

# TEXAS ROLLING PLAINS COTTON TRIALS | 2022



TEXAS A&M  
**AGRI LIFE**  
EXTENSION

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



# TEXAS ROLLING PLAINS COTTON TRIALS | 2022

## 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
Jonathan Ramirez	Extension Program Specialist I	AgriLife Extension, Corpus Christi, TX

## COUNTY EXTENSION AGENT COOPERATORS

Kenny Patterson	County Extension Agent	AgriLife Extension, Collingsworth Co., TX
Blake Davis	County Extension Agent	AgriLife Extension, Haskell Co., TX
Justin Gilliam	County Extension Agent	AgriLife Extension, Hardeman Co., TX
David Graf	County Extension Agent	AgriLife Extension, Wichita 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.

## 2022 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.

2022 growing season was one of the most challenging years for cotton growers in Texas due to the extreme drought conditions, high summer temperatures, and brutal wind. Due to the very dry conditions, disease pressure was below average. Many dryland acres were abandoned due to the lack of moisture, while irrigation had to be continuously running to maintain the adequate soil moisture for irrigated fields. Periodic rainfall events during the harvest season slowed the field operations and harvesting.

To assist Texas cotton producers in remaining competitive in the Rolling Plains, the Texas A&M AgriLife Extension Service Agronomy program has conducted, large plot, on-farm, replicated variety trials since 2012. This approach provides a reliable source of information to assist farmers with the variety selection process. Three replicated agronomic cotton evaluation (RACE) trials, five Phytogen Innovation trials,

and two BASF APT trials were planted in 2022. We were able to harvest one RACE trial, three phytogen innovation trials, and two BASF ATP trials. Mean irrigated location yields for the 2022 cotton variety trials ranged from 1880 lb/ac for the Hardeman trial location to 995 lb/ac for the Wilbarger trial site, while mean yield of the dryland trial was 652 lb/ac in Haskell County.

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 2022 Texas Rolling Plains Cotton Trials.

<b>Maturity\Technology</b>	<b>XtendFlex</b>	<b>Enlist</b>	<b>GLT/GLTP</b>
<b>Early</b>	<a href="#"><u>DP2012B3XF</u></a>		
	<a href="#"><u>ST4993B3XF</u></a>		
<b>Early mid</b>	<a href="#"><u>DP1820B3XF</u></a>	<a href="#"><u>PHY350W3FE</u></a>	<a href="#"><u>FM1730GLTP</u></a>
	<a href="#"><u>ST4990B3XF</u></a>	<a href="#"><u>PHY394W3FE</u></a>	<a href="#"><u>FM1830GLT</u></a>
	<a href="#"><u>DP2020B3XF</u></a>	<a href="#"><u>PHY332W3FE</u></a>	<a href="#"><u>FM1953GLTP</u></a>
	<a href="#"><u>ST4595B3XF</u></a>		
<b>Mid</b>	<a href="#"><u>DP2038B3XF</u></a>	<a href="#"><u>PHY400W3FE</u></a>	<a href="#"><u>FM2498GLT</u></a>
	<a href="#"><u>NG4936B3XF</u></a>	<a href="#"><u>PHY480W3FE</u></a>	<a href="#"><u>FM2398GLTP</u></a>
	<a href="#"><u>NG4098B3XF</u></a>	<a href="#"><u>PHY443W3FE</u></a>	
	<a href="#"><u>NG4190B3XF</u></a>	<a href="#"><u>PHY411W3FE</u></a>	
<b>Mid to Full</b>	<a href="#"><u>DP1948B3XF</u></a>	<a href="#"><u>PHY500W3FE</u></a>	
	<a href="#"><u>ST5707B2XF</u></a>	<a href="#"><u>PHY545W3FE</u></a>	
	<a href="#"><u>NG5150B3XF</u></a>		
	<a href="#"><u>ST5600B2XF</u></a>		
	<a href="#"><u>DP1845B3XF</u></a>		
<b>Full</b>		<a href="#"><u>PHY580W3FE</u></a>	

**Table 2. FIBER EVALUATION**

<b>Parameters</b>	<b>Definition</b>	<b>Range</b>
<b>Micronaire (Mic)</b>	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
<b>Fiber length</b>	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
<b>Fiber strength</b>	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
<b>Length uniformity (unif)</b>	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>)

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**TABLE 3. BACKGROUND INFORMATION**

County	Producer cooperators	County Extension Agent	Irri/dry	Planting date	Harvest date	Rows x spacing	Seeding rate	Plot size
<b>RACE trial - Mixed technologies</b>								
Collingsworth	Rex Henard	Kenny Patterson	Irrigated	5/24/2022	11/10/2022	6 by 40"	40000	0.9
Wilbarger	Donald Shoppa	Langdon Reagan	Dryland	5/31/2022	Abandoned	8 by 40"	24100	-
<b>RACE trial - Xtendflex technology only</b>								
Childress	Cade Wyatt	Paul Dockter	Dryland	6/13/2022	Abandoned	8 by 40"	45000	1.3
<b>Phylogen Innovation Trial - Enlist technology only</b>								
Childress	Cade Wyatt	Paul Dockter	Dryland	5/18/2022	Abandoned	8 by 40"	25000	-
Collingsworth	Jerry Dan Davis	Kenny Patterson	Irrigated	5/27/2022	12/5/2022	6 by 40"	40000	0.6
Hardeman	Aaron Philips	Justin Gilliam	Irrigated	6/13/2022	11/13/2022	6 by 40"	29000	1.2
Wichita	Dwayne Pierce	David Graf	Irrigated	6/13/2022	12/29/2022	8 by 30"	45000	1.25
Wilbarger	Darren Streit	Langdon Reagan	Irrigated	6/16/2022	Abandoned	8 by 40"	31000	-
<b>BASF APT Trial - Xtendflex only (Haskell) and Xtendflex and GLTP (Wilbarger)</b>								
Haskell	Jason Key	Blake Davis	Dryland	6/9/2022	12/3/2022	6 by 40"	24000	1.1
Wilbarger	Donald Shoppa	Langdon Reagan	Dryland	5/31/2022	Abandoned	8 by 40"	24100	-
Wilbarger	Colby White	Langdon Reagan	Irrigated	6/14/2022	12/29/2022	8 by 40"	-	



2022 Texas Rolling Plains Cotton Trials

RACE trial agronomic information

County	Collingsworth			
Cooperator	Rex Henard			
Technologies	Mixed			
Irrigation	Irrigated			
Plant	5/24/2022			
Harvest	11/10/2022			
GDD	170	days		
Population	40000			
Rows and width	6 by 40"			
Plot size	0.9	ac		

Precipitation

Month	Precip. (in)
April	0.12
May	2.51
June	4.85
July	0.66
August	3.27
September	0.27
October	1.63
<b>Total</b>	<b>13.31</b>

Variety	Lint (Lbs/ac)	Gin turnout (%)	Micronaire	Fiber Length (inch)	Strength (g/tex)	Unif	Loan Value (cents/lb)	Lint Value (\$/acre)
ST4993B3XF	<b>1434</b>	40	4.77	1.18	<b>31.7</b>	<b>84.0</b>	55.7	<b>798</b>
PHY411W3FE	1439	40	4.70	1.14	<b>31.4</b>	<b>83.3</b>	54.9	788
FM2498GLT	1390	39	<b>4.93</b>	1.18	30.7	82.4	55.1	767
FM2398GLTP	1373	40	<b>5.03</b>	1.20	31.0	<b>83.4</b>	54.4	747
DP1820B3XF	1356	39	4.55	1.24	<b>32.5</b>	<b>83.5</b>	55.6	753
PHY332W3FE	1297	39	4.10	1.20	<b>31.8</b>	<b>83.1</b>	55.4	721
DP2012B3XF	1295	38	4.30	1.19	30.9	82.6	<b>55.9</b>	725
PHY400W3FE	1294	<b>41</b>	4.30	1.17	<b>32.4</b>	82.3	55.2	712
DP1845B3XF	1280	37	4.03	<b>1.26</b>	30.3	82.7	55.0	704
<b>Mean</b>	<b>1351</b>	<b>39</b>	<b>4.5</b>	<b>1.2</b>	<b>31.4</b>	<b>83.0</b>	<b>55.2</b>	<b>746</b>
<b>CV %</b>	<b>11</b>	<b>6</b>	<b>4.2</b>	<b>1.3</b>	<b>3.1</b>	<b>0.9</b>	<b>2.2</b>	<b>19.3</b>
<b>P&gt;F</b>	<b>NS</b>	<b>NS</b>	<b>&lt;.0001</b>	<b>&lt;.0001</b>	<b>0.0711</b>	<b>0.0888</b>	<b>NS</b>	<b>NS</b>
<b>STD DEV</b>	<b>62</b>	<b>1</b>	<b>0.4</b>	<b>0.04</b>	<b>0.8</b>	<b>0.6</b>	<b>0.5</b>	<b>33.4</b>

Notes: Highlighted values are significantly same as the highest value at P<0.1



2022 Texas Rolling Plains Cotton Trials

Phytogen Innovation trial agronomic information

County	Hardeman			
Cooperator	Aaron Philips			
Technologies	Enlist			
Irrigation	Irrigated			
Plant	6/13/2022	Double cropped behind wheat		
Harvest	11/13/2022			
GDD	153	days		
Population	29000			
Rows and width	6 by 40"			
Plot size	1.2	ac		

Precipitation

Month	Precip. (in)
April	0.37
May	1.98
June	7.95
July	0.06
August	6.37
September	0.04
October	2.53
<b>Total</b>	<b>19.30</b>

Variety	Lint (Lbs/ac)	Gin turnout (%)	Micronaire	Fiber Length (inch)	Strength (g/tex)	Unif	Loan Value (\$/lb)	Lint Value* (\$/acre)
PHY332W3FE	1949	34	4.08	<b>1.21</b>	29.8	82.3	56.3	<b>1098</b>
PHY400W3FE	<b>1955</b>	<b>36</b>	4.06	1.16	29.2	82.0	56.2	1097
PHY350W3FE	1905	34	<b>4.37</b>	1.17	29.2	82.6	<b>56.8</b>	1082
PHY411W3FE	1917	35	<b>4.40</b>	1.11	29.3	82.1	55.6	1066
PHY480W3FE	1858	34	3.98	1.15	30.0	82.6	<b>56.7</b>	1053
PHY415W3FE	1874	34	4.07	<b>1.21</b>	<b>30.9</b>	82.6	55.3	1036
PHY443W3FE	1803	35	4.36	1.15	30.5	<b>83.1</b>	<b>57.1</b>	1029
PHY545W3FE	1777	<b>36</b>	4.09	1.14	28.7	81.8	56.4	1001
<b>Mean</b>	<b>1880</b>	<b>35</b>	<b>4.2</b>	<b>1.16</b>	<b>29.7</b>	<b>82.4</b>	<b>56.3</b>	<b>1058</b>
<b>CV %</b>	<b>4.1</b>	<b>1.6</b>	<b>3.1</b>	<b>2.6</b>	<b>2.5</b>	<b>0.7</b>	<b>1.0</b>	<b>4.5</b>
<b>P&gt;F</b>	<b>NS</b>	<b>0.0006</b>	<b>0.0040</b>	<b>0.0154</b>	<b>0.0509</b>	<b>NS</b>	<b>0.0304</b>	<b>NS</b>
<b>STD DEV</b>	<b>65</b>	<b>1</b>	<b>0.2</b>	<b>0.03</b>	<b>0.7</b>	<b>0.4</b>	<b>0.601</b>	<b>35</b>

Notes:

Highlighted values are significantly same as the highest value at P<0.1



2022 Texas Rolling Plains Cotton Trials

Phylogen Innovation trial agronomic information

County	Collingsworth			
Cooperator	Jerry Dan Davis			
Technologies	Enlist			
Irrigation	Irrigated			
Plant	5/27/2022			
Harvest	12/5/2022			
GDD	192	days		
Population	40000			
Rows and width	6 by 40"			
Plot size	0.6	ac		

Precipitation

Month	Precip. (in)
April	0.12
May	2.51
June	4.85
July	0.66
August	3.27
September	0.27
October	1.63
<b>Total</b>	<b>13.31</b>

Variety	Lint (Lbs/ac)	Gin turnout (%)	Micronaire	Fiber Length (inch)	Strength (g/tex)	Unif	Loan Value (\$/lb)	Lint Value* (\$/acre)
PHY350W3FE	1208	37	<b>4.03</b>	1.13	29.8	81.5	55.11	<b>668</b>
PHY545W3FE	<b>1233</b>	<b>40</b>	3.78	1.10	30.2	82.3	53.83	663
PHY443W3FE	1185	38	3.88	1.12	30.2	<b>82.5</b>	54.35	643
PHY411W3FE	1201	37	3.85	1.11	30.9	81.8	53.1	639
PHY400W3FE	1172	37	3.65	1.11	29.9	81.3	51.93	607
PHY480W3FE	1115	36	3.48	1.12	29.0	<b>82.5</b>	52.1	581
PHY415W3FE	1113	37	3.49	<b>1.16</b>	<b>31.4</b>	82.0	51.42	575
PHY332W3FE	1060	36	3.67	<b>1.16</b>	30.1	81.9	52.87	562
<b>Mean</b>	<b>1161</b>	<b>37</b>	<b>4</b>	<b>1</b>	<b>30</b>	<b>82</b>	<b>53</b>	<b>617</b>
<b>CV %</b>	<b>6</b>	<b>2</b>	<b>8</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>9</b>
<b>P&gt;F</b>	<b>NS</b>	<b>0</b>	<b>NS</b>	<b>0</b>	<b>NS</b>	<b>NS</b>	<b>&lt;.0001</b>	<b>NS</b>
<b>STD DEV</b>	<b>59</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>42</b>

Notes:

Highlighted values are significantly same as the highest value at P<0.1



2022 Texas Rolling Plains Cotton Trials

Phytogen Innovation trial agronomic information

County	Wichita			
Cooperator	Dwayne Pierce			
Technologies	Enlist			
Irrigation	Irrigated			
Plant	6/13/2022			
Harvest	12/29/2022			
GDD	199	days		
Population	45000			
Rows	8 by 30"	rows	40"	width
Plot size	1.3	ac		

Precipitation

Month	Precip. (in)
April	2.04
May	2.64
June	3.09
July	0.36
August	1.99
September	0.24
October	3.63
<b>Total</b>	<b>13.99</b>

Variety	Lint (Lbs/ac)	Gin turnout (%)	Micronaire	Fiber Length (inch)	Strength (g/tex)	Unif	Loan Value (\$/lb)	Lint Value* (\$/acre)
PHY411W3FE	1479	31	4.01	1.10	30.1	81.8	52.1	771
PHY400W3FE	1518	32	3.34	1.13	30.8	81.2	48.1	734
PHY415W3FE	1457	30	3.65	1.19	30.8	82.2	49.1	715
PHY443W3FE	1418	30	3.68	1.12	29.9	81.4	50.3	713
PHY332W3FE	1342	29	3.54	1.17	31.1	81.3	47.9	644
PHY545W3FE	1432	31	3.52	1.12	29.5	81.7	43.1	619
PHY480W3FE	1424	29	3.41	1.16	30	82.6	43.1	616
PHY350W3FE	1312	29	3.23	1.15	29.2	81.6	44.4	583
<b>Mean</b>	<b>1423</b>	<b>30</b>	<b>3.5</b>	<b>1.14</b>	<b>30.2</b>	<b>81.7</b>	<b>47.3</b>	<b>674</b>
<b>CV %</b>	<b>6.6</b>	<b>3.3</b>	<b>6.5</b>	<b>1.2</b>	<b>2.1</b>	<b>0.9</b>	<b>8.5</b>	<b>13.4</b>
<b>P&gt;F</b>	<b>NS</b>	<b>0.0184</b>	<b>0.027</b>	<b>&lt;0.0001</b>	<b>0.0234</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>
<b>STD DEV</b>	<b>68</b>	<b>1.1</b>	<b>0.24</b>	<b>0.03</b>	<b>0.67</b>	<b>0.47</b>	<b>3.4</b>	<b>67</b>

Note:

Highlighted values are significantly same as the highest value at  $P < 0.1$

2022 Texas Rolling Plains Cotton Trials

**BASF APT Trial agronomic information (Not replicated)**

County	Haskell			
Cooperator	Jason Key			
Technologies	XtendFlex			
Irrigation	Dryland			
Plant	6/9/2022			
Harvest	12/3/2022			
GDD	177	days		
Population	24000			
Rows and width	6 by 40"			
Plot size	1.1	ac		

**Precipitation**

Month	Precip. (in)
April	1.43
May	2.43
June	2.71
July	0.37
August	2.21
September	0.32
October	2.45
<b>Total</b>	<b>0.00</b>

Variety	Lint (Lbs/ac)	Gin TO (%)	Micronaire	Fiber Length (inch)	Strength (g/tex)	Unif	Loan Value (\$/lb)	Lint Value* (\$/acre)
<b>ST 4595B3XF</b>	<b>854</b>	<b>34</b>	4.73	1.18	30.0	82.0	55.2	<b>471</b>
<b>BX 2394B3XF</b>	790	33	4.58	1.14	30.3	80.3	56.7	448
<b>DP 1845 B3XF</b>	746	33	4.52	<b>1.22</b>	31.3	82.3	53.1	396
<b>ST 4990B3XF</b>	622	30	4.82	<b>1.22</b>	30.3	83.3	<b>57.3</b>	356
<b>BX 2398B3XF</b>	614	33	4.87	1.16	29.2	82.0	56.9	349
<b>BX 2396B3XF</b>	605	<b>34</b>	4.92	1.13	29.2	82.8	56.4	341
<b>ST 4993B3XF</b>	607	33	5.08	1.15	34.4	<b>83.8</b>	54.6	332
<b>ST 5707B2XF</b>	611	29	<b>5.12</b>	1.19	<b>34.7</b>	82.9	53.0	324
<b>ST 5600B2XF</b>	568	31	5.05	1.16	33.0	83.6	53.0	301
<b>BX 2392B3XF</b>	498	31	4.72	1.16	30.9	82.8	55.1	274
<b>Mean</b>	<b>652</b>	<b>32</b>	<b>4.8</b>	<b>1.2</b>	<b>31.3</b>	<b>82.6</b>	<b>55.1</b>	<b>359</b>

\*Trial was not replicated.

2022 Texas Rolling Plains Cotton Trials

**BASF APT Trial agronomic information (Not replicated)**

County	Wilbarger			
Cooperator	Colby White			
Technologies	XtendFlex			
Irrigation	Irrigated			
Plant	6/14/2022			
Harvest	12/29/2022			
GDD	198	days		
Population				
Rows and width	8 by 40"			
Plot size		ac		

**Precipitation**

Month	Precip. (in)
April	1.21
May	4.72
June	3.86
July	0.47
August	3.55
September	0.52
October	3.61
<b>Total</b>	<b>0.00</b>

Variety	Lint (Lbs/ac)	Gin TO (%)	Micronaire	Fiber Length (inch)	Strength (g/tex)	Unif	Loan Value (\$/lb)	Lint Value* (\$/acre)
ST 4993B3XF	<b>1165</b>	<b>39</b>	<b>4.22</b>	1.12	31.4	<b>83.2</b>	53.1	<b>618</b>
BX 2392B3XF	1040	38	3.95	1.12	27.9	81.5	<b>56.4</b>	586
ST 4595B3XF	1086	38	3.90	1.16	28.7	80.7	51.6	560
BX 2394B3XF	993	37	3.73	1.14	29.3	81.0	55.0	546
ST 5707B2XF	951	33	3.66	1.18	<b>31.8</b>	81.9	53.0	504
ST 4990B3XF	976	38	3.98	1.18	29.5	82.7	51.7	504
ST 5600B2XF	1037	37	4.09	1.10	30.6	80.5	47.2	489
DP 1845 B3XF	967	35	3.35	<b>1.23</b>	30.6	82.3	47.9	463
BX 2396B3XF	901	38	3.76	1.14	27.2	81.8	49.0	441
BX 2398B3XF	832	36	3.78	1.16	28.8	81.4	52.6	438
<b>Mean</b>	<b>995</b>	<b>37</b>	<b>3.8</b>	<b>1.2</b>	<b>29.6</b>	<b>81.7</b>	<b>51.7</b>	<b>515</b>

\*Trial was not replicated.



<http://cotton.tamu.edu/>

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Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress 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

soilcrop.tamu.edu