SCSC-2024-02

TEXAS ROLLING PLAINS COTTON TRIALS | 2023

Texas A&M AgriLife Extension

Department of Soil and Crop Sciences Texas A&M AgriLife Extension Service

cotton

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CONTRIBUTING AUTHORS

Emi Kimura	Extension Agronomist	AgriLife Extension, Vernon, TX
TJ Payne	Extension Farm Demonstration Assistant	AgriLife Extension, Vernon, TX
Dane Leija	Technical Assistant II	AgriLife Extension, Vernon, TX
Paul DeLaune	Environmental Soil Scientist	AgriLife Research, Vernon, TX

COUNTY EXTENSION AGENT COOPERATORS

Kenny Patterson	County Extension Agent	AgriLife Extension, Collingsworth Co., TX
Nick Dickson	County Extension Agent	AgriLife Extension, Fisher Co., TX
Justin Gilliam	County Extension Agent	AgriLife Extension, Hardeman Co., TX
Langdon Reagan	County Extension Agent	AgriLife Extension, Wilbarger Co., TX

ACKNOWLEDGEMENTS

Appreciation is expressed to **the producer cooperators** who provided their land, equipment, and time to assist in preparation, planting, field management, and harvesting of the plots throughout the year. All cooperators are listed in Table 3. We would like to extend our appreciation to **Cotton Incorporated** through the **Texas State Support Committee**, **Deltapine, Stoneville/FiberMax and Phytogen Cottonseed** for their partial funding of these trials.

2023 HIGHLIGHT

Variety selection is the most important decision made during the year. Unlike herbicide or insecticide decisions that can be changed during the season to address specific conditions and pests, variety selection is made only once, and variety selection dictates the management of a field for the entire season. Variety decisions should be based on genetics first and transgenic technology second. Attention should be focused on agronomic characteristics such as yield, maturity, and fiber quality when selecting varieties.

2023 growing season was another challenging year for cotton growers in Texas due to the very hot and dry conditions, and brutal wind. Planting season in the Rolling Plains of Texas was wetter than normal years. Due to the prolonged rain, cotton planting was delayed between a week to even multiple weeks. However, growers who planted cotton in the limited planting window between rains took advantage of the precipitation. Cotton stands looked great in May and early June. On the other hand, some growers had to replant cotton due to the precipitation immediately after the planting. Very hot and dry July through September were detrimental for the cotton development in the Rolling Plains. The total planted acres of 353,200 ac were reported to the FSA in the January 2024 report, of which 16% were failed acres. In 2023, 19% of dryland acres were abandoned in the Texas Rolling Plains.

Ten cotton trials were planted for the 2023 season in the Texas Rolling Plains, consisting of two Replicated Agronomic Cotton Evaluation (RACE) trials, six Phytogen innovation trials, and two BASF APT trials. Of which, five trials were abandoned due to the extreme drought conditions. Background information for all trials is listed in table 3. Average stand counts varied widely among locations and irrigation status (Table 4). Average stand count for the irrigated and dryland trials were 2.24 and 1.55 plants/ft, respectively (Table 4). Average lint yield for the irrigated RACE trial at Collingsworth County was 999 lb/ac with 39% turnout. The highest lint value at the trial was $650/ac with PHY 411 W3FE. Among the XtendFlex technologies, NG 3195 B3XF, DP 1820 B3XF, and NG 4190 B3XF were numerically greater than other varieties. One dryland trial was harvested in Wilbarger County; however, we had to harvest three replicates into one bale due to the poor yield potential. Average yield of the dryland trial was 207 lb/ac with 26% turnout. The highest lint value was $126/ac with PHY 480 W3FE.
Lint samples from all trials were ginned with conventional gin. The statistical analysis quantifies the variability of the test site conditions, such as soil type, harvesting, insect damage, etc. A CV (coefficient of variation) of 15% or less is generally considered acceptable and means the data are dependable. Non-statistical significance is represented as "NS" and indicates no differences among the varieties within the data column at a 90% confidence level.

Resources for Texas cotton production

- General cotton production information for new cotton growers: http://cotton.tamu.edu/index.html
- Cotton variety trial results: http://varietytesting.tamu.edu/cotton/
- Cotton trial update in the Rolling Plains of Texas: Rolng Plains Agronomy Program Blog (https://agrilife.org/txrollingplainsagronomy/)

Table 1. Variety characteristics/Highlights

Below are the cotton varieties entered in the 2023 Texas Rolling Plains Cotton Trials.

Maturity\Technology	XtendFlex	Enlist	GLT/GLTP
Early	DP2012B3XF		
	ST4993B3XF		
Early mid	DP1820B3XF	PHY350W3FE	FM1730GLTP
	ST4990B3XF	PHY394W3FE	FM1830GLT
	DP2020B3XF	PHY332W3FE	FM1953GLTP
	ST4595B3XF		
	NG 3195 B3XF		
Mid	DP2038B3XF	PHY400W3FE	FM2498GLT
	NG4936B3XF	PHY480W3FE	FM2398GLTP
	NG4098B3XF	PHY443W3FE	
	NG4190B3XF	PHY411W3FE	
	DP 2333 B3XF	PHY 415 W3FE	
	DP 2239 B3XF		
Mid to Full	DP1948B3XF	PHY500W3FE	
	ST5707B2XF	PHY545W3FE	
	NG5150B3XF	PHY 475 W3FE	
	ST5600B2XF		
	DP1845B3XF		
Full		PHY580W3FE	

Table 2. FIBER EVALUATION

Parameters	Definition	Range
Micronaire (Mic)	Micronaire is a measurement of both fiber fineness and maturity.	Premium range: 3.7-4.2 Base range: 3.5-3.6 or 4.3-4.9 Discount range: 0-3.4 or >5.0
Fiber length	The average length of the longer half of the fibers.	Extra-long: >1.26 Long: 1.11-1.26 Medium: 0.99-1.10 Short: <0.99
Fiber strength	Fiber strength as measured on the High Volume Instrument is the force (in grams) required to break a bundle of fibers one - tex unit in mass.	Very strong: > 31 Strong: 29-30 Average: 26-28 Intermediate: 24-25 Weak: < 23
Length uniformity (unif)	Length uniformity index is the ratio between the "mean length" of the fibers and the "upper half mean length".	Very high: >85 High: 83-85 Intermediate: 80-82 Low: 77-79 Very low: <77

Source: "Classification of Upland Cotton" Adapted from Cotton Incorporated website (https://www.cottoninc.com/wp-content/uploads/2017/02/Classification-of-Cotton.pdf)

TABLE 4. BACKGROUND INFORMATION

County	Producer cooperators	County Extension Agent	Irri/dry	Planting date	Harvest date	Rows x spacing	Seeding rate	Plot size
RACE trial - Mixed technologies								
Collingsworth	Rex Henard	Kenny Patterson	Irrigated	5/17/2023	11/14/2023	6 by 40"	40000	0.5
Wilbarger	Donald Shoppa	Langdon Reagan	Dryland	6/13/2023	Abandoned	8 by 40"	24100	-
Phytogen Innovation Trial - Enlist technology only								
Collingsworth	Billy Watters	Kenny Patterson	Irrigated	5/23/2023	11/13/2023	8 by 40"	40000	1.68
Fisher	Joe Posey	Nick Dickson	Irrigated	5/11/2023	10/22/2023	6 by 30"	40000	1.3
Hardeman	TAMU	Justin Gilliam	Irrigated	6/20/2023	Abandoned	6 by 40"	29000	-
Wilbarger	Layne Chapman	Langdon Reagan	Irrigated	5/23/2023	10/10/2023	8 by 40"	45000	-
Wilbarger	Darren Streit	Langdon Reagan	Dryland	6/9/2023	11/28/2023	8 by 40"	31000	4.9
Wichita	Dwayne Pierce	Vacant	Irrigated	6/23/2023	Abandoned	6 by 30"	43000	-
BASF APT Trial - Xtendflex only (Haskell) and Xtendflex and GLTP (Wilbarger)								
Haskell	Jason Key	Vacant	Dryland	6/14/2023	Abandoned	6 by 40"	24000	-
Wilbarger	Donald Shoppa	Langdon Reagan	Dryland	6/13/2023	Abandoned	8 by 40"	24100	-

2023 Texas Rolling Plains Cotton Trials

RACE trial agronomic information

County	Collingsworth			
Cooperator	Rex Henard			
Technologies	Mixed			
Irrigation	Irrigated			
Plant	5/17/2023			
Harvest	11/14/2023			
GDD	181	days		
Population	40000			
Rows and width	6 by 40"			
Plot size	0.5	ac		

Precipitation

Month	Precip. (in)
April	1.15
May	5.67
June	2.17
July	1.37
August	1.26
September	1.83
October	1.71
Total	15.16

Variety	Lint (Lbs/ac)	Gin turnout (%)	Micronaire	Fiber Length (inch)	Strength (g/tex)	Unif	Loan Value (cents/lb)	Lint Value ($/acre)
PHY411W3FE	**1242**	41.4	4.0	1.19	31.4	81.8	52.3	**650**
Fill(DP2123)	1227	39.2	4.5	1.22	30.6	**83.8**	52.4	643
NG 3195 B3XF	1205	39.2	4.3	**1.23**	31.2	82.8	52.4	631
DP 1820 B3XF	1144	40.8	4.6	1.16	30.3	82.6	52.2	597
NG 4190 B3XF	1088	39.4	4.5	1.17	32.0	83.2	52.5	571
PHY400W3FE	1008	39.5	4.6	1.18	30.0	82.6	52.2	526
NG 5150 B3XF	952	40.0	**4.8**	1.19	31.9	82.6	52.5	499
ST 4993B3XF	930	36.7	4.6	1.21	31.0	83.3	52.4	488
PHY332W3FE	865	40.4	4.4	1.20	**33.4**	82.5	**52.6**	455
DP 2239 B3XF	804	36.1	4.6	1.20	31.1	83.5	52.4	421
FM 2398GLTP	801	35.0	4.7	1.16	30.7	82.9	52.4	420
DP 2333 B3XF	724	**44.1**	4.7	1.19	29.4	81.4	52.1	377
Mean	**999**	**39.3**	**4.5**	**1.19**	**31.1**	**82.7**	**52.4**	**523**
CV %	-	-	-	-	-	-	-	-
P>F	-	-	-	-	-	-	-	-
STD DEV	**181**	**2.5**	**0.2**	**0.02**	**1.1**	**0.7**	**0.1**	**95**

Notes:

Data were not analyzed because less than three replications were harvested.

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Phytogen Innovation trial agronomic information

County	Wilbarger			
Cooperator	Darren Streit			
Technologies	Enlist			
Irrigation	Dryland			
Plant	6/9/2023			
Harvest	11/28/2023			
GDD	172	days		
Population	31000			
Rows	8	rows	40"	width
Plot size	4.9	ac		

Precipitation

Month	Precip. (in)
April	3.04
May	3.14
June	1.52
July	1.59
August	0.39
September	1.25
October	5.14
Total	16.07

Variety	Lint (Lbs/ac)	Gin turnout (%)	Micronaire	Fiber Length (inch)	Strength (g/tex)	Unif	Loan Value ($/lb)	Lint Value* ($/acre)
PHY480W3FE	**277**	30.0	4.59	1.03	30.0	81.4	0.4543	**126**
PHY545W3FE	265	**30.4**	4.83	1.04	30.7	80.9	0.4495	119
PHY400W3FE	229	29.4	4.62	1.05	29.7	80.2	**0.4645**	106
PHY475W3FE	208	26.1	4.85	1.03	32.0	80.5	0.4540	94
PX1124B236-04W3FE	203	25.0	5.35	**1.07**	**33.4**	**81.9**	0.4370	89
PHY332W3FE	140	20.8	**4.37**	**1.07**	29.5	80.9	0.4263	59
PX1125B234-04W3FE	134	20.4	5.21	1.02	29.5	80.8	0.4015	54
PHY415W3FE	201	24.1	4.66	**1.07**	30.9	80.7	0.2255	45
Mean	**207**	**26**	**4.8**	**1.05**	**30.7**	**80.9**	**0.4**	**87**
CV %	-	-	-	-	-	-	-	-
P>F	-	-	-	-	-	-	-	-
STD DEV	-	-	-	-	-		-	-

Notes:

Three replicates were combined due to poor stand.

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Phytogen Innovation trial agronomic information

County	Fisher			
Cooperator	Joe Posey			
Technologies	Enlist			
Irrigation	Irrigated			
Plant	5/11/2023			
Harvest	10/22/2023			
GDD	164	days		
Population	40000			
Rows and width	6 by 30"			
Plot size	1.3	ac		

Precipitation

Month	Precip. (in)
April	1.20
May	6.12
June	4.09
July	1.64
August	0.36
September	3.05
October	6.26
Total	22.72

Variety	Lint (Lbs/ac)	Gin turnout (%)	Micronaire	Fiber Length (inch)	Strength (g/tex)	Unif	Loan Value ($/lb)	Lint Value* ($/acre)
PX1125B234-04W3FE	**1721**	33.4	5.1	1.09	29.9	81.3	0.53	**$907**
PHY411W3FE	1660	34.7	4.5	1.07	30.7	80.4	0.54	$895
PHY415W3FE	1575	**35.2**	4.2	**1.14**	**31.5**	**81.9**	**0.54**	$857
PX1124B236-04W3FE	1536	32.2	**4.0**	1.10	30.7	80.6	0.52	$800
PHY475W3FE	1559	32.6	4.1	1.05	29.8	79.5	0.51	$795
PHY480W3FE	1496	33.1	3.9	1.09	29.4	80.7	0.52	$784
PHY332W3FE	1449	33.5	4.2	1.12	29.2	80.5	0.52	$757
PHY400W3FE	1428	34.8	4.1	1.08	28.3	79.1	0.52	$743
Mean	**1553**	**33.7**	**4.3**	**1.09**	**29.9**	**80.5**	**0.53**	**817**
CV %	-	-	-	-	-	-	-	-
P>F	-	-	-	-	-	-	-	-
STD DEV	-	-	-	-	-	-	-	-

Notes:

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Phytogen Innovation trial agronomic information

County	Collingsworth			
Cooperator	Billy Watters			
Technologies	Enlist			
Irrigation	Irrigated			
Plant	5/23/2023			
Harvest	11/13/2023			
GDD	174	days		
Population	-			
Rows and width	8 by 40"			
Plot size	1.7	ac		

Precipitation

Month	Precip. (in)
April	1.15
May	5.67
June	2.17
July	1.37
August	1.26
September	1.83
October	1.71
Total	15.16

Variety	Lint (Lbs/ac)	Gin turnout (%)	Micronaire	Fiber Length (inch)	Strength (g/tex)	Unif	Loan Value ($/lb)	Lint Value* ($/acre)
PHY415W3FE	1455	33.8	**3.63**	**1.19**	32.8	83.3	**0.58**	**846**
PHY400W3FE	1366	33.2	3.55	1.18	33.8	82.3	0.58	791
PHY411W3FE	1321	**34.1**	3.74	1.18	34.5	82.7	**0.58**	768
PX1124B236-04W3FE	1400	33.9	3.35	1.16	32.4	83.1	0.55	768
PHY332W3FE	**1458**	33.3	3.16	1.17	34.5	81.7	0.52	758
PHY475W3FE	1257	32.2	3.57	1.15	**35.0**	82.6	0.58	728
PX1125B234-04W3FE	1296	33.7	3.36	1.17	**35.0**	82.4	0.53	690
PHY480W3FE	1261	33.3	3.24	1.18	33.4	**83.5**	0.52	658
Mean	**1352**	**33.4**	**3.5**	**1.17**	**33.9**	**82.7**	**0.56**	**751**
CV %	-	-	-	-	-	-	-	-
P>F	-	-	-	-	-	-	-	-
STD DEV	**81**	**0.6**	**0.2**	**0.01**	**1.0**	**0.6**	**0.03**	**59**

Notes:

Data were not analyzed because less than three replications were harvested.

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http://cotton.tamu.edu/

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Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congree of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Rick Avery, Director, Texas A&M AgriLife Extension Service, The Texas A&M University System.

Department of Soil and Crop Sciences

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