt; Professor, Agricultural Engineer-Irrigation, Extension Agronomist-Cotton, and Sr. Research Associate

MATERIALS AND METHODS:

Plot Size:	4 rows by 500 feet, 3 replications
Planting Date:	May 1
Varieties:	Stoneville 4554 B2RF FiberMax 9063 B2RF Beltwide Cotton Genetics 4630 B2F Delta Pine 143 B2RF
Herbicides:	Prowl 3 pt/A PPI Roundup WeatherMax 22 oz/A POST Roundup WeatherMax 22 oz/A POST
Fertilizer:	130-34-0
Irrigation in-season:	

	Low	Medium	High
Preplant	2.25"		
Stand Establishment	1.4"		
In-season	8.0"	12.6"	16.8"
Total	11.7"	16.3"	20.5"

Harvest Date: October 28

RESULTS AND DISCUSSION:

Four Roundup Ready Flex/Bollgard II varieties, which have performed well in small and large plot variety trials, were selected for planting under three low energy precision application (LEPA) irrigation levels. Irrigation level was based on pumping capacities of 0.12"/d (day), 0.18"/d, and 0.24"/d and total irrigation applied during the growing season amounted to 8.0", 12.6", and 16.8" per acre, respectively. When cotton lint yields were averaged across irrigation levels, yields ranged from 757 to 1001 lbs/A, with highest yields produced with ST 4554 B2RF. (Table 1) When varieties were averaged within an irrigation level, yields ranged from 589 to 1028 lbs/A, with higher yields produced with the medium irrigation compared to the low. The additional irrigation applied in the high irrigation treatment did not increase yields over yields produced with the medium irrigation treatment. The trial was planted May 1 and made excellent early season growth, and with consistent heat unit accumulation, the growing season appeared to favor longer season, more indeterminate varieties.

Gross revenues ($/A) were calculated by multiplying lint yield by loan price. When averaged across irrigation levels, gross revenue ranged from $398-460/A, with no different between varieties (Table 2). When varieties were averaged within an irrigation level, gross revenue ranged from $284-$511/A. Gross revenues were increased at the medium irrigation level compared to the low irrigation treatment. Additional irrigation above the medium level did not increase gross revenues, and net revenues were lower due to increased pumping cost.

Further analysis of these results will be conducted by agricultural economists to compare profitability of varieties and irrigation inputs.

Table 1. Effects of B2/RF variety and LEPA irrigation levels on cotton lint yields at AG-CARES, Lamesa, TX, 2006.				
	L	M	H	Avg.
Variety	---lbs lint/A---			
ST 4554 B2RF	654	1234	1115	1001 A
DP 143 B2RF	602	955	936	849 B
BCG 4630 B2F	556	1074	1072	900 AB
FM 9063 B2RF	544	791	936	757 B
	589 b	1013 a	1028 a	

Table 2. Effects of B2/RF variety and LEPA irrigation levels on gross revenues at AG-CARES, Lamesa, TX, 2006.				
	L	M	H	Avg.
Variety	--$/A--			
ST 4554 B2RF	310	577	494	460 A
DP 143 B2RF	290	437	468	398 A
BCG 4630 B2F	260	535	569	454 A
FM 9063 B2RF	276	424	515	405 A
	284 b	493 a	511 a	

TITLE:

Cotton Variety Performance as Affected by Sub-Surface Drip Irrigation (SDI) Levels at AG-CARES, Lamesa, TX, 2006.

AUTHORS:

Wayne Keeling, Jim Bordovsky, Randy Boman, and John Everitt; Professor, Agricultural Engineer-Irrigation, Extension Agronomist-Cotton, and Sr. Research Associate

MATERIALS AND METHODS:

Plot Size:	4 rows by 400 feet, 3 replications
Planting Date:	May 11, 2006
Varieties:	Stoneville 4554 B2RF
	FiberMax 9063 B2RF
	Beltwide Cotton Genetics 4630 B2F
	Delta Pine 143 B2RF
Herbicides:	Caparol 1 qt/A PRE
	Roundup WeatherMax 22 oz/A POST
	Roundup WeatherMax 22 oz/A POST
Fertilizer:	120-50-0
Plant Growth Regulators:	Pentia 16 oz/A–Early Bloom

Irrigation in-season:

	Medium	High
Preplant	3.3"	4.2"
Stand Establishment	2.4"	3.0"
In-season	14.1"	18.1"
Total	19.8"	25.3"

Harvest Date: October 31, 2006

RESULTS AND DISCUSSION:

The four varieties that were planted in the LEPA irrigation trial were also planted under two irrigation levels using sub-surface drip irrigation (SDI). Irrigation treatments were based on maximum daily irrigation capacities of 0.17"/d (Day) and 0.25"/d. In-season irrigation totaled 14.1" and 18" for the medium and high treatments, respectively. Total irrigation, including preplant, at planting/emergence, and in-season totaled 19.8" and 25.3"/A.

When cotton lint yields for each variety were averaged across both irrigation levels, yields ranged from 1467 to 1721 lbs lint/A, with highest yields produced with DP 143 B2RF (Table 1). ST 4554 B2RF and BCG 4630 B2F produced similar yields to DP 143 B2RF. When yields were compared between SDI irrigation levels, yields were increased from 1449 lbs/A at the medium level to 1771 lbs/A with high irrigation level.

When averaged across irrigation treatments, gross revenues ranged from $782 to $896/ A, with similar returns for each of the four varieties (Table 2). When varieties were averaged within an irrigation level, gross revenues were increased from $733/A to $943/A with additional irrigation input.

Further analysis of these results will be conducted by agricultural economists to compare profitability of varieties and inputs, as well as profitability of LEPA compared to SDI.

Table 1. Effects of variety and SDI levels on lint yields at AG-CARES, Lamesa, TX, 2006.

Variety	M	H	Avg.
	-------------------------lbs lint/A------------------------------		
ST 4554 B2RF	1465	1857	1661 AB
DP 143 B2RF	1492	1951	1721 A
BCG 4630 B2F	1404	1774	1589 AB
FM 9063 B2RF	1433	1501	1467 B
	1449 b	1771 a	

Table 2. Effects of variety and SDI levels on gross revenues at AG-CARES, Lamesa, TX, 2006.

Variety	M	H	Avg.
	-------------------------lbs lint/A------------------------------		
ST 4554 B2RF	781	1012	896 A
DP 143 B2RF	769	999	884 A
BCG 4630 B2F	765	973	869 A
FM 9063 B2RF	776	787	782 A
	773 b	943 a	

TITLE:

Soil Moisture Monitoring under Subsurface Drip Irrigation at AG-CARES, Lamesa, TX, 2006.

AUTHORS:

Dana Porter, Jim Bordovsky, Wayne Keeling, Randy Boman, John Everitt, and Jim Barber, Extension Irrigation Specialist, Agricultural Engineer, Professor, Extension Agronomist - Cotton, Sr. Research Associate, and Research and Extension Assistant

MATERIALS AND METHODS:

Soil moisture monitoring under subsurface drip irrigation was conducted in conjunction with the cotton variety by plant population by irrigation level studies at the AG-CARES farm in 2006. Twenty-one locations within the subsurface drip irrigation study area were monitored weekly over the period June 23–September 22, 2006.

Two-inch diameter aluminum access tubes were installed at each location to a depth of approximately 4 feet (in some cases tubes were installed somewhat shallower due to equipment limitations.) A neutron probe was used to measure soil moisture at 1-ft depth increments (1 ft., 2 ft. and 3 ft. depths) at each location. Gravimetric soil moisture determination from samples collected on-site was used calibrate the neutron probe readings.

Irrigation Treatments: (In-season study period)	High irrigation treatment: ~ 18.4 inches Low irrigation treatment: ~ 11.9 inches
Rainfall: (In-season study period)	~ 6.8 inches

RESULTS AND DISCUSSION:

Total water applied through irrigation and rainfall under the high irrigation water treatment was approximately 93% of the estimated crop evapotranspiration (ET) during the study period. Total water applied for the lower irrigation treatment was approximately 69% of crop ET. Crop ET estimates were obtained from the Texas High Plains Evapotranspiration Network. Further analysis will address total water applications (pre-season and in-season), total crop water uptake, and water use efficiencies. Cumulative cotton ET, irrigation and rainfall for the study period are presented graphically in Figure 1.

Soil moisture (inches of water per inch of soil) at 1-ft, 2-ft and 3-ft depths over the study period is summarized in figure 2. Each point represents a mean of 3 replications. These graphs represent preliminary information; further analysis will include correlation of the soil moisture trends with plant observations taken at the time of soil moisture measurements.

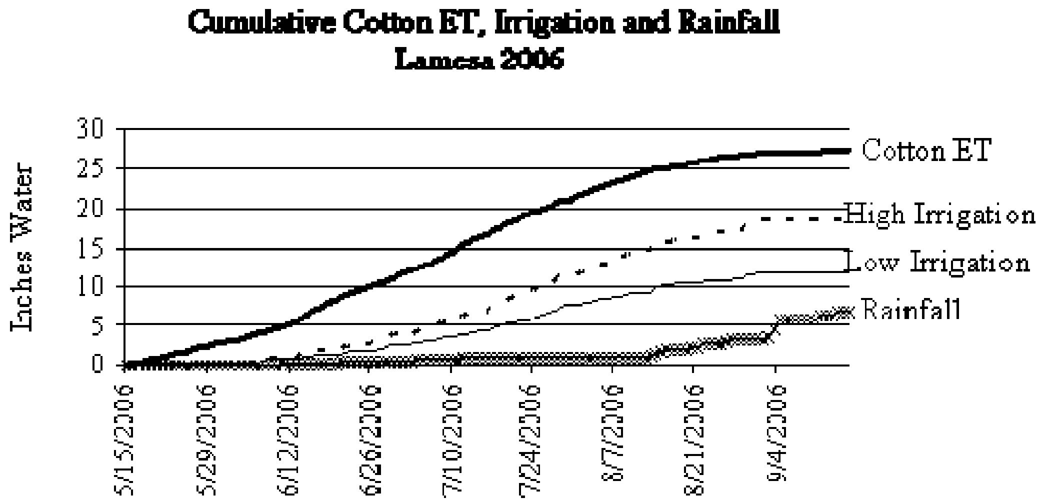


Figure 1. Cumulative cotton ET, irrigation and rainfall, 2006.

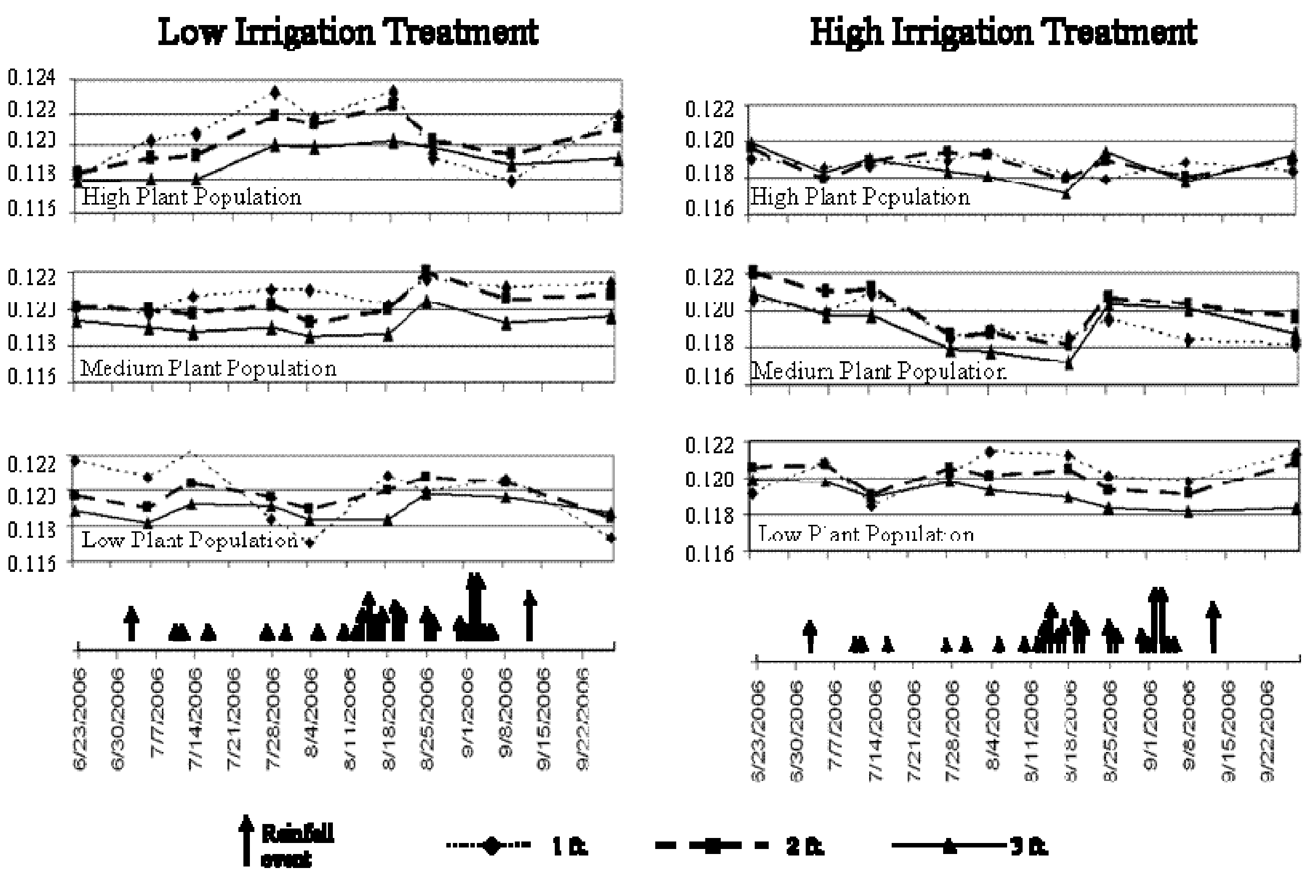


Figure 2. Soil moisture (inches water per inch of soil) at 1-ft, 2-ft and 3-ft depths. These graphs represent preliminary information only; further analysis is pending.

TITLE:

Duration of Nitrogen Fertigation in Subsurface Drip Irrigated Cotton at AG-CARES, Lamesa, TX, 2006.

AUTHORS:

Kevin Bronson, Adi Malapati, Megha Parajulee, Dana Porter, and Jason Nusz, Professor, Research Associate, Associate Professor, Extension Irrigation Specialist, and Technician.

METHODS AND PROCEDURES:

Experimental Design:	Randomized complete block with 3 replications
Plot Size:	53.3 ft wide (16, 40 inch row) and 823 ft long.
Experimental area:	6 ac
Soil Type	Amarillo sandy loam
Variety	BCG4630 B2F
Soil Sampling	1/6 acre grid
N fertilizer rate:	Starter rate of 50 lb N/ac and 40 lb P_20_5/ac
	63 lb N/ ac during the season as fertigation
Duration of fertigation:	21 or 30 days from the start of fertigation (June 15th)
Planting Date	May 10^{th}
Harvest Date	October 31^{st}

RESULTS AND DISCUSSION:

Irrigated cotton (*Gossypium hirsutum* L.) is grown on half of the cotton area in the Southern High Plains (SHP) of Texas Water and nitrogen (N) are the major constraints to cotton production in this region. Subsurface drip irrigation (SDI) systems can convey water to the root zone with a greater efficiency than other systems including furrow irrigation and LEPA systems, and have been increasingly adopted in the Southern High Plains. Recent estimates of cropland in SDI in the SHP exceed 250,000 ac. Nutrient management in these irrigation systems has not received as much attention as water management. The time and rate of N fertilizer injection in SDI cotton need optimizing in order to prevent N loss through leaching and denitrification.

Fine-tuning the timing of N fertigation can result in improved N use efficiency and profit in cotton. The rate of N fertilizer application was based on the pre-plant soil nitrate test, in which the soil nitrate was subtracted from 150 N/ac (N supply target for 2 ½ bale yield goal) to give an N fertilizer recommendation of 113 lb N/ac, of which 63 lb N was injected through the drip system for 21 or 30 days starting at first square.

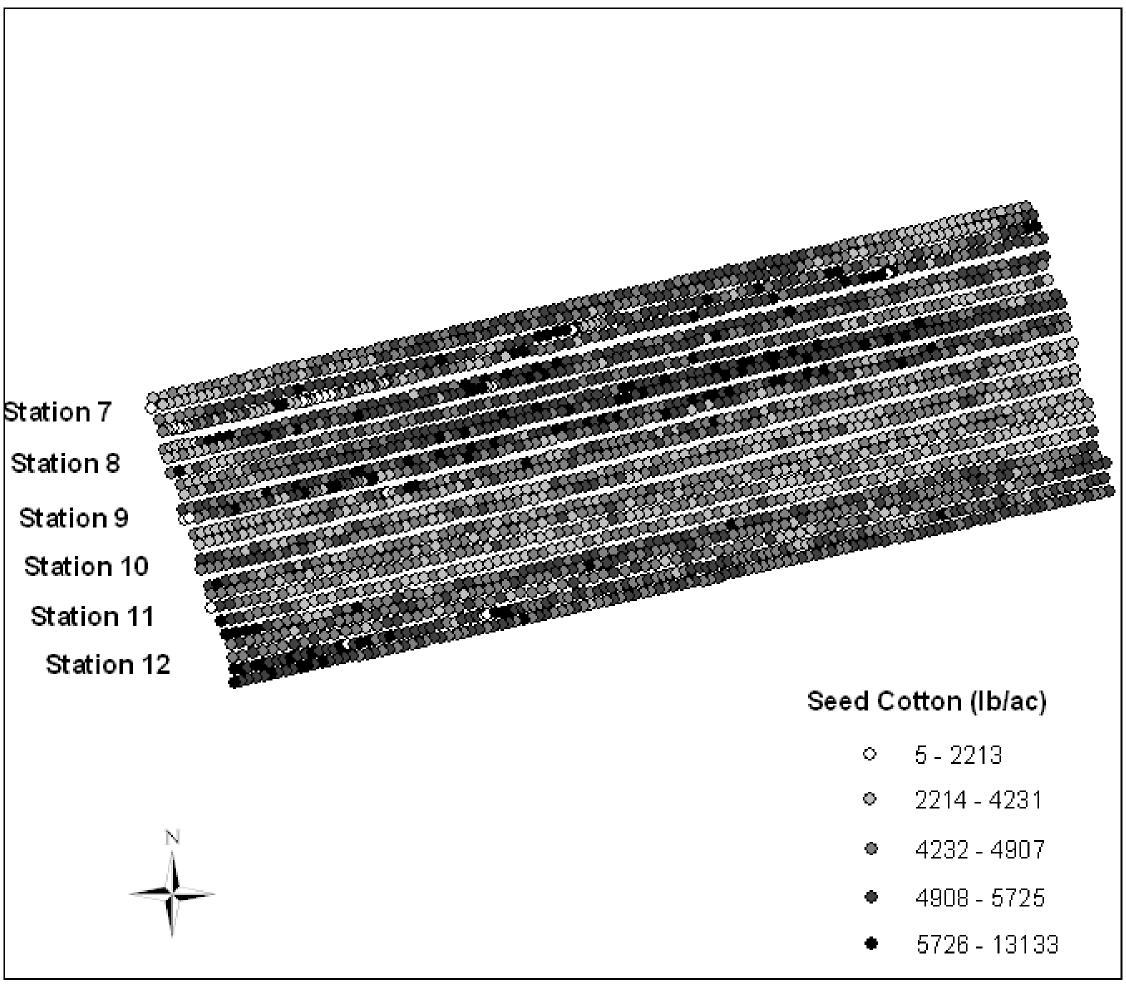
Seed cotton was harvested with a John Deere 7445 four-row stripper harvester equipped with an AgriPlan yield monitoring system. Lint yields responded significantly to the duration of fertigation. Lint yield averaged 1484 and 1379 lb/ac for 21 and 30 day fertigation, respectively. These results thus indicate that plants can efficiently use N fertilizer and yield high if applied within three weeks of first square in sub surface drip irrigation system.

Table 1. Early August leaf chlorophyll meter reading (SPAD), GVI, NDVI, leaf N and lint yield as affected by duration of N fertigation under SDI, Lamesa, TX 2006

Treatment	Leaf SPAD	GVI±	NDVI†	Leaf N %	Lint lb/ac
21 Days	48.3a‡	7.8 a	0.77 a	3.4 a	1485 a
30 Days	47.6a	7.3 a	0.75 a	3.5 a	1379 b

‡Means in all columns followed by the same letter are not significantly different at the 0.05
±Green vegetative index (GVI) = R820 / R550
†NDVI = ((R820-R550)/(R820+R550))
R = percent reflectance at λ (nm)

Yield map of subsurface drip cotton at AG-CARES stations 7-12, 2006



TITLE:

Yield, Quality, Profitability and Drought Avoidance of Cotton Produced at Varying Plant Densities at AG-CARES in Lamesa, TX, 2006.

AUTHORS:

Craig Bednarz, Wayne Keeling, Randy Boman, Jim Bordovsky, Cory Mills and John Everitt, Assistant Professor, Professor, Extension-Agronomist Cotton, Agricultural Engineer-Irrigation, Graduate Research Assistant, and Sr. Research Associate

OBJECTIVE:

The objectives of this work are to determine how lint yield, fiber quality, profitability and drought avoidance are affected by plant density.

MATERIALS AND METHODS:

Studies were conducted using two sub surface irrigation treatments (0.25 inches per day maximum and 0.17 inches per day maximum), three plant densities (32,000, 52,000 and 80,000 plants/acre) and two cultivars (ST.4554 BII/RF and FM 9063 BII/RF). Plant density and yield potential interactions are not well understood and the optimum plant density may change with irrigation level. Thus, an irrigation treatment was included in the study. Throughout the growing season, light interception was monitored. With this information, the relationship between season-long cumulative solar radiation and lint yield will be determined. This information is intended to be useful for determining reasonable yield goals under replant decisions (following hail, etc.) or under various deficit irrigation scenarios. Also, the number of nodes above the first square, the number of nodes above white flower and the number of nodes above cracked boll were monitored throughout the growing season to determine crop maturity. Prior to machine harvest, plants from 10 feet of row were removed from the field and will be hand harvested by fruiting position. In this manner, whole plant yield components (bolls per acre, weight per boll, etc.) and within-boll yield components (seed per boll, fiber per seed, etc.) under differing levels of irrigation availability and plant density will be determined.

RESULTS:

At this time data collection and analysis are not complete.

TITLE:

Accuracy of the Agriplan Yield Mapping System at AG-CARES, Lamesa, TX, 2006.

AUTHORS:

Terry Wheeler, Daviel Archer, Wayne Keeling, John Everitt, Associate Professor, Technician, Professor, and Sr. Research Associate

MATERIALS AND METHODS:

An Agriplan yield mapping system was installed on the AGCARES cotton stripper in 2006. Yields were mapped in pie 2, where the large plot variety by water treatments were conducted. The average yield predicted by the yield mapping system was compared with the bulk yields for each 8-row plot to determine:
1) whether the correction factor to be applied to the yield map of burr-extracted cotton was the same for each variety across all water treatments; and
2) percent difference in the yield map compared to actual yields for bulk plots.

RESULTS AND DISCUSSION:

The correction factor to relate the yield map burr-extracted cotton to actual yield was similar for both FiberMax 989BR (0.38) and Stoneville 5599BR (0.42) across both varieties and all irrigation treatments. However, for Paymaster (PM) 2280BR, the correction factor was higher for the low irrigation treatment (0.44) than for the medium (0.35) or high (0.34) irrigation treatments. This means that yield differences due to water stress would not be accurately represented if a single turnout value were applied to the map for this variety.

The yield map values were adjusted by the average correction factor for each variety (FM 989BR = 0.381, PM 2280BR = 0.377, and ST 5599BR = 0.416). For FM 989BR, the yield map was off for irrigation treatments by 0 to 8%. For PM 2280BR, the yield map was off for irrigation treatments by 7 to 14%. For ST 5599BR, the yield map was off for irrigation treatments by 5 to 17%. The actual yields were compared across all varieties and irrigation treatments for each bulk plot with regression analysis. The mapping system yields described 80% of the variation in actual yield values when using all values. One plot (Stoneville 5599BR, irrigation = medium, replication=3) was an outlier compared to the rest. When this plot was removed from the analysis, then the mapping system predicted yields described 90% of the variation in actual yield.

Table 1. Comparison of yield maps and actual average yield for three varieties and three irrigation rates.

Variety	High irr.[a] lbs/acre	High irr. est. yield	Med. irr. lbs/acre	Med. irr est. yield	Low irr. lbs/acre	Low irr. est. yield
ST 5599BR	1,447	1,691 (+17%)	1,358	1,277 (-6%)	844	804 (-5%)
FM 989BR	1,149	1,145 (-0.3%)	1,119	1,034 (-8%)	603	646 (+7%)
PM 2280BR	915	1,007 (+10%)	1,026	1,097 (+7%)	626	541 (-14%)

[a]Irr.=irrigation treatment.
[b]est. yield was estimated yield by an AgriPlan yield mapping system. Burr-extracted cotton weights were multiplied by 0.381 for Fibermax 989BR, 0.377 for Paymaster 2280BR, and 0.416 for Stoneville 5599BR. Values for est. yield were also in lbs/acre.

TITLE:

Large Plot Comparisons Between AVICTA Complete PACK and Temik 15G at AG-CARES, Lamesa, TX, 2006..

AUTHORS:

Terry Wheeler, Mark Stelter, Victor Mendoza, Daniel Archer, and Evan Arnold, Associate Professor and Technicians

MATERIALS AND METHODS:

Planted:	May 3
Variety:	FiberMax 960B2R
Nematicides:	Temik 15G applied at 3.5 lbs/acre
Sampled roots for galls:	June 14
Midseason nematode sampling:	July 31
Harvest:	November 7

RESULTS AND DISCUSSION:

The only significant (*P*=0.05) treatment effect was for yield. The treatments of Base seed treatment without a nematicide, and Base seed treatment + Trilex (a seed fungicide) + Temik 15G had higher yields than seed overtreated with AVICTA complete pack (Table 1). Plant stand for AVICTA treated seed was lower than the other stands at *P*=0.08 (Table 1). Yield was negatively correlated with root galling early in the season (r = -0.80, *P* = 0.002), and positively correlated with stand (r = 0.57, *P* = 0.05).

Table 1. Effect of nematicides on root-knot nematode and cotton at a site near Lamesa.

Treatment	Galls/plt	Root-knot eggs/500 cc soil	Plants /ft. row	Lbs of lint per acre
Base seed treatment	6.0	13,320	2.8	1,170 a
AVICTA+ base	9.3	4,080	2.4	1,101 b
Temik 15G + base	5.2	7,320	2.9	1,133 ab
Temik 15G + Trilex + base	5.9	14,360	2.9	1,153 a

TITLE:

Effect of Crop Rotation and Rate of Temik 15G on Root-Knot Nematode Reproduction and Cotton Yield at AG-CARES, Lamesa, TX, 2006..

AUTHORS:

Terry Wheeler, Mark Stelter, Victor Mendoza, Daniel Archer, and Evan Arnold, Associate Professor and Technicians

MATERIALS AND METHODS:

Planted:	May 2
Plot size:	40 ft. long, 2 rows wide, with eight replications of each treatment combination.
Variety:	Fibermax 989BR
Thrips ratings:	May 17, May 24, May 30 (present only at low numbers in 2006)
Gall ratings:	10 plants/plot on June 15
Midseason nematode sampling:	July 24
Harvest:	November 9

RESULTS AND DISCUSSION:

The test area was planted in cotton, peanut, and sorghum during 2005, and then in cotton for 2006. The area that was in each 2005 crop, was tested with the three different rates of Temik 15G in 2006. During the winter and spring before the 2006 cotton was planted, the entire test area was in a wheat cover crop. Cotton is an excellent host for root-knot nematode, peanut is not a host at all for the nematode, and sorghum can be a variable host, depending on the individual field. The rotation with peanut appeared to be partially effective when a reduction in the number of galls/plant were seen in the following cotton crop (Table 1). However, by midseason the number of root-knot nematodes was similar across all crop rotations (Table 1). Cotton yield was higher following sorghum (1,052 lbs of lint/acre), than following peanut (970 lbs of lint/acre) or cotton (967 lbs of lint/acre). The lack of yield increase following peanut was surprising, since that has typically been a very good rotation at AGCARES in large-scale plots. However, if there were nematode reproduction in the cover crop during the winter, then much of the benefit of the peanut rotation would have been negated. It was surprising that yields were higher following sorghum, when there was no apparent benefit in terms of reducing root-knot nematode populations. The benefits may be due to other soil properties and not related directly to an effect on the nematode. The yield increase in cotton following sorghum was 85 lbs of lint/acre compared with cotton following cotton. This is probably not large enough to justify the economics of planting sorghum with its limited profitability. There was no effect of Temik 15G rate on yield or any nematode parameters (Table 1). This test was in the same wedge and span as the cover crop test, yet the efficacy of Temik 15G was different than for the cover crop test.

Table 1. Effect of crop rotation and rate of Temik 15G on cotton yield and nematode reproduction.

Treatment	Galls/ root	Root-knot at midseason / 500 cm^3 soil	Lbs of lint/acre
cotton in 2005 and 2006	5.5 a	8,243	967 b
peanut in 2005 and cotton in 2006	2.2 b	9,461	970 b
sorghum in 2005 and cotton in 2006	4.0 a	8,946	1,052 a
Temik 15G = 0	5.3	11,144	1,000
Temik 15G = 3.5 lbs/acre	2.2	10,901	1,000
Temik 15G = 5 lbs/acre	4.3	4,605	990

TITLE:

Effect of Cover Crop and Temik 15G on Cotton Yield and Nematode Reproduction at AG-CARES, Lamesa, TX, 2006.

AUTHORS:

Terry Wheeler, Mark Stelter, Victor Mendoza, Daniel Archer, and Evan Arnold, Associate Professor and Technicians

MATERIALS AND METHODS:

Planted:	May 2
Plot size:	40 ft. long, 2 rows wide, with eight replications of each treatment combination.
Nematicides:	Rate of Temik 15G: 0, 3.5 and 5 lbs/acre
Variety:	Fibermax 989BR
Cover crops:	rye, wheat, none, and oats, however oats died out in places and will not be represented in the results.
Thrips ratings:	May 17, May 25, May 31 (present only at low numbers in 2006)
Gall ratings:	10 plants/plot on June 15
Midseason nematode sampling:	July 18
Harvest:	November 1

RESULTS AND DISCUSSION:

There were more galls present (P = 0.06) on the cotton with a rye cover crop (7.6 galls/root) than wheat (4.6 galls/root) or no cover (3.6 galls/root). However, at midseason there were more (P = 0.01) root-knot nematode eggs in plots with a wheat (14,640 eggs/500 cm^3 soil) or rye cover (9,245 eggs/500 cm^3 soil) than with no cover crop (2,475 eggs/500 cm^3 soil). This suggests that there was some reproduction that occurred on the cover crops compared with the no cover, during the winter. The winter of 2005/2006 was fairly warm. This is different than was seen in this test during the previous year, where results were similar regardless of whether there was a cover or no cover crop present. However, yield was not effected by cover crop (Table 1).

Temik 15G was applied at three rates for each of the cover crops to determine if cover crop could effect the efficacy of Temik 15G. Soil microbes can degrade Temik 15G, and the use of different cover crops, or no cover crop could potentially effect the microbes in the soil. There were more galls/root in the absence of Temik 15G, but differences were not significant (Table 1). This is in contrast to the results in 2005, when there were consistently (and significantly) more galls per plant for the 0 rate of Temik 15G than for either 3.5 or 5 lbs/acre of Temik 15G. Root-knot nematode at midseason was similar across all Temik 15G rates. Yields were higher in the presence of Temik 15G than in the absence of Temik 15G (Table 1). These results are consistent with yield results in 2005. This was the only test conducted at AGCARES where Temik 15G did improve yield in 2006 (out of 7 tests).

Table 1. Effect of cover crop and rate of Temik 15G on yield and nematode reproduction.

Treatment	Galls/ root	Root-knot at midseason / 500 cm^3 soil	Lbs of lint/acre
Temik 15G=0	6.7	8,110	937 b
Temik 15G=3.5 lbs/a	5.3	8,800	1,024 a
Temik 15G= 5 lbs/a	3.9	9,450	1,062 a
Rye cover crop	7.6	9,245 b	1,034
Wheat cover crop	4.6	14,640 a	985
No cover crop	3.6	2,475 c	1,004

TITLE:

Use of Chemical Rotation to Enhance the Efficacy of Temik 15G at AG-CARES, Lamesa, TX, 2006.

AUTHORS:

Terry Wheeler, Mark Stelter, Victor Mendoza, Daniel Archer, and Evan Arnold, Associate Professor and Technicians

METHODS AND MATERIALS:

Planted:	May 2
Plot size:	35.5 ft. long, 4 rows wide, with four replications of each treatment combination.
Variety:	Fibermax 989BR
Treatments from 2005:	Temik 15G at 0, 3.5, and 5 lbs/acre; same three treatments plus an infurrow fungicide (Abound FL) was applied in the furrow at-planting as well; AVICTA Complete Pack was on the seed; Telone II (a fumigant) was applied at 3 gal/acre.
Treatments in 2006:	Each of the 12-row plots from 2005 was divided into three 4-row plots and treated with 0, 3.5, and 5 lbs of Temik 15G/acre.
Gall ratings:	10 plants/plot on June 23
Midseason nematode sampling:	July 26
Harvest:	November 8

RESULTS AND DISCUSSION:

Yield was not affected by the rate of Temik 15G in 2006 (Table 1), however, Temik 15G did reduce the number of galls/plant, indicating that it was effective. Yield was affected by the chemical treatments applied in 2005 (Table 1). However, applying Temik 15G in 2005, did not necessarily create a problem for 2006. When 0 or 3.5 lbs of Temik 15G were applied (and Abound FL was not applied), or AVICTA complete pack in 2005, then yields were significantly higher than when Abound FL was applied without any Temik 15G, or when Temik 15G was applied at 5 lbs/acre. These conclusions do not lend themselves to easy interpretation.

Table 1. Effect of treatments in 2005 and Temik rates in 2006 on nematode reproduction and cotton yield.

Treatment	Galls/ root	Root-knot at midseason / 500 cm^3 soil	Lbs of lint/acre
Temik 15G=0, Abound FL=0 in 2005	14.5	26,943	973 a
Temik 15G=3.5 lbs/a, Abound FL =0 in 2005	10.7	26,963	928 ab
AVICTA complete Pack in 2005	12.5	26,290	917 abc
Temik 15G=5 lbs/a, Abound FL=8 oz/a in 2005	12.8	17,443	867 bcd
Temik 15G=3.5 lbs/a, Abound FL=8 oz/a in 2005	13.3	14,644	834 bcd
Telone II=3 gal/a in 2005	12.3	18,630	824 cd
Temik 15G=0, Abound FL=8 oz/a in 2005	12.8	12,190	811 d
Temik 15G=5 lbs/a, Abound FL=0 in 2005	9.8	17,060	786 d
Temik 15G=0 in 2006	15.7 a	19,308	885
Temik 15G=3.5/a lbs in 2006	9.7 b	25,175	870
Temik 15G=5 lbs/a in 2006	11.5 b	15,458	846

TITLE:

Effect of Vydate CLV Applied After Planting on Nematode Control and Yield at AG-CARES, Lamesa, TX, 2006.

AUTHORS:

Terry Wheeler, Mark Stelter, Victor Mendoza, Daniel Archer, and Evan Arnold, Associate Professor and Technicians

MATERIALS AND METHODS:

Planting date:	May 2
Plot size:	2-rows wide, 35.5 ft. long
Variety was	DeltaPine 555BG/RR for 2 replications, and Paymaster 2280 BG/RR for 2 replications.
Roots sampled for gall rating:	June 15 (10 plants/plot)
Nematicides:	Vydate application at 2-5 leaf stage: June 1 Vydate application 2 wks later: June 14 Vydate application at pinhead size square (ran late): July 4 Vydate application 2 wks later: July 18
Sampling date for nematodes:	July 21
Harvest date:	October 30

RESULTS AND DISCUSSION:

Treatments included four without any nematicide at planting (trt's 1, 2, and 3 with Cruiser, and 4 without any thrips protection), three where AVICTA complete pack was on the seed (trt's 4, 5, and 6), and three treatments where Temik 15G was applied at 5 lbs/acre at planting (trt's 7, 8, and 9). Vydate CLV was applied at the 2-5 leaf stage only (trt 2), or the 2-5 leaf stage and two weeks later (trt 3). Vydate CLV was applied at pinhead size square only (trt's 5, 8) or at pinhead size square and two weeks later (trt's 6 and 9).

A measure of the success of the at-plant treatment is the number of galls/plant at around 35 days after planting. It was extremely dry at this time, even when sampling behind the pivot. Galls/root were higher for plants without any nematicide at planting (4.4/root) compared to those with AVICTA complete Pack (2.9/root) and Temik 15G (1.8/root). However, these numbers were not significantly different at a 95% confidence level. Root-knot nematode population density at midseason was higher for plots that received no nematicide at planting (11,625 eggs/500 cm^3 soil) than those that had AVICTA complete pack (8,562 eggs/500 cm^3 soil) or Temik 15G (7,045 eggs/500 cm^3 soil). However, there were no differences in yield between plots with no nematicide (1,378 lbs of lint/a), plots with AVICTA complete pack (1,316 lbs of lint/acre), and plots with Temik 15G (1,377 lbs of lint/acre). The addition of Vydate CLV resulted in similar yield, nematode counts, and plant stands as the same at-plant treatments without Vydate CLV (Table 1).

Table 1. Effect of Vydate CLV on yield and nematode control.

Trt[a]	Galls/plant	Root-knot nematode eggs/500 cm^3 soil	Plants/ft. row	Lbs of lint/acre
1	4.7	15,240	2.7	1,384
2	6.4	8,340	2.6	1,488
3	5.1	12,780	2.7	1,354
4	4.4	7,175	2.5	1,346
5	3.0	10,740	2.7	1,298
6	1.4	7,770	2.9	1,302
7	1.1	3,885	2.8	1,387
8	1.2	6,180	2.6	1,421
9	3.0	11,070	2.7	1,324
10	1.3	10,140	2.8	1,288

[a]Treatment 1=Cruiser at planting. 2= Cruiser at planting and Vydate CLV applied at 17 oz/a at the 2-5 leaf stage. 3=Cruiser at planting and Vydate CLV applied at 8.5 oz/a at the 2-5 leaf stage and again two weeks later. 4=AVICTA Complete Pack on the seed. 5=AVICTA Complete Pack on the seed and Vydate CLV applied at 17 oz/acre at pinhead size square. 6=AVICTA Complete Pack at planting and Vydate CLV applied at 8.5 oz at pinhead size square and two weeks later. 7=Temik 15G applied at 5lbs/acre at planting. 8=Temik 15G applied at 5 lbs/acre at planting and Vydate CLV applied at 17 oz/a at pinhead size square. 9=Temik 15G applied at 5 lbs/acre at planting and Vydate CLV applied at 8.5 oz/acre at pinhead size square and at two weeks later. Trt 10 = no insecticide or nematicides applied.

TITLE:

Effect of Experimental Nematicide Seed Treatments on Cotton Yield and Root-Knot Nematode Reproduction in Small Plots at AG-CARES, Lamesa, TX, 2006.

AUTHORS:

Terry Wheeler, Mark Stelter, Victor Mendoza, Daniel Archer, and Evan Arnold, Associate Professor and Technicians

MATERIALS AND METHODS:

Planting date:	May 2
Plot size:	2-rows wide, 35.5 ft. long
Varieties:	PM 2280 BG/RR for Syngenta test
	FM 960 B2R for Bayer test
Midseason sampling:	July 21
Harvest:	October 29 (Syngenta) and October 30 (Bayer)

RESULTS AND DISCUSSION:

Due to the presence of agreements with the companies, the results will be summarized by comparing whether any of the seed treatments were as effective as Temik 15G (applied at 5 lbs/acre at planting), and whether any treatments were more effective than the untreated check.

In both tests (Bayer and Syngenta products), there were no significant differences between the untreated checks and any of the nematicide treatments in terms of yield or nematode reproduction. For the Bayer test, the highest yield numerically was found when Temik 15G was applied at planting (1,694 lbs of lint/acre), and the lowest yields with the untreated check (1,499 lbs of lint/acre) and when seed was treated with the insecticide Gaucho Grande (1,463 lbs of lint/acre). All the nematicide seed treatments were intermediate in yield. A number of the treatments in this Bayer test were various concentrations of their new nematicide seed treatment Aeris.

In the Syngenta test, average yield for treatments ranged from 1,138 lbs of lint/acre to 1,180 lbs of lint/acre, which is remarkable low variation for a small plot test. There were no measured parameters that appeared to differ between treatments. Yield differences appeared to be primarily due to differences in plant stand (which explained 15% of the variation in yield), which were random across the treatments.

TITLE:

Effect of Root-Knot Nematodes on Deltapine Varieties at AG-CARES, Lamesa, TX, 2006.

AUTHORS:

Terry Wheeler, Mark Stelter, Victor Mendoza, Daniel Archer, and Evan Arnold, Associate Professor and Technicians

MATERIALS AND METHODS:

Planting date:	May 2
Plot size:	2-rows wide, 35.5 ft. long
Sampling dates for nematodes:	July 18 and September 7
Harvest date:	October 29

RESULTS AND DISCUSSION:

The variety Stoneville (ST) 5599BR has been found over many tests to be more tolerant to root-knot nematode than Paymaster (PM) 2326RR. To be more resistant, a variety must allow fewer nematodes to be formed than a more susceptible variety. ST5599BR allowed similar levels of root-knot nematode as PM 2326RR, so it was not more resistant. However, ST 5599BR would typically yield much higher than PM 2326RR in root-knot nematode fields, so it was more tolerant of the nematode pressure.

At AG-CARES, eight varieties all had similar levels of reproduction at midseason and in the fall (Table 1), so they are all equal in terms of nematode reproduction. ST 5599BR yielded similar to all the varieties in the test. The highest yielding variety was DP 515BR (1,655 lbs/acre) which was consistently higher than the yields for DP 445BR (1,338), DP 555BR (1,365), and DP 117B2R (1,371) (Table 1). It appears, from these results that there are some Deltapine varieties that could be planted with similar confidence as ST 5599BR in root-knot nematode fields. As new varieties are developed, it is important to continue evaluation of varieties, so that those which yield well, and do not allow for high levels of reproduction can be recommended for root-knot nematode fields. None of these varieties tested have what is considered acceptable nematode resistance, however, several have acceptable tolerance.

Vapam, a fumigant, was applied at planting to ½ of the plots for each variety, to evaluate the effect of each variety with normal versus reduced nematode pressure. Vapam reduced the number of root-knot nematodes at midseason in the fumigated plots (2,580 root-knot nematode eggs/500 cm^3 soil) compared to the normal plots (8,725 root-knot nematode eggs/500 cm^3 soil), but had no impact on final yield (1,491 lbs of lint/a for fumigated vs. 1,436 lbs of lint/acre for normal plots) or final nematode populations (26,006 root-knot nematode eggs/500 cm^3 soil for fumigated vs. 13,859 root-knot nematode eggs/500 cm^3 soil for normal plots). Plant stands were higher at harvest for fumigated plots (2.7 plants/ft. of row) than for normal plots (2.4 plants/ft. of row).

Table 1. Effect of root-knot nematodes on resistance and tolerance to varieties.

Variety	Lbs of lint/acre	Root-knot nematode per 500 cm^3 soil at July	September	Plants/ ft. row
DP 515BR	1,655 a*	5,730	17,040	2.8
DP 455BR	1,551 ab	4,785	20,530	2.5
DP 444BR	1,488 abc	7,095	22,450	2.5
ST 5599BR	1,477 abc	5,445	11,555	2.5
DP 117B2R	1,371 bc	3,255	16,650	2.6
DP 555BR	1,365 bc	4,740	12,205	2.6
DP 445BR	1,338 c	8,520	39,095	2.5

*Different letter indicate that means are significantly (P=0.05) different.

TITLE:

Preplant Burndown Herbicides for Horseweed Control at AG-CARES, Lamesa, TX, 2006

AUTHORS:

Wayne Keeling and John Everitt; Professor and Sr. Research Associate

MATERIALS AND METHODS:

Plot Size:	4 rows by 30 feet, 3 replications
Weed:	Horseweed (3-6' tall)
Application Date:	April 4, 2006
Spray Volume:	10 gallons per acre at 26 psi

RESULTS AND DISCUSSION:

Horseweed, sometimes called marestail, can be a major weed problem in no-till or reduced tillage systems. Ten herbicide treatments were compared for horseweed control. Treatments were applied on April 4 to weeds 3-6' tall. Weed control ratings were made 7, 14, and 21 days after treatment (DAT). At 7DAT, Gramoxone Inteon (alone or in combination with Caparol) and Ignite controlled horseweed >90%. At 21DAT, most effective control (98-100%) was achieved with Roundup WeatherMax. The addition of 2,4-D to Roundup WeatherMax was not needed to improve control achieved with Roundup WeatherMax alone. This combination did improve control achieved with 2,4-D alone. Gramoxone Inteon and Ignite treatments were less effective than Roundup WeatherMax, especially when Roundup WeatherMax is applied at the 32 oz rate. Previous research has shown excellent horseweed control with 2,4-D, but in this test Roundup WeatherMax was a superior treatment. The use of 2,4-D is important to prevent development of glyphosate resistant horseweed.

Table 1. Effects of preplant burndown herbicides on horseweed control at AG-CARES, Lamesa, TX, 2006.

Treatment	Rate oz/A	Horseweed Control 4/11	Horseweed Control 4/19	Horseweed Control 4/25
		----------------------%----------------------		
Untreated		0	0	0
Roundup Weathermax	21	53	98	98
Roundup Weathermax	32	75	100	100
2,4-D Amine	32	62	72	80
2,4-D Lv Ester	21	58	67	78
Roundup Weathermax 2,4-D Amine	21 16	75	99	100
Gramoxone Inteon NIS	24	95	96	92
Gramoxone Inteon Caparol NIS	24 26	95	96	93
Ignite AMS	29	90	92	91
Ignite Direx AMS	29 16	80	91	93
LSD (P=.10)		6.87	3.46	3.13
Standard Deviation		4.88	2.46	2.22
CV		7.17	3.06	2.72

TITLE:

Prowl H_2O Applied Preemergence, at Ground-Crack, and Postemergence in Peanut at AG-CARES, Lamesa, TX in 2006.

AUTHORS:

Peter Dotray, Wayne Keeling, Lyndell Gilbert, Professor, Professor, Technician II.

MATERIALS AND METHODS:

Plot Size:	2 rows by 30 feet, 3 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 24
Variety:	Flavorrunner 458
Application Dates:	Preemergence application on April 24; at-crack (AC) May 8; 4 days after crack (DAC) May 12; 7 DAC May 15
Rainfall (May to Oct):	12.3 inches
Irrigation (May to Oct):	17.4 inches
Digging Date:	October 28
Harvest Date:	November 1

RESULTS AND DISCUSSION:

Prowl H_2O is a new formulation of pendimethalin that is registered for use preplant incorporated, preplant surface, preemergence (PRE), early postemergence, at lay-by, and in chemigation systems. In peanut, Prowl H_2O may be applied PPI and PRE (if under an overhead irrigation system). Compared to the Prowl EC formulation, Prowl H_20 is more water soluble and should be easier to incorporate into the soil using water following application. The objective of this study was to examine peanut tolerance to Prowl H_20 applied PRE, at-crack (AC), 4 days after crack (DAC), and 7 DAC under weed-free conditions. Prowl EC was applied PRE for comparison purposes. In 2005, peanut injury following Prowl H_20 at 2 pints did not exceed 4% regardless of time of application (2005 data not shown). Prowl H_20 at 3 pints injured peanut 4 to 9% when applied 4 and 7 DAC, but no other injury was observed. No injury was observed following Prowl EC applied PRE. At harvest, no peanut injury was observed following any treatment. Peanut yield ranged from 4110 to 5157 pounds per acre (lb/A) and were not different from the Prowl EC applied PRE (4757 lb/A) or the untreated control (4666 lb/A). In 2006, peanut injury following Prowl H_20 at 2 pints did not exceed 3% regardless of time of application (Table 1). Prowl H_20 at 3 pints injured peanut up to 5%. No injury was observed following Prowl EC applied PRE. At harvest, no peanut injury was observed following any treatment. Peanut yields ranged from 4973 to 5400 lb/A and were not different from the Prowl EC (5329 lb/A) applied PRE or the untreated control (4705 lb/A). Our results from the two years of this experiment suggest that Prowl H_2O may be safely used in peanut. Similar results were observed in south Texas.

Table 1. Peanut injury and yield as affected by Prowl H_2O applied postemergence in peanut at AG-CARES, Lamesa, TX in 2006.

Treatment	Timing	Rate	Peanut Injury					Yield	Grade
			May 15	May 22	May 30	Jun 19	Sep 29		
		product/A	-------------------------		%		-------------------------	lb/A	%
Non-treated	---	---	0	0	0	0	0	4705	61
Prowl 3.3 EC	PRE	2.4 pints	0	0	0	0	0	5329	59
Prowl H_2O 3.8	PRE	2 pints	0	0	0	0	0	5098	60
Prowl H_2O 3.8	PRE	3 pints	2	0	0	0	0	5351	59
Prowl H_2O 3.8	AC	2 pints	0	0	0	0	0	5116	61
Prowl H_2O 3.8	AC	3 pints	2	0	3	0	0	5066	59
Prowl H_2O 3.8	4 DAC	2 pints	0	0	3	0	0	4973	63
Prowl H_2O 3.8	4 DAC	3 pints	0	0	5	0	0	5400	62
Prowl H_2O 3.8	7 DAC	2 pints	0	0	0	0	0	5053	62
Prowl H_2O 3.8	7 DAC	3 pints	0	0	0	0	0	5212	60
CV								8	4
LSD $_{(0.10)}$			NS	NS	2	NS	NS	NS	NS

TITLE:

Peanut Tolerance to Prowl H_2O incorporated by different irrigation amounts at AG-CARES, Lamesa, TX in 2006.

AUTHORS:

Peter Dotray, Wayne Keeling, Lyndell Gilbert, John Everitt, Professor, Professor, Technician II, Research Associate.

MATERIALS AND METHODS:

Plot Size:	8 rows by 150 feet, 3 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 24
Variety:	Flavorrunner 458
Application Dates:	Preplant incorporated application on April 19
Initial irrigation:	April 19
Rainfall (May to Oct):	12.3 inches
Irrigation (May to Oct):	17.4 inches
Digging Date:	October 28
Harvest Date:	November 1

RESULTS AND DISCUSSION:

Prowl H_2O is a new formulation of pendimethalin that is registered for use preplant incorporated, preplant surface, preemergence (PRE), early postemergence, at lay-by, and in chemigation systems. In peanut, Prowl H_2O may be applied PPI and PRE (if under an overhead irrigation system). Several peanut growers have expressed an interested in this new formulation because of the possibility of improving soil incorporation by use of an overhead sprinkler irrigation system. Although mechanical incorporation may be the preferred method to incorporate dinitroaniline herbicides, water incorporation may be the only method of incorporation in a minimum tillage system. The objective of this research was to examine peanut response to Prowl H_2O applied at 2 pints followed by 0.25 to 1.25 inches of initial irrigation to incorporate the herbicide.

No visual peanut injury was observed following Prowl H_2O at 2 pints regardless of the amount of water used to incorporate the herbicide (Table 1). No differences in peanut yield were observed at harvest. Peanut yield ranged from 4816 to 5015 pounds per acre, which were not different from the non-treated control (5169 pounds/A). This data suggests the peanut tolerance to Prowl H_2O was not affected by the amount of water used to incorporate the herbicide. Additional studies are needed to determine the influence of water incorporation on weed control.

Table 1. Peanut injury and yield as affected by Prowl H_2O incorporated at different irrigation amounts immediately after application at AG-CARES, Lamesa, TX in 2006.

Treatment	Irrigation Amount	Rate	Peanut Injury				Yield
			May 15	May 22	Jun 19	Sep 29	
	inches	product/A	--------------------------------- % -----------------------				lb/A
Non-treated	---	---	0	0	0	0	5169
Prowl H_2O	1.25	2 pints	0	0	0	0	4833
Prowl H_2O	1.0	2 pints	0	0	0	0	4816
Prowl H_2O	.75	2 pints	0	0	0	0	5002
Prowl H_2O	.50	2 pints	0	0	0	0	4959
Prowl H_2O	.25	2 pints	0	0	0	0	5015
CV							3
$LSD_{(0.10)}$			NS	NS	NS	NS	NS

TITLE:

Peanut Tolerance to Cobra Herbicide at AG-CARES, Lamesa, TX in 2006.

AUTHORS:

Peter Dotray, Wayne Keeling, Todd Baughman, Lyndell Gilbert, Professor, Professor, Associate Professor, Technician II.

MATERIALS AND METHODS:

Plot Size:	2 rows by 30 feet, 3 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 24
Variety:	Flavorrunner 458
Application Dates:	Postemergence-topical (PT) 6 leaf (LF), May 22; 15 days after treatment (DAT), June 5; 30 DAT, June 19; 45 DAT, July 3; 60 DAT, July 17
Rainfall (May to Oct):	12.3 inches
Irrigation (May to Oct):	17.4 inches
Digging Date:	October 28
Harvest Date:	November 1

RESULTS AND DISCUSSION:

Cobra (lactofen) has a federal label for use in soybean postemergence (POST) and cotton (postemergence-directed). In 2005, Cobra was labeled for use postemergence (POST) in peanut for control of several annual broadleaf weeds. Cobra is classified as a diphenyl ether (cell membrane disruptor). Peanut tolerance to Cobra is based on the plants ability to metabolize (break down) the herbicide, which often times results in leaf necrosis after application. Key weeds controlled by Cobra include annual morningglory and Palmer amaranth (carelessweed). Cobra weaknesses include many annual broadleaf weeds larger than 4-inches. Possible tank mix partners include Cadre (imazapic), Pursuit (imazethapyr), 2,4-DB, and Select (clethodim). Current label restrictions include: 1) apply after peanuts have at least 6 true leaves, 2) do not apply more than 12.5 fluid ounces per acre per application, 3) do not exceed 25 fluid ounces per acre per season, and 4) do not apply within 90 days of harvest. The objective of this study was to evaluate peanut response to Cobra applied in single and sequential applications at multiple locations over years using different peanut varieties. Field experiments were conducted at four locations in 2005 and five locations in 2006. Locations included Lamesa (Texas High Plains, 2005-06), Lockett (Texas Rolling Plains, 2005-06), Yoakum (South Texas, 2005-06), Ty Ty (Tift County, Georgia, 2005-06), and Plains (Sumter County, GA 2006). The varieties included Tamrun 96, Tamrun OL01, Tamrun OL02, Flavorrunner 458, Georgia Green, and Jupiter. Cobra at 12.5 fluid ounces per acre plus crop oil concentrate at 1% v/v was applied to peanut at 6 leaf (lf), 6 lf followed by (fb) 15 days after the initial 6 lf treatment (DAT), 15 DAT alone, 6 lf fb 30 DAT, 30 DAT alone, 6 lf fb 45 DAT, 45 DAT alone, 6 lf fb 60 DAT, and 60 DAT alone. Peanut injury was evaluated throughout the season. Plots were kept weed-free to prevent any stress due to competition.

Lamesa, 2005. Cobra applied at 6 lf injured Tamrun OL02 18% at 17 DAT, 28% at 45 DAT, and 6% late-season. Injury consisted of stunted plants and chlorotic/necrotic leaves. Cobra applied at 6 lf fb 30 DAT caused the greatest visual injury (33%), and injury was apparent at harvest (7%). Neither injury nor grade loss was observed following any Cobra application relative to the non-treated control yield. Peanut yield ranged from 3761 to 4661 pounds per acre (lbs/A) and were not different from the untreated control (4243 lbs/A) (2005 data not shown).

Lamesa, 2006. Cobra applied at 6 lf injured Flavorrunner 458 up to 6%. When applied at 6 lf fb 60 DAT or 60 DAT, peanut was injured up to 15% (Table 1). No other treatment caused injury exceeding 10%. No yield or grade loss was observed following Cobra alone or in sequential applications. Peanut yield ranged from 4779 to 5556 pounds per acre (lbs/A) and were not different from the untreated control (5232 lbs/A).

Other locations, 2005-2006. At Lockett, TX in 2005 and 2006 (Jupiter variety), Yoakum, TX in 2005 (Tamrun 96) and 2006 (Tamrun OL01), and Ty Ty and Plains, GA in 2006 (Georgia Green), no visual injury exceeded 20% and no yield or grade loss was observed. At Ty Ty, GA in 2005, Georgia Green yield was reduced by 22 to 26% following Cobra at 6 lf fb 43 DAT and following the 43 DAT application.

Summary. In 9 tests over two years in Texas and Georgia, Cobra did stunt and bronze peanut leaves at all locations, but a yield reduction was noted at only one location. Since Cobra cannot be applied until the 6 leaf stage and within 90 days of harvest, the most likely sequential application window would be 6 lf (15 to 20 DAP) fb 15 to 30 DAT (30 to 50 DAP). This suggests that Cobra may be used for about 15 to 35 days early-season. Although these studies were conducted under weed-free conditions, Cobra has been shown to be effective on several annual broadleaf weeds, including Palmer amaranth and ivyleaf morning; however, weed size at application should not exceed 4 inches.

Table 1. Peanut injury and yield as affected by Cobra herbicide at AG-CARES, Lamesa, TX in 2006 [a].

Treatment	Timing	Rate	Peanut Injury							Yield	Grade
			Jun 5	Jun 19	Jul 3	Jul 17	Jul 31	Aug 18	Sep 29		
		lb ai/A	---------------------------- (%) ----------------------------							lb/A	%
Non-treated	---	---	0	0	0	0	0	0	0	5232	62
Cobra [b] + COC	6 LF	0.1953 + 1%	4	3	5	6	3	3	2	5556	62
Cobra + COC fb Cobra + COC	6 LF fb 15 DAT	0.1953 + 1% fb 0.1953 + 1%	4	7	8	9	5	4	5	5059	65
Cobra + COC	15 DAT	0.1953 + 1%		0	7	6	4	5	3	5002	64
Cobra + COC fb Cobra + COC	6 LF fb 30 DAT	0.1953 + 1% fb 0.1953 + 1%	5	2	10	9	6	5	5	5002	62
Cobra + COC	30 DAT	0.1953 + 1%			6	7	1	1	2	4779	64
Cobra + COC fb Cobra + COC	6 LF fb 45 DAT	0.1953 + 1% fb 0.1953 + 1%	4	3	6	10	10	8	4	5110	63
Cobra + COC	45 DAT	0.1953 + 1%				10	11	9	5	4785	64
Cobra + COC fb Cobra + COC	6 LF fb 60 DAT	0.1953 + 1% fb 0.1953 + 1%	4	3	5	5	15	14	3	5170	64
Cobra + COC	60 DAT	0.1953 + 1%					15	14	6	4785	62
CV										7	3
LSD $_{(0.10)}$			1	1	2	1	2	2	3	NS	NS

[a]Abbreviations: 6 LF = 6 leaf; fb = followed by; COC = crop oil concentrate

[b]Cobra at 0.1953 lb ai/A = 12.5 fluid ounces/acre

TITLE:

Peanut Varietal Tolerance to Herbicides Applied Postemergence at AG-CARES, Lamesa, TX in 2006.

AUTHORS:

Peter Dotray, Todd Baughman, Lyndell Gilbert, Professor, Associate Professor, Technician II.

MATERIALS AND METHODS:

Plot Size:	2 rows by 30 feet, 3 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 24
Varieties:	Flavorrunner 458, GP-1, and Tamrun OL02
Application Date:	Postemergence (56 days after planting), June 19
Harvest Date:	November 2

RESULTS AND DISCUSSION:

Differences in varietal tolerance has been an issue in peanut since 2000 when Strongarm applied preemergence (PRE) caused significantly more injury to Flavorrunner 458 compared to Tamrun 96. Subsequent field and greenhouse experiments have demonstrated differences in peanut varietal tolerance when exposed to selected soil applied herbicides under weed free conditions. This type of response has been reported in other crops as well, including cotton and corn. For the past several years, we have been testing for varietal differences following herbicides applied preemergence and postemergence. In 2006, we tested three herbicides applied postemergence. Flavorrunner 458, GP-1, and Tamrun OL02 were planted on April 24 and Cobra, Aim, and ET were applied 56 days after planting. All three of these herbicides are classified as contact inhibitors that cause rapid cell membrane disruption. Cobra is a newly registered herbicide in peanut since the 2005 growing season. Aim and ET are not currently registered for use postemergence-topical, although Aim may be used postemergence-directed.

Aim or ET at 2 ounces per acre injured Flavorrunner 458 28 to 30% 14 days after treatment (DAT). Injury at the end of the season (Sep 29) was most apparent following Aim at 2 ounces (23%), and injury following Aim at 1 ounce or ET at 1 or 2 ounces ranged from 17 to 18%. Plot yield following Aim and ET treatments ranged from 3831 to 4253 lb/A, which was less than the non-treated control (4880 lb/A). Aim at 2 ounces caused the most severe yield loss. Cobra injured peanut no more than 5% and peanut yield was similar to the non-treated control plot.

Aim or ET at 1 ounce injured GP-1 15 to 17% 14 DAT, while Aim or ET at 2 ounces caused 20 to 25% injury. By the end of the season, Aim or ET at 1 or 2 ounces caused 18 to 27% injury. GP-1 was injured up to 13% following Cobra at 12.5 ounces. Peanut yield loss was observed following all treatments (3781 to 4606 lb/A) compared to the non-treated control (5206 lb/A).

Aim or ET at 1 or 2 ounces per acre injured Tamrun OL02 15 to 28% 14 DAT. Injury was still apparent at the end of the season (15 to 22%). Cobra injured Tamrun OL02 up to 7 % . With the exception of ET at 1 ounce (4473 lb/A), all treatments reduced peanut yield (3434 to 4002 lb/A) compared to the non-treated control (4535 lb/A). This research suggests that peanut yield loss is likely following Aim and ET applied postemergence. Cobra reduced yield in GP-1 and Tamrun OL02, but not Flavorrunner 458. Future research will include differential varietal tolerance to herbicides.

Table 1. Peanut varietal tolerance to post herbicides at AG-CARES, Lamesa, TX in

Variety	Herbicide	Rate	Rate oz.	Peanut Injury				Yield
				Jul 3	Jul 17	Aug 18	Sep 29	
		lb ai/A	prod/A	-------------- % --------------				lb/A
Flavorrunner 458	none	---	---	0	0	0	0	4880
Flavorrunner 458	Cobra + COC	0.1953 + 1%	12.5	5	5	3	3	4871
Flavorrunner 458	Aim + COC	0.016 + 1%	1.0	21	22	22	17	4215
Flavorrunner 458	Aim + COC	0.032 + 1%	2.0	30	30	28	23	3831
Flavorrunner 458	ET + COC	0.00156 + 0.5%	1.0	20	22	22	17	4197
Flavorrunner 458	ET + COC	0.00313 + 0.5%	2.0	28	25	23	18	4253
CV								4
LSD (0.10)				1	1	2	2	250
GP-1	none	---	---	0	0	0	0	5206
GP-1	Cobra + COC	0.1953 + 1%	12.5	6	10	12	13	4606
GP-1	Aim + COC	0.016 + 1%	1.0	15	20	23	22	4223
GP-1	Aim + COC	0.032 + 1%	2.0	25	26	30	27	3781
GP-1	ET + COC	0.00156 + 0.5%	1.0	17	19	22	18	4530
GP-1	ET + COC	0.00313 + 0.5%	2.0	20	25	28	25	4317
CV								5
LSD (0.10)				2	1	4	5	300

Tamrun OL 02	none	---	---	0	0	0	0	4535
Tamrun OL 02	Cobra + COC	0.1953 + 1%	12.5	4	6	5	7	4002
Tamrun OL 02	Aim + COC	0.016 + 1%	1.0	17	15	15	15	3434
Tamrun OL 02	Aim + COC	0.032 + 1%	2.0	25	20	20	22	3800
Tamrun OL 02	ET + COC	0.00156 + 0.5%	1.0	15	17	18	17	4473
Tamrun OL 02	ET + COC	0.00313 + 0.5%	2.0	28	23	23	20	3739
CV								8
$LSD_{(0.10)}$				1	2	2	3	467

TITLE:

Peanut Tolerance to Gramoxone Inteon and Dual Magnum Applied in Tank Mixture at Several Application Timings at AG-CARES, Lamesa, TX, 2006.

AUTHORS:

Peter Dotray, Lyndell Gilbert, Professor, Technician II.

MATERIALS AND METHODS:

Plot Size:	2 rows by 30 feet, 3 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 24
Variety:	Flavorrunner 458
Application Dates:	At-crack (AC), May 8; 7 days after crack (DAC), May 15; 14 DAC, May 22; 21 DAC, May 30; 28 DAC, June 5.
Digging Date:	October 28
Harvest Date:	November 2

RESULTS AND DISCUSSION:

Gramoxone Inteon is a new formulation of paraquat dichloride. It has 2 pounds of paraquat per gallon compared to the Gramoxone Max formulation which contained 3 pounds per gallon. The Gramoxone Inteon formulation reduces oral toxicity while maintaining the key benefits of paraquat (good weed control, rapid activity, cost effective, easy to use). Gramoxone Inteon may be applied from 8 to 16 ounces per acre from ground-crack to 28 days after ground-crack, and up to 2 applications may be made per year. For ground-crack use, Gramoxone Inteon may be tank mixed with Dual Magnum for residual weed control. The objective of this research was to examine peanut response to Gramoxone Inteon plus Dual Magnum in tank mix combinations when applied at ground crack (AC) and up to 28 days after crack (DAC).

Gramoxone Inteon alone and combinations with Dual Magnum caused up to 5% visible injury 7 days after the AC applications (Table 1). Applications made 7 DAC injured peanut 32 to 58% 7 days after treatment (DAT). The 16 ounce rate of Gramoxone Inteon (0.25 lbs ai/A) plus Dual Magnum caused the most injury (53 to 58%). Peanut injury following applications made 14 DAC ranged from 15 to 47% 7 DAT, and Gramoxone Inteon at 16 ounces plus Dual Magnum causing the greatest injury (37 to 47%). Applications made at 21 and 28 DAC injured peanut 14 to 33% and 15 to 25%, respectively. Greatest injury was again observed following the 16 ounce rate of Gramoxone Inteon plus Dual Magnum. The addition of Dual Magnum to Gramoxone Inteon (16 ounces) increased peanut injury at three of five application timings (7, 14, and 21 DAC) compared to the injury caused by Gramoxone Inteon (16 ounces) applied alone regardless of the presence of nonionic surfactant (NIS) . The addition of NIS to Gramoxone Inteon plus Dual Magnum (both at 16 ounces) did not increase peanut injury compared to this same tank mixture without NIS. The addition of NIS to Gramoxone Inteon at 8 ounces plus Dual Magnum at 16 ounces did not increase peanut injury compared to the same tank mixture without NIS. End of season peanut injury following AC applications ranged from 0 to 5%, whereas injury following applications made 7, 14, 21, and 28 DAC ranged from 10 to 16%, 4 to 17%, 8 to 14%, and 5 to 12%, respectively. Visual injury did not result in reduced peanut yield. Peanut yield following herbicide applications ranged from 4042 to 4893 lb/A and were not different (P>0.10) from the untreated control (4815 lb/A). This data suggests that Gramoxone Inteon plus Dual Magnum tank mixtures will cause visible peanut injury when applied AC to 28 DAC. Greatest visible injury was observed following tank mix combinations of Gramoxone Inteon plus Dual Magnum (both at 16 ounces), and least injury was observed following AC applications. Although significant peanut leaf burn (necrosis) and stunting were observed following applications made between 7 to 28 days after crack, no yield loss was observed.

Table 1. Peanut injury and yield as affected by Gramoxone Inteon and Dual Magnum tank mix timings at AG-CARES, Lamesa, TX in 2006.

Treatment	Timing	Prod.	Rate	Peanut Injury									Yield
				May 15	May 22	May 30	Jun 5	Jun 12	Jun 19	Jun 26	Jul 3	Sep 29	
		oz/A	lb ai/A	%									lb/A
Gram Inteon + NIS	AC	8	0.125 + 0.25%	2	3	0	0	0	0	2	0	0	4690
Gram Inteon + NIS	AC	16	0.25 + 0.25%	3	3	3	0	0	2	4	6	5	4560
Gram Inteon + Dual Mag + NIS	AC	8+16	0.125 + 0.95 + 0.25%	0	3	0	0	0	0	0	0	0	4837
Gram Inteon + Dual Mag + NIS	AC	16+16	0.25 + 0.95 + 0.25%	2	4	3	0	0	3	7	5	4	4664
Gram Inteon + Dual Mag	AC	8+16	0.125 + 0.95	0	3	0	0	0	3	3	2	3	4777
Gram Inteon + Dual Mag	AC	16+16	0.25 + 0.95	2	2	3	0	0	2	4	5	4	4759
Gram Inteon + Dual Mag	AC	8+24	0.125 + 1.43	3	2	0	3	0	5	7	0	2	4893
Gram Inteon + Dual Mag	AC	16+24	0.25 + 1.43	5	3	3	4	2	5	9	7	5	4741
Gram Inteon + NIS	7 DAC	8	0.125 + 0.25%	---	32	11	10	22	13	13	12	10	4678
Gram Inteon + NIS	7 DAC	16	0.25 + 0.25%	---	43	27	17	32	19	27	28	15	4265
Gram Inteon + Dual Mag + NIS	7 DAC	8+16	0.125 + 0.95 + 0.25%	---	43	15	12	23	15	16	15	10	4408
Gram Inteon + Dual Mag + NIS	7 DAC	16+16	0.25 + 0.95 + 0.25%	---	53	32	28	35	23	35	34	12	4179
Gram Inteon + Dual Mag	7 DAC	8+16	0.125 + 0.95	---	43	13	10	23	16	19	16	12	4591
Gram Inteon + Dual Mag	7 DAC	16+16	0.25 + 0.95	---	57	28	28	35	22	31	32	16	4346
Gram Inteon + Dual Mag	7 DAC	8+24	0.125 + 1.43	---	45	18	11	23	18	23	22	12	4252
Gram Inteon + Dual Mag	7 DAC	16+24	0.25 + 1.43	---	58	28	30	37	25	36	35	14	4130

Gram Inteon + NIS	14 DAC	8	0.125 + 0.25%	---	---	16	5	8	10	7	6	4	4763
Gram Inteon + NIS	14 DAC	16	0.25 + 0.25%	---	---	38	19	30	19	18	20	12	4505
Gram Inteon + Dual Mag + NIS	14 DAC	8+16	0.125 + 0.95 + 0.25%	---	---	15	7	13	13	12	8	8	4543
Gram Inteon + Dual Mag + NIS	14 DAC	16+16	0.25 + 0.95 + 0.25%	---	---	37	25	27	18	25	23	12	4500
Gram Inteon + Dual Mag	14 DAC	8+16	0.125 + 0.95	---	---	18	13	15	15	14	13	12	4377
Gram Inteon + Dual Mag	14 DAC	16+16	0.25 + 0.95	---	---	47	37	37	28	32	33	17	4042

Table 1. Cont.

Treatment	Timing	Prod.	Rate	Peanut Injury									Yield
				May 15	May 22	May 30	Jun 5	Jun 12	Jun 19	Jun 26	Jul 3	Sep 29	
Gram Inteon + Dual Mag	14 DAC	8+24	0.125 + 1.43	---	---	21	10	12	13	11	12	12	4302
Gram Inteon + Dual Mag	14 DAC	16+24	0.25 + 1.43	---	---	43	27	28	21	23	28	13	4273
Gram Inteon + NIS	21 DAC	8	0.125 + 0.25%	---	---	---	14	12	10	8	8	10	4327
Gram Inteon + NIS	21 DAC	16	0.25 + 0.25%	---	---	---	18	23	17	15	22	12	4717
Gram Inteon + Dual Mag + NIS	21 DAC	8+16	0.125 + 0.95 + 0.25%	---	---	---	18	15	14	13	11	10	4797
Gram Inteon + Dual Mag + NIS	21 DAC	16+16	0.25 + 0.95 + 0.25%	---	---	---	29	25	20	24	31	14	4568
Gram Inteon + Dual Mag	21 DAC	8+16	0.125 + 0.95	---	---	---	16	17	14	15	13	10	4283
Gram Inteon + Dual Mag	21 DAC	16+16	0.25 + 0.95	---	---	---	33	30	22	30	34	14	4162
Gram Inteon + Dual Mag	21 DAC	8+24	0.125 + 1.43	---	---	---	17	15	14	15	11	8	4658
Gram Inteon + Dual Mag	21 DAC	16+24	0.25 + 1.43	---	---	---	33	25	21	29	24	13	4399
Gram Inteon + NIS	28 DAC	8	0.125 + 0.25%	---	---	---	---	18	12	8	7	7	4369
Gram Inteon + NIS	28 DAC	16	0.25 + 0.25%	---	---	---	---	22	14	13	17	12	4543

Gram Inteon + Dual Mag + NIS	28 DAC	8+16	0.125 + 0.95 + 0.25%	---	---	---	---	20	12	8	7	6	4456
Gram Inteon + Dual Mag + NIS	28 DAC	16+16	0.25 + 0.95 + 0.25%	---	---	---	---	25	14	13	17	11	4543
Gram Inteon + Dual Mag	28 DAC	8+16	0.125 + 0.95	---	---	---	---	15	11	7	8	5	4555
Gram Inteon + Dual Mag	28 DAC	16+16	0.25 + 0.95	---	---	---	---	21	14	14	14	12	4198
Gram Inteon + Dual Mag	28 DAC	8+24	0.125 + 1.43	---	---	---	---	15	11	10	6	5	4531
Gram Inteon + Dual Mag	28 DAC	16+24	0.25 + 1.43	---	---	---	---	25	16	16	14	8	4822
Untreated	---		---	0	0	0	0	0	0	0	0	0	4815
CV													8
LSD (0.10)				NS	3	4	3	4	3	4	3	4	NS

Detailed Growing Season Climate Data at AG-CARES, Lamesa, TX, 2006

Date		Max Temp (°F)	Min Temp (°F)	Max RH %	Min RH %	Avg. Wind Speed mil/hr	PET (in.)	Rain (in.)	Heat Units Cotton	Heat Units Peanuts
May	1	93.50	59.50	51.30	9.70	8.2	0.04	0.00	17	22
	2	96.20	55.20	79.70	9.80	8.3	0.04	0.00	16	20
	3	93.30	59.50	82.80	14.80	11.1	0.04	0.00	16	21
	4	81.10	56.20	97.20	42.10	10.5	0.03	0.00	9	14
	5	81.80	57.70	99.80	45.10	12.9	0.02	0.31	10	15
	6	68.60	53.90	98.90	58.30	8.5	0.01	0.00	1	7
	7	75.70	53.60	99.70	63.30	8.8	0.02	0.00	5	10
	8	93.20	54.70	102.00	7.00	6.2	0.04	0.01	14	19
	9	92.70	57.50	39.00	10.60	6.4	0.04	0.00	15	20
	10	74.40	54.50	84.70	15.60	12.5	0.03	0.00	4	10
	11	74.20	49.70	74.80	14.20	4.6	0.03	0.00	2	10
	12	93.60	52.30	50.10	11.20	8.0	0.04	0.00	13	19
	13	100.50	55.70	59.80	5.70	7.3	0.17	0.00	18	20
	14	85.20	63.00	79.50	20.70	14.5	0.17	0.00	14	19
	15	73.70	54.00	90.10	28.50	6.9	0.08	0.07	4	9
	16	85.50	50.30	94.00	15.70	5.6	0.13	0.00	8	15
	17	88.30	53.00	63.80	13.50	4.8	0.14	0.00	11	17
	18	95.10	54.10	60.90	9.70	5.4	0.14	0.00	15	20
	19	99.60	58.60	51.90	8.70	4.5	0.15	0.00	19	22
	20	102.40	63.20	44.50	8.90	8.1	0.19	0.00	23	24
	21	99.30	64.40	63.10	13.90	9.2	0.19	0.04	22	25
	22	94.00	66.40	57.20	14.50	11.6	0.19	0.00	20	25
	23	100.10	65.50	64.50	12.40	10.0	0.20	0.00	23	25
	24	99.90	63.10	65.50	12.00	7.0	0.17	0.00	21	24
	25	98.70	64.70	68.90	12.40	9.3	0.19	0.00	22	25
	26	98.20	69.50	64.60	17.80	12.7	0.20	0.00	24	27
	27	97.70	68.50	61.70	11.60	11.9	0.21	0.00	23	27
	28	98.30	66.90	70.40	9.80	9.2	0.19	0.00	23	26
	29	98.30	68.50	87.20	13.00	8.3	0.18	0.00	23	27
	30	93.70	65.20	80.80	23.00	12.2	0.19	0.00	19	24
	31	85.20	61.60	94.20	32.40	9.6	0.14	0.03	13	18
June	1	83.90	63.70	87.20	33.40	7.7	0.12	0.00	14	19
	2	87.30	61.10	79.00	26.80	5.9	0.14	0.00	14	19
	3	92.90	62.80	62.10	20.50	6.6	0.16	0.00	18	23
	4	98.60	62.80	69.30	10.70	8.0	0.19	0.00	21	24
	5	102.00	66.60	53.20	7.80	11.3	0.23	0.00	24	26
	6	103.50	68.30	58.70	8.00	7.3	0.19	0.00	26	27
	7	98.00	67.20	55.30	15.50	9.0	0.20	0.00	23	26
	8	93.90	65.60	60.10	13.40	8.6	0.18	0.00	20	25
	9	97.20	65.00	55.40	14.70	7.1	0.18	0.00	21	25
	10	99.50	66.30	59.60	13.50	7.1	0.17	0.00	23	26
	11	102.70	69.80	71.50	11.70	7.7	0.35	0.25	26	27
	12	99.20	65.40	82.90	14.60	7.6	0.35	0.00	22	25

Detailed Growing Season Climate Data at AG-CARES, Lamesa, TX, 2006

Date		Max Temp (°F)	Min Temp (°F)	Max RH %	Min RH %	Avg. Wind Speed mil/hr	PET (in.)	Rain (in.)	Heat Units Cotton	Heat Units Peanuts
	13	97.70	66.70	69.00	17.50	5.4	0.31	0.00	22	26
	14	100.40	69.20	70.00	15.40	9.3	0.38	0.00	25	27
	15	101.50	71.00	59.00	12.50	13.2	0.46	0.00	26	28
	16	101.30	73.00	74.50	7.30	14.5	0.48	0.00	27	29
	17	97.60	64.80	72.10	11.20	6.2	0.33	0.00	21	25
	18	98.70	66.80	79.60	13.60	10.4	0.39	0.00	23	26
	19	100.10	70.30	63.10	11.90	10.4	0.42	0.00	25	28
	20	98.00	65.60	83.50	14.20	7.2	0.34	0.00	22	25
	21	99.00	70.60	82.90	19.10	11.9	0.40	0.13	25	28
	22	94.90	67.00	87.10	24.50	10.4	0.29	0.09	21	26
	23	87.50	63.70	93.80	32.90	6.1	0.22	0.05	16	21
	24	90.50	62.50	86.30	24.20	5.4	0.24	0.00	17	22
	25	90.80	65.00	75.90	21.30	7.0	0.26	0.00	18	23
	26	76.50	62.70	70.00	32.30	8.4	0.20	0.00	10	15
	27	86.80	54.40	83.90	19.40	3.9	0.23	0.00	11	16
	28	88.90	59.30	66.70	17.40	6.8	0.27	0.00	14	19
	29	90.50	62.50	66.90	24.00	6.4	0.27	0.00	16	21
	30	93.00	66.60	61.40	23.60	7.8	0.31	0.00	20	25
July	1	92.00	64.00	77.00	20.70	7.1	0.35	0.00	18	23
	2	91.20	64.50	77.10	24.60	6.9	0.32	0.00	18	23
	3	92.10	64.30	73.50	26.70	6.7	0.32	0.00	18	23
	4	92.50	66.30	87.50	28.10	5.5	0.29	0.25	19	24
	5	89.50	70.20	91.50	30.00	6.6	0.27	0.00	20	25
	6	89.50	67.00	94.30	28.90	6.7	0.31	0.00	18	23
	7	90.70	68.10	84.50	28.40	6.5	0.34	0.00	19	24
	8	92.30	64.90	74.10	26.70	6.0	0.34	0.00	19	24
	9	96.10	67.80	63.90	22.50	5.9	0.36	0.00	22	26
	10	98.10	73.80	70.80	24.20	9.3	0.40	0.01	26	29
	11	99.90	69.40	79.80	21.60	9.3	0.43	0.00	25	27
	12	101.10	72.00	68.50	18.80	9.0	0.43	0.04	27	28
	13	100.70	65.20	86.00	16.00	6.4	0.37	0.00	23	25
	14	100.20	73.50	57.80	17.60	7.4	0.41	0.00	27	29
	15	96.40	68.90	62.50	20.00	4.8	0.34	0.00	23	27
	16	96.80	69.20	67.90	21.10	4.2	0.34	0.00	23	27
	17	100.80	68.40	66.10	17.50	4.7	0.36	0.00	25	27
	18	100.30	76.30	59.40	17.60	5.0	0.37	0.03	28	31
	19	99.60	71.00	52.10	13.90	5.9	0.39	0.00	25	28
	20	98.70	70.00	59.20	15.70	4.9	0.36	0.00	24	28
	21	98.30	66.60	70.30	15.50	4.4	0.27	0.00	22	26
	22	94.30	71.20	68.10	17.90	10.2	0.34	0.00	23	28
	23	93.30	62.50	63.20	22.60	4.2	0.25	0.00	18	23
	24	96.60	67.20	57.40	19.80	5.1	0.26	0.00	22	26
	25	97.40	72.40	57.90	19.30	7.1	0.32	0.00	25	29

Detailed Growing Season Climate Data at AG-CARES, Lamesa, TX, 2006

Date		Max Temp (°F)	Min Temp (°F)	Max RH %	Min RH %	Avg. Wind Speed mil/hr	PET (in.)	Rain (in.)	Heat Units Cotton	Heat Units Peanuts
	26	98.30	70.70	66.10	18.30	5.8	0.30	0.00	24	28
	27	99.20	70.60	63.50	16.50	7.9	0.32	0.00	25	28
	28	93.50	71.40	85.70	27.40	7.0	0.26	0.07	22	27
	29	94.20	70.30	86.80	28.30	8.8	0.28	0.00	22	27
	30	92.30	69.30	80.80	29.40	7.4	0.21	0.00	21	26
	31	98.70	72.60	73.00	23.20	9.9	0.33	0.00	26	29
August	1	95.80	70.50	87.00	25.50	10.1	0.31	0.01	23	28
	2	93.80	70.40	88.90	27.20	8.8	0.28	0.00	22	27
	3	90.30	67.40	85.10	29.60	6.5	0.22	0.00	19	24
	4	89.50	70.20	84.00	31.90	5.9	0.21	0.00	20	25
	5	93.70	69.80	84.60	26.70	6.5	0.26	0.00	22	27
	6	94.70	67.80	79.80	24.70	4.6	0.24	0.00	21	26
	7	92.90	69.30	84.60	29.60	4.6	0.20	0.03	21	26
	8	93.60	69.50	82.30	27.30	6.7	0.27	0.00	22	27
	9	95.60	72.50	64.00	26.20	8.1	0.31	0.00	24	29
	10	99.30	69.10	71.10	20.70	7.3	0.31	0.00	24	27
	11	93.50	73.70	68.70	25.80	7.0	0.23	0.08	24	29
	12	91.00	68.30	82.40	30.20	5.2	0.17	0.00	20	25
	13	93.50	70.80	90.40	28.00	8.2	0.24	0.05	22	27
	14	93.20	66.70	94.80	25.80	5.5	0.22	0.23	20	25
	15	80.40	67.40	96.50	61.40	5.6	0.11	0.48	14	19
	16	83.80	68.80	96.20	61.80	4.8	0.11	0.12	16	21
	17	92.50	68.70	96.30	32.80	6.0	0.20	0.00	21	26
	18	93.50	67.50	92.90	27.00	5.3	0.14	0.00	21	26
	19	93.80	67.50	85.50	25.60	4.9	0.14	0.09	21	26
	20	92.10	69.10	94.10	31.30	7.1	0.14	0.21	21	26
	21	90.50	70.00	93.90	39.80	7.0	0.13	0.02	20	25
	22	91.30	69.30	95.30	34.40	5.9	0.13	0.34	20	25
	23	92.50	68.40	96.30	30.70	3.3	0.10	0.23	20	25
	24	97.70	68.20	85.60	20.90	5.8	0.15	0.00	23	27
	25	97.20	75.60	66.10	21.90	7.9	0.17	0.00	26	30
	26	93.40	71.50	95.00	31.00	6.5	0.09	0.23	22	27
	27	84.20	69.80	95.30	54.80	5.6	0.06	0.11	17	22
	28	86.00	63.40	95.40	36.70	6.3	0.08	0.00	15	20
	29	83.90	63.90	95.60	30.40	6.1	0.09	0.00	14	19
	30	86.70	59.50	93.20	37.30	5.7	0.08	0.00	13	18
	31	90.00	66.90	91.50	34.20	7.7	0.09	0.00	18	23
September	1	82.20	66.00	92.90	53.20	5.0	0.02	0.18	14	19
	2	75.60	60.00	96.80	52.70	11.5	0.02	0.06	8	13
	3	63.10	59.40	98.10	95.00	7.6	0.01	1.17	1	6
	4	65.30	59.80	98.80	92.00	6.2	0.01	1.09	3	8
	5	79.00	59.20	99.40	50.00	4.8	0.03	0.01	9	14
	6	78.10	59.50	95.50	47.90	3.5	0.03	0.06	9	14

Detailed Growing Season Climate Data at AG-CARES, Lamesa, TX, 2006

Date		Max Temp (°F)	Min Temp (°F)	Max RH %	Min RH %	Avg. Wind Speed mil/hr	PET (in.)	Rain (in.)	Heat Units Cotton	Heat Units Peanuts
	7	79.80	57.40	90.50	31.20	5.1	0.04	0.00	9	14
	8	81.10	58.50	88.80	33.10	7.5	0.04	0.00	10	15
	9	82.60	59.10	95.90	46.10	5.6	0.02	0.00	11	16
	10	88.30	64.20	96.30	32.60	5.5	0.02	0.00	16	21
	11	83.70	61.30	93.50	31.30	7.5	0.02	0.50	12	17
	12	79.50	62.80	95.30	49.30	5.3	0.02	0.00	11	16
	13	81.90	59.30	96.20	37.80	3.7	0.02	0.00	11	16
	14	81.60	61.40	94.50	52.90	7.8	0.02	0.53	12	17
	15	88.20	66.00	95.50	42.90	9.3	0.02	0.00	17	22
	16	92.40	68.70	93.20	35.00	10.4	0.03	0.00	21	26
	17	75.10	56.20	96.30	34.40	7.3	0.00	0.00	6	11
	18	76.70	52.40	93.10	27.60	3.0	0.00	0.00	5	11
	19	80.70	49.60	89.20	24.30	4.7	0.00	0.00	5	13
	20	87.20	55.40	84.10	31.90	9.9	0.00	0.00	11	16
	21	85.80	59.90	64.60	13.00	10.8	0.00	0.00	13	18
	22	89.20	53.00	83.30	18.60	8.7	0.00	0.00	11	17
	23	79.40	57.30	63.20	26.50	6.5	0.00	0.00	8	13
	24	69.90	51.50	77.50	32.60	6.8	0.00	0.00	1	7
	25	77.90	48.60	86.60	26.30	2.6	0.00	0.00	3	11
	26	86.90	52.10	75.90	27.20	5.5	0.00	0.00	10	16
	27	92.40	56.10	82.50	11.70	5.4	0.00	0.00	14	19
	28	71.00	54.50	63.60	26.40	7.7	0.00	0.00	3	8
	29	89.00	49.30	74.60	15.00	5.5	0.00	0.00	9	17
	30	91.80	57.10	93.40	15.00	4.5	0.00	0.00	14	19
October	1	86.70	65.20	86.50	35.80	8.5	0.00	0.00	16	21
	2	89.40	64.20	82.20	30.60	7.9	0.00	0.00	17	22
	3	87.90	61.90	83.20	31.10	7.9	0.00	0.00	15	20
	4	85.00	61.20	88.00	32.40	4.9	0.00	0.00	13	18
	5	83.30	55.90	89.00	32.40	4.6	0.00	0.00	10	15
	6	84.80	56.70	86.20	26.40	6.0	0.00	0.00	11	16
	7	82.30	58.90	79.40	29.60	7.6	0.00	0.00	11	16
	8	78.60	58.20	92.60	48.70	6.5	0.00	0.15	8	13
	9	66.20	53.20	98.10	80.00	9.5	0.00	0.96	0	6
	10	68.90	52.70	99.00	52.70	6.2	0.00	0.12	1	7
	11	80.50	51.60	95.20	20.20	6.6	0.00	0.00	6	13
	12	67.60	45.70	97.00	35.00	6.4	0.00	0.00	0	6
	13	72.50	41.90	93.90	38.80	4.7	0.00	0.00	0	9
	14	67.50	55.80	98.90	88.10	6.5	0.00	1.13	2	7
	15	73.20	60.20	98.60	78.50	6.7	0.00	0.92	7	12
	16	71.50	55.90	98.10	34.00	7.9	0.00	0.23	4	0
	17	80.50	53.70	83.60	23.90	6.9	0.00	0.00	7	0
	18	62.10	48.00	89.80	63.00	10.0	0.00	0.00	0	0
	19	62.40	43.20	93.90	51.30	5.2	0.00	0.08	0	0

Detailed Growing Season Climate Data at AG-CARES, Lamesa, TX, 2006

Date		Max Temp (°F)	Min Temp (°F)	Max RH %	Min RH %	Avg. Wind Speed mil/hr	PET (in.)	Rain (in.)	Heat Units Cotton	Heat Units Peanuts
	20	74.30	44.90	93.80	19.30	8.3	0.00	0.00	0	0
	21	66.30	44.10	93.80	37.70	9.0	0.00	0.00	0	0
	22	58.60	38.70	91.20	29.40	5.5	0.00	0.00	0	0
	23	68.60	36.40	91.60	34.20	5.8	0.00	0.00	0	0
	24	73.20	44.90	92.60	41.40	7.1	0.00	0.00	0	0
	25	80.80	56.80	96.00	23.50	8.6	0.00	0.00	9	0
	26	70.90	50.50	83.00	13.70	13.0	0.00	0.00	1	0
	27	67.90	41.90	69.10	15.40	13.2	0.00	0.00	0	0
	28	75.90	36.30	82.60	13.40	5.3	0.00	0.00	0	0
	29	78.30	39.80	69.70	12.40	8.7	0.00	0.00	0	0
	30	79.30	50.60	54.60	21.40	8.6	0.00	0.00	5	0
	31	58.60	42.20	68.10	30.40	6.5	0.00	0.00	0	0