

2019 TEXAS HIGH PLAINS REPLICATED AGRONOMIC COTTON EVALUATION (RACE) TRIALS

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2019 Southern High Plains Replicated Agronomic Cotton Evaluation (RACE) Trial Results



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2019 Season Summary

The 2019 season certainly started off looking very promising. Different from years past, particularly 2018, most of the region had adequate moisture in the soil profile going into planting. With that being said early spring rains also brought with it plenty of hail, triggering replanting scenarios in many cases. Additionally, most of the region experienced below normal (1981-2010) heat unit (HU) accumulation in May and June, further delaying crop establishment and initial growth. While much of the Southern High Plains seemed to be off by 20 to as much as 30% of initial yield estimates, July through September came with high temperatures and poorly distributed rainfall at peak crop water demand. Although we did catch some rain during this critical period of fruit set, most of the time it came in the form of brief, heavy downpours, with extended dry and hot periods in between. According to the United States Department of Agriculture – National Agricultural Statistics Service (USDA-NASS) Texas producers seeded 7.05 million acres of upland cotton in 2019 and average yield was reported at 569 lb/a across the State. As of February 1, 2020, the USDA-NASS reports a total of 6.3 million bales ginned in Texas, which represents about 34.4% of the Nation's total for upland cotton thus far. The average price per pound of lint is \$0.589 with an estimated total crop value right around \$1.8 billion. As we look into 2020, the National Cotton Council of America planting intentions survey indicate a nationwide decrease of about 5% in total acreage compared to 2019, for a total of 12.7 million acres. In Texas, our producers intend to plant approximately 6.7 million acres, a decrease of 4.2% compared to 2019, but still more than half of the Nation's intended acres.

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2019 VARIETY LIST

	Dryland	Irrigated
1	DP1646 B2XF	CP9598 B3XF
2	DP1948 B3XF	DP1549 B2XF*
3	FM2334 GLT	DP1820 B3XF
4	NG3930 B3XF	DP1845 B3XF
5	NG3956 B3XF	FM2498 GLT
6	NG4777 B3XF	FM2574 GLT
7	NG4792 XF	NG3930 B3XF
8	ST5707 B2XF	NG3956 B3XF
9	WFU19XB9 B3XF	NG4777 B3XF
10		NG4792 XF
11		ST5600 B2XF
12		WFU 19XB9 B3XF

*Grower Entry



2019 VARIETY LINEUP CHARACTERISTICS

Table 1. Characteristics of varieties included in the 2019 Replicated Agronomic Cotton Evaluation (RACE) trials in the Southern High Plains of Texas. All information was retrieved from each seed company website.

Variety	Maturity	Herbicide Package	Leaf Type	Storm Tolerance	Plant Height	MIC	Verticillium	Bacterial Blight
DeltaPine 1820 B3XF	Early-Mid	Glufos, Glyphos, and Dicamba	Semi-Smooth	4	Medium-Tall	4.6	Moderate	Resistant
NexGen 3930 B3XF	Early-Mid	Glufos, Glyphos, and Dicamba	Semi-Smooth	7	Medium-Tall	4.1 - 4.5	Good	Mod. Resistance
NexGen 3956 B3XF	Early-Mid	Glufos, Glyphos, and Dicamba	Semi-Smooth	8	Medium-Tall	4.3 - 4.7	Very Good	Mod. Resistance
Croplan 9598 B3XF	Medium	Glufos, Glyphos, and Dicamba	Smooth	3	Medium	4.3 - 4.7	Susceptible	Resistant
FiberMax 2334 GLT	Medium	Glyphosate and Glufosinate	Smooth	5	Medium/Moderate	4.1	Very Good	Resistant
FiberMax 2498 GLT	Medium	Glyphosate and Glufosinate	Semi-Smooth	6	Medium-Tall	4.4	Very Good	Resistant
NexGen 4777 B2XF	Medium	Glufos, Glyphos, and Dicamba	Smooth	6	Tall	4.0 - 4.7	Very Good	Mod. Resistance
NexGen 4792 XF	Medium	Glufos, Glyphos, and Dicamba	Smooth	6	Medium-Tall	3.7 - 4.6	Very Good	Mod. Resistance
DeltaPine 1646 B2XF	Mid-Full	Glufos, Glyphos, and Dicamba	Smooth	5	N/A*	4.5	Mod. Susceptibility	Mod. Resistance
DeltaPine 1845 B3XF	Mid-Full	Glufos, Glyphos, and Dicamba	Semi-Smooth	4	N/A	4.2	Mod. Susceptibility	Mod. Resistance
DeltaPine 1948 B3XF	Mid-Full	Glufos, Glyphos, and Dicamba	Smooth	4.5	Medium-Tall	4.1	Mod. Susceptibility	Mod. Susceptibility
FiberMax 2574 GLT	Mid-Full	Glyphosate and Glufosinate	Smooth	5	Medium-Tall	4.1	Very Good	Resistant
Stoneville 5600 B2XF	Mid-Full	Glufos, Glyphos, and Dicamba	Semi-Smooth	5	Tall/Vigorous	4.7	Good	Susceptible
Stoneville 5707 B2XF	Mid-Full	Glufos, Glyphos, and Dicamba	Semi-Smooth	4	Tall/Vigorous	4.2	Fair	Resistant
WinField United 19XB9 B3XF	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

* Information not available on website.

Variety descriptions, rankings and characteristics obtained from each seed company website.

2019 TRIAL LOCATION DETAILS

Table 2. Location, Cooperator, and other relevant remarks for the 2019 Southern High Plains Replicated Agronomic Cotton (RACE) Evaluation trials.

	Location	Irrigation	Cooperator	Planting Date	Harvest Date	Seeding Rate seeds/a	Remarks
1	Crosby	No	Erik Alvarado	5/22/19	Lost	Lost	Lost ¹ /Hail
2	Dawson	No	Ag-CARES	5/23/19	26-Nov	38,000	Herbicide Damage ²
3	Dawson	No	Will Cozart	Lost	Lost	Lost	Lost
4	Hale	Yes	Michael Looney	5/20/19	18-Dec	52,500	Lost/Sampled ³
5	Hale	Yes	Halfway Station	6/4/19	18-Nov	47,500	Herbicide Damage
6	Hall	No	Brice Hatley	Lost	Lost	Lost	Lost/Freeze
7	Hall	Yes	Brice Hatley	Lost	Lost	Lost	Lost/Freeze
8	Hockley	No	Danny Dukatnik	6/11/19	12-Nov	29,000	Lost/Sampled
9	Lamb	No	Clay Graves/Troy McDann	5/15/19	Lost	Lost	Lost/Hail/Sand
10	Lubbock	No	Cole Hamilton	5/30/19	23-Oct	25,000	Round Modules ⁴ /Herbicide Damage (2,4-D)
11	Lubbock	No	Station	5/15/19	15-Nov	35,400	Hail Damage
12	Lubbock	Yes	Eddie Speer	5/30/19	15-Nov	32,000	Hail Damage
13	Lubbock	No	Glover	5/15/19	2-Dec	35,400	Hail Damage
14	Mitchell	No	Andrew Sauer	6/13/19	4-Dec	35,000	Herbicide Damage
15	Terry	Yes	Clay and David Lewis	5/19/19	26-Aug	30,000	Herbicide Damage

¹ means the trial was lost due to poor initial establishment and/or to insurance/freeze/hail.

² unless otherwise specified, herbicide damage applies to Fibermax varieties not resistant to auxin herbicides.

³ for all sampled locations a total of 6 linear ft. of each row was hand sampled. HVI testing performed as usual.

⁴ trial harvested using a round module harvester, three replications pooled into two modules.

HEAT UNIT ACCUMULATION AND IN-SEASON PRECIPITATION

Table 3. Accumulated heat units (HU), beginning and ending dates, and in-season precipitation for 2019 RACE trials.

Location	Cooperator	Accumulated HU (DD60s)	Begin Date*	End	In-Season Precipitation (in.)
Lubbock	Station	2,871	4.5.19	10.9.19	24
Lubbock	Cole Hamilton	2,871	4.5.19	10.9.19	24
Lubbock	Glover	2,871	4.5.19	10.9.19	24
Lubbock	Eddie Speer	2,871	4.5.19	10.9.19	24
Hockley	Danny Dukatnik	2,413	3.28.19	10.10.19	13
Hale	Halfway Station	2,149	4.4.19	10.10.19	17
Hale	Michael Looney	2,441	4.4.19	10.10.19	15
Terry	Clay and David Lewis	2,698	3.28.19	10.10.19	17
Dawson	Ag-CARES	2,969	3.27.19	10.11.19	12
Mitchell	Andrew Sauer	3,540	4.3.19	10.23.19	15

* starts/stops at 3 consecutive days with or without positive HU accumulation.

FINAL PLANT POPULATION BY VARIETY AT DRYLAND LOCATIONS

Table 4. Final plant population at dryland Replicated Agronomic Cotton Evaluation (RACE) Trial locations in 2019. No statistical significance at 0.05 (n.s.).

Variety	LBB_STATION		LBB_GLOVER		LBB_DRY		HOCKLEY_DRY		DAWSON_DRY	
	plants/a	(%)*	plants/a	(%)	plants/a	(%)	plants/a	(%)	plants/a	(%)
DP1646B2XF	13,508	38	12,636	36	17,647	71	26,065	90	36,819	97
DP1948B3XF	18,083	51	12,636	36	15,251	61	20,330	70	30,501	80
FM2334GLT	12,418	35	20,915	59	19,826	79	LOST [†]	LOST	33,115	87
NG3930B3XF	13,072	37	16,122	46	16,558	66	26,792	92	34,205	90
NG3956B3XF	12,200	34	19,826	56	16,993	68	28,316	98	35,730	94
NG4777B2XF	11,983	34	22,222	63	20,479	82	30,640	106	38,344	101
NG4792XF	16,994	48	22,004	62	16,558	66	26,283	91	34,423	91
ST5707B2XF	10,240	29	22,222	63	19,826	79	29,551	102	38,562	101
WFU19XB9B3XF	16,558	47	15,033	42	18,301	73	24,541	85	34,641	91
Mean	13,952	39	18,180	51	17,938	72	26,565	92	35,149	92
STDEV	4,312		4,772		2,245		3,867		3,142	
CV, %	30.9		26.3		12.5		14.6		8.9	
p-value	0.3474		0.0032		0.0186		0.0121		0.0120	
LSD	n.s.		3,241		1,713		3,000		2,327	

* (%) indicates percentage of seeding rate present as final plant stand (refer to table 2 for seeding rate)

[†] variety lost due to herbicide injury

FINAL PLANT POPULATION BY VARIETY AT IRRIGATED LOCATIONS

Table 5. Final plant population at irrigated Replicated Agronomic Cotton Evaluation (RACE) Trial locations in 2019.

Variety	TERRY_IRR		LBB_IRR		HALFWAY_IRR		HALE_IRR	
	plants/a	(%)*	plants/a	(%)	plants/a	(%)	plants/a	(%)
CP9598B3XF	21,351	71	22,004	69	3,486	7	9,368	18
DP1820B3XF	19,608	65	23,312	73	25,054	53	18,083	34
DP1845B3XF	23,312	78	27,451	86	23,965	50	18,954	36
FM2498GLT	25,708	86	31,373	98	32,680	69	36,383	69
FM2574GLT	27,887	93	32,898	103	23,965	50	38,780	74
NG3930B3XF	25,708	86	25,926	81	22,004	46	23,529	45
NG3956B3XF	21,133	70	22,658	71	32,026	67	19,608	37
NG4777B2XF	28,105	94	28,758	90	25,708	54	32,026	61
NG4792XF	25,272	84	29,412	92	25,054	53	27,887	53
ST5600B2XF	23,965	80	26,797	84	17,647	37	21,351	41
WFU19XB9B3XF	24,183	81	26,580	83	26,362	55	20,261	39
DP1549B2XF [†]	25,054	84						
Mean	24,274	81	27,015	84	23,450	49	24,203	46
STDEV	3,129		4,081		8,384		9,062	
CV, %	12.9		15.1		35.8		37.4	
p-value	0.0018		0.001		<0.001		<0.0001	
LSD	1,874		2,440		3,829		3,424	

* (%) indicates percentage of seeding rate present as final plant stand (refer to table 2 for seeding rate)

[†] Grower Entry

Table 6. Lint yield, quality, and value results from the Lubbock County dryland RACE trial located at the Texas A&M AgriLife Research and Extension Center – Lubbock. Ranked by highest to lowest lint yield values. Poor final stand uniformity due to hail damage and poor initial germination. No statistical significance at 0.05 (n.s.).

Variety	Lint Yield lb/a	Turnout %	MIC	Length in.	Uniformity %	Strength g/tex	Color	Leaf	Loan Value cents/lb	Lint Value \$/a
DP1948B3XF	271	0.39	4.0	1.19	82.6	31.1	31, 31, 31	3, 2, 2	56.7	154
NG3930B3XF	264	0.36	4.1	1.10	81.8	27.5	32, 32, 31	3, 3, 2	53.2	139
NG4792XF	255	0.38	4.7	1.07	81.4	29.7	42, 32, 33	2, 2, 3	49.4	126
NG4777B2XF	253	0.38	4.5	1.06	80.6	27.5	32, 32, 32	2, 1, 2	51.4	130
DP1646B2XF	213	0.42	4.3	1.17	81.3	28.2	31, 31, 31	2, 3, 2	56.1	120
WFU19XB9B3XF	193	0.37	4.0	1.16	81.8	32.3	22, 32, 32	1, 2, 2	54.0	104
NG3956B3XF	174	0.37	4.2	1.08	80.9	27.9	31, 32, 32	2, 1, 2	52.7	92
ST5707B2XF	156	0.36	4.2	1.13	81.7	30.9	32, 32, 32	3, 3, 4	52.4	81
FM2334GLT	133	0.40	4.5	1.14	81.7	30.5	32, 31, 31	1, 1, 1	55.1	73
Mean	212	0.38	4.3	1.12	81.5	29.5			53.5	113
STDEV	96	0.02	0.4	0.05	1.0	1.8			2.6	52
CV, %	45	5.27	8.3	4.33	1.2	6.1			4.8	46
p-value	0.6086	<0.0001	0.0768	<0.0001	0.3515	<0.0001			0.0003	0.6489
LSD	n.s.	0.01	n.s.	0.02	n.s.	0.6			1.5	n.s.

Loan value calculated using the Cotton Incorporated Upland Loan Calculator Program (\$52.0 cents/lb base for 41 color, 4 leaf, 34 staple)

STDEV (standard deviation). CV (coefficient of variation). LSD (least significant difference, $p < 0.05$).

<https://www.cottoninc.com/cotton-production/ag-resources/cotton-farming-decision-aids/2019-upland-cotton-loan-calculator/>

Table 7. Lint yield, quality, and value results from the Lubbock County dryland RACE trial located at the Glover Farm, east of the Texas A&M AgriLife Research and Extension Center – Lubbock. Ranked by highest to lowest lint yield values. Hail damage July 10. No statistical significance at 0.05 (n.s.).

Variety	Lint Yield lb/a	Turnout %	MIC	Length in.	Uniformity %	Strength g/tex	Color	Leaf	Loan Value cents/lb	Lint Value \$/a
NG3956B3XF	294	0.35	4.7	1.02	80.6	27.0	33, 32, 32	3, 3, 2	47.4	143
NG3930B3XF	265	0.35	4.5	1.05	80.7	26.0	42, 43, 43	5, 3, 4	44.2	117
DP1948B3XF	244	0.37	4.7	1.11	81.3	30.0	42, 41, 41	4, 4, 3	52.6	128
NG4792XF	242	0.35	4.7	1.00	79.2	28.3	43, 43, 33	3, 4, 3	43.7	106
NG4777B2XF	236	0.34	4.5	1.02	79.5	26.4	43, 33, 32	3, 2, 3	44.8	106
FM2334GLT	235	0.37	4.8	1.05	79.7	27.0	32, 32, 32	2, 2, 2	49.5	116
WFU19XB9B3XF	226	0.34	4.7	1.12	81.6	29.2	33, 43, 32	4, 4, 4	49.2	112
ST5707B2XF	198	0.34	4.8	1.04	80.1	28.7	43, 43, 42	4, 3, 3	46.0	91
DP1646B2XF	181	0.37	4.6	1.08	79.0	25.9	31, 32, 42	3, 2, 3	50.6	91
Mean	236	0.35	4.7	1.05	80.2	27.6			47.5	112
STDEV	53	0.01	0.2	0.04	1.2	1.7			3.8	29
CV, %	22	4.10	3.9	3.92	1.5	6.1			8.1	26
p-value	0.2904	0.0017	0.3001	<0.0001	0.0162	0.0009			0.0154	0.4528
LSD	n.s.	0.01	n.s.	0.02	0.9	1.0			2.9	n.s.

Loan value calculated using the Cotton Incorporated Upland Loan Calculator Program (\$52.0 cents/lb base for 41 color, 4 leaf, 34 staple)

STDEV (standard deviation). CV (coefficient of variation). LSD (least significant difference, $p < 0.05$).

<https://www.cottoninc.com/cotton-production/ag-resources/cotton-farming-decision-aids/2019-upland-cotton-loan-calculator/>

Table 8. Lint yield, quality, and value results from the Hockley County dryland RACE trial. Cooperator Danny Dukatnik. Ranked by highest to lowest lint yield values. Trial was replanted June 11. Fibermax 2334 lost due to dicamba injury. No statistical significance at 0.05 (n.s.).

Variety	Lint Yield lb/a	Turnout %	MIC	Length in.	Uniformity %	Strength g/tex	Color	Leaf	Loan Value cents/lb	Lint Value \$/a
NG3930B3XF	382	0.36	4.8	1.11	81.4	28.5	21, 33, 21	2, 2, 1	53.0	203
NG4777B2XF	343	0.34	4.7	1.11	82.2	30.9	23, 33, 32	1, 1, 1	50.0	172
DP1646B2XF	341	0.34	4.9	1.07	82.1	28.7	32, 22, 33	2, 1, 1	50.6	174
ST5707B2XF	330	0.34	4.9	1.09	81.0	28.8	32, 33, 22	1, 1, 1	51.0	170
NG4792XF	307	0.33	4.9	1.14	82.5	31.4	33, 33, 23	1, 2, 1	49.5	153
WFU19XB9B3XF	299	0.33	5.0	1.07	81.4	30.0	33, 22, 23	2, 1, 1	49.1	146
DP1948B3XF	276	0.32	4.6	1.08	80.8	27.9	22, 33, 22	2, 1, 1	50.9	141
NG3956B3XF	222	0.36	4.8	1.11	81.2	30.2	32, 33, 32	2, 1, 1	50.7	113
Mean	312	0.34	4.8	1.10	81.6	29.6			50.6	159
STDEV	72	0.03	0.2	0.05	1.3	1.9			2.7	42
CV, %	23	7.36	4.4	4.67	1.6	6.4			5.4	27
p-value	0.1910	0.67	0.5113	0.7267	0.7544	0.2136			0.8286	0.2841
LSD	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.			n.s.	n.s.

Loan value calculated using the Cotton Incorporated Upland Loan Calculator Program (\$52.0 cents/lb base for 41 color, 4 leaf, 34 staple)

STDEV (standard deviation). CV (coefficient of variation). LSD (least significant difference, $p < 0.05$).

<https://www.cottoninc.com/cotton-production/ag-resources/cotton-farming-decision-aids/2019-upland-cotton-loan-calculator/>

Table 9. Lint yield, quality, and value results from the Dawson County dryland RACE trial located at the Agricultural Complex for Advanced Research and Extension Systems (Ag-CARES) in Lamesa, TX. Ranked by highest to lowest lint yield values. No statistical significance at 0.05 (n.s.).

Variety	Lint Yield lb/a	Turnout %	MIC	Length in.	Uniformity %	Strength g/tex	Color	Leaf	Loan Value cents/lb	Lint Value \$/a
NG4792XF	270	0.38	4.4	1.02	79.1	26.4	32, 32, 33	3, 2, 3	47.2	127
FM2334GLT	246	0.39	4.0	1.03	77.8	23.3	32, 32, 32	2, 1, 1	46.7	115
WFU19XB9B3XF	223	0.36	4.2	1.05	78.5	24.7	32, 33, 33	3, 2, 3	46.4	104
ST5707B2XF	218	0.37	4.6	1.03	80.4	26.2	32, 32, 32	3, 5, 3	47.9	104
NG3930B3XF	210	0.35	3.8	1.03	79.5	23.3	32, 32, 33	3, 3, 2	45.9	96
NG3956B3XF	207	0.34	4.1	1.01	79.1	25.1	33, 33, 33	4, 4, 3	43.4	90
NG4777B2XF	196	0.35	3.7	0.98	76.6	20.6	32, 32, 32	2, 3, 2	43.2	85
DP1646B2XF	186	0.40	4.1	1.03	77.7	23.6	31, 31, 31	4, 3, 2	47.9	90
DP1948B3XF	176	0.38	4.3	1.09	80.5	28.3	42, 32, 31	4, 3, 4	51.6	91
Mean	215	0.37	4.1	1.03	78.8	24.6			46.7	100
STDEV	49	0.02	0.3	0.03	1.3	2.2			2.8	24
CV, %	23	5.5	6.7	3.1	1.7	9.1			5.9	24
p-value	0.4120	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			0.0002	0.4506
LSD	n.s.	0.01	0.09	0.02	0.5	0.8			1.6	n.s.

Loan value calculated using the Cotton Incorporated Upland Loan Calculator Program (\$52.0 cents/lb base for 41 color, 4 leaf, 34 staple)

STDEV (standard deviation). CV (coefficient of variation). LSD (least significant difference, $p < 0.05$).

<https://www.cottoninc.com/cotton-production/ag-resources/cotton-farming-decision-aids/2019-upland-cotton-loan-calculator/>

Table 10. Lint yield, quality, and value results from the Lubbock County dryland RACE trial. Cooperator Cole Hamilton. Ranked by highest to lowest lint yield values. Some localized 2,4-D injury noted. Cooperator used a round module cotton stripper. Three replications pooled into two round modules and weighed in the field; no statistical analysis available for lint yield.

Variety	Lint Yield lb/a	Turnout %	MIC	Length in.	Uniformity %	Strength g/tex	Color	Leaf	Loan Value cents/lb	Lint Value \$/a
WFU19XB9B3XF	553	0.37	4.9	1.13	82.2	30.9	22, 22	2, 2	55.1	304
DP1948B3XF	497	0.38	4.6	1.13	82.5	31.7	31, 31	2, 1	56.2	279
DP1646B2XF	491	0.41	4.7	1.11	80.0	28.8	31, 21	1, 1	55.1	271
NG3930B3XF	472	0.38	4.6	1.07	81.8	27.0	32, 32	2, 3	51.6	243
ST5707B2XF	465	0.36	5.0	1.10	82.8	33.3	32, 32	2, 1	50.4	234
FM2334GLT	464	0.39	4.7	1.11	81.3	31.6	31, 31	1, 1	55.4	253
NG4777B2XF	435	0.38	4.8	1.04	80.3	27.6	32, 32	2, 1	49.7	216
NG3956B3XF	435	0.36	4.5	1.04	81.0	28.2	32, 32	3, 2	50.4	222
NG4792XF*	391	0.39	4.9	1.05	81.7	30.0	32	2	51.6	202
Mean	467	0.38	4.7	1.08	81.5	29.9			52.9	247
STDEV	46	0.01	0.2	0.04	1.1	2.2			2.6	33
CV, %	10	3.9	3.5	3.4	1.3	7.5			4.9	13
p-value	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A
LSD	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A

Loan value calculated using the Cotton Incorporated Upland Loan Calculator Program (\$52.0 cents/lb base for 41 color, 4 leaf, 34 staple)

STDEV (standard deviation). CV (coefficient of variation). LSD (least significant difference, $p < 0.05$). N/A (not available).

<https://www.cottoninc.com/cotton-production/ag-resources/cotton-farming-decision-aids/2019-upland-cotton-loan-calculator/>

*Single grab sample for HVI.

Table 11. Lint yield, quality, and value results from the Mitchell County dryland RACE trial. Cooperator Andrew Sauer. Ranked by highest to lowest lint yield values. Fibermax varieties lost due to dicamba injury. Widespread wildlife (deer) damage to the trial. No statistical significance at 0.05 (n.s.).

Variety	Lint Yield lb/a	Turnout %	MIC	Length in.	Uniformity %	Strength g/tex	Color	Leaf	Loan Value cents/lb	Lint Value \$/a
DP1845B3XF	364	0.34	4.3	1.22	82.6	33.1	42, 42, 41	3, 4, 3	52.6	192
NG3956B3XF	341	0.31	4.3	1.12	82.1	28.7	42, 32, 43	4, 3, 4	49.8	171
ST5600B2XF	316	0.34	4.8	1.17	82.4	31.4	43, 54, 43	1, 3, 2	46.4	146
CP9598B3XF	305	0.36	4.9	1.16	82.9	30.5	42, 42, 42	2, 1, 2	50.7	153
DP1820B3XF	288	0.33	4.6	1.21	83.4	33.4	42, 42, 42	3, 2, 3	51.7	149
NG3930B3XF	228	0.32	4.3	1.14	82.3	29.0	33, 43, 43	2, 4, 2	48.3	110
WFU19XB9B3XF	218	0.33	4.3	1.20	83.4	32.1	43, 42, 32	3, 2, 2	51.1	111
NG4777B2XF	215	0.28	3.9	1.15	81.8	31.9	42, 42, 32	2, 3, 3	52.1	111
NG4792XF	212	0.32	4.5	1.15	83.4	32.9	33, 32, 43	4, 4, 2	50.0	107
Mean	276	0.33	4.4	1.17	82.7	31.5			50.3	139
STDEV	114	0.03	0.4	0.04	0.9	1.9			2.5	58
CV, %	41	7.8	8.2	3.3	1.1	6.1			5.0	42
p-value	0.6491	0.0167	0.0075	0.006	0.2143	0.0005			0.0265	0.6139
LSD	n.s.	0.02	0.26	0.02	n.s.	1.2			2.0	n.s.

Loan value calculated using the Cotton Incorporated Upland Loan Calculator Program (\$52.0 cents/lb base for 41 color, 4 leaf, 34 staple)

STDEV (standard deviation). CV (coefficient of variation). LSD (least significant difference, $p < 0.05$). N/A (not available).

<https://www.cottoninc.com/cotton-production/ag-resources/cotton-farming-decision-aids/2019-upland-cotton-loan-calculator/>

Table 12. Lint yield, quality, and value results from the Lubbock County irrigated RACE trial. Cooperator Eddie Speer. Ranked by highest to lowest lint yield values. Hail damage July 10. Center pivot. No statistical significance at 0.05 (n.s.).

Variety	Lint Yield lb/a	Turnout %	MIC	Length in.	Uniformity %	Strength g/tex	Color	Leaf	Loan Value cents/lb	Lint Value \$/a
CP9598B3XF	1504	0.41	4.9	1.15	82.4	31.5	31, 31, 31	2, 3, 3	56.2	845
DP1820B3XF	1297	0.39	4.9	1.18	83.0	34.1	31, 31, 31	2, 2, 3	56.8	736
DP1845B3XF	1164	0.38	4.7	1.16	82.1	32.8	31, 41, 32	5, 5, 2	52.2	607
NG3930B3XF	1118	0.36	4.3	1.12	82.3	29.9	32, 32, 32	5, 2, 4	51.4	575
FM2498GLT	1073	0.39	4.7	1.14	82.7	31.8	31, 31, 31	3, 2, 3	56.1	602
FM2574GLT	1056	0.40	4.7	1.21	83.2	34.2	31, 31, 31	4, 3, 4	55.5	585
NG4777B2XF	990	0.38	4.7	1.13	82.2	31.6	32, 32, 41	2, 2, 4	53.3	529
NG3956B3XF	983	0.37	4.7	1.11	82.1	29.4	32, 42, 32	4, 6, 4	49.9	489
NG4792XF	863	0.38	4.9	1.08	81.9	32.1	32, 32, 32	1, 3, 1	50.6	437
ST5600B2XF	823	0.40	5.1	1.11	82.4	31.6	32, 32, 32	4, 3, 3	50.4	414
WFU19XB9B3XF	621	0.36	4.6	1.19	83.2	33.8	32, 32, 32	4, 4, 4	52.4	326
Mean	1045	0.38	4.7	1.15	82.5	32.1			53.2	559
STDEV	284	0.02	0.3	0.05	0.8	1.7			2.7	167
CV, %	27	4.53	6.0	4.01	1.0	5.4			5.0	30
p-value	0.0024	<0.0001	0.0824	0.0005	0.4294	<0.0001			<0.0001	0.0004
LSD	177	0.01	n.s.	0.03	n.s.	0.8			1.1	95

Loan value calculated using the Cotton Incorporated Upland Loan Calculator Program (\$52.0 cents/lb base for 41 color, 4 leaf, 34 staple)

STDEV (standard deviation). CV (coefficient of variation). LSD (least significant difference, $p < 0.05$).

<https://www.cottoninc.com/cotton-production/ag-resources/cotton-farming-decision-aids/2019-upland-cotton-loan-calculator/>

Table 13. Lint yield, quality, and value results from the Hale County irrigated RACE trial located at the Texas A&M AgriLife Research and Extension Center –Halfway. Ranked by highest to lowest lint yield values. Test replanted June 4 due to hail damage. Dicamba injury to Fibermax varieties noted. CP9598 showed poor emergence, refer to plant population table.

Variety	Lint Yield lb/a	Turnout %	MIC	Length in.	Uniformity %	Strength g/tex	Color	Leaf	Loan Value cents/lb	Lint Value \$/a
FM2498GLT	1100	0.40	4.6	1.11	82.0	30.0	23, 22, 22	1, 1, 1	53.0	584
NG4792XF	963	0.37	4.7	1.10	83.0	31.4	33, 33, 33	2, 2, 2	49.4	476
NG3930B3XF	943	0.36	4.2	1.15	83.8	29.6	23, 23, 23	3, 3, 3	50.7	478
NG4777B2XF	935	0.37	4.7	1.11	82.9	30.7	23, 33, 33	1, 1, 1	49.9	467
FM2574GLT	895	0.38	4.2	1.17	82.0	31.2	22, 22, 22	2, 1, 1	55.3	494
NG3956B3XF	880	0.36	4.4	1.10	82.2	29.0	23, 33, 23	1, 2, 3	49.8	439
DP1820B3XF	804	0.38	4.5	1.16	82.8	32.3	32, 33, 23	1, 1, 1	51.5	415
DP1845B3XF	801	0.37	4.1	1.20	82.7	30.8	22, 33, 23	2, 2, 3	52.3	419
WFU19XB9B3XF	779	0.37	4.2	1.13	83.4	31.8	34, 33, 34	2, 2, 3	48.8	380
ST5600B2XF	763	0.34	3.9	1.20	83.0	31.5	23, 23, 23	1, 3, 3	51.0	389
CP9598B3XF	515	0.37	3.4	1.16	82.6	30.4	23, 23, 23	1, 2, 2	47.8	248
Mean	853	0.37	4.3	1.14	82.8	30.8			50.9	435
STDEV	158	0.02	0.4	0.04	0.7	1.2			2.4	91
CV, %	19	4.45	9.5	3.31	0.8	3.9			4.7	21
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0044			0.0004	<0.0001
LSD	69	0.01	0.1	0.01	0.4	0.8			1.4	42

Loan value calculated using the Cotton Incorporated Upland Loan Calculator Program (\$52.0 cents/lb base for 41 color, 4 leaf, 34 staple)

STDEV (standard deviation). CV (coefficient of variation). LSD (least significant difference, $p < 0.05$).

<https://www.cottoninc.com/cotton-production/ag-resources/cotton-farming-decision-aids/2019-upland-cotton-loan-calculator/>

Table 14. Lint yield, quality, and value results from the Hale County irrigated RACE trial. Cooperator Michael Looney. Ranked by highest to lowest lint yield values. Intended as an irrigated trial, managed as dryland. CP9598 showed poor emergence, refer to plant population table.

Variety	Lint Yield lb/a	Turnout %	MIC	Length in.	Uniformity %	Strength g/tex	Color	Leaf	Loan Value cents/lb	Lint Value \$/a
ST5600B2XF	275	0.27	4.4	1.09	81.4	28.6	32, 42	3, 3	51.1	140
DP1845B3XF	263	0.24	3.7	1.15	79.1	29.3	42, 32	5, 4	48.4	129
NG4792XF	231	0.23	3.8	1.06	80.0	29.1	43, 33	4, 3	44.7	106
WFU19XB9B3XF	228	0.23	4.0	1.13	81.0	29.6	33, 32	3, 4	50.9	117
FM2498GLT	212	0.25	4.2	1.06	80.2	28.2	32, 32, 32	3, 3, 3	50.7	108
FM2574GLT	205	0.24	4.0	1.08	79.0	28.0	42, 31, 42	3, 3, 3	51.1	108
DP1820B3XF	201	0.26	3.8	1.12	80.8	30.0	32, 32	3, 4	52.4	105
NG3930B3XF	199	0.22	3.5	1.10	80.3	29.4	32	5	46.0	91
NG3956B3XF	193	0.23	3.5	1.09	82.3	30.3	33	4	45.2	87
NG4777B3XF	185	0.23	3.6	1.05	78.1	26.8	33, 33	3, 4	46.1	85
CP9598B3XF	120	0.24	4.0	1.12	81.0	28.9	32	3	52.7	63
Mean	216	0.24	3.9	1.09	80.1	28.7			49.3	107
STDEV	71	0.02	0.4	0.04	1.4	1.2			3.6	40
CV, %	33	10.3	9.3	3.35	1.7	4.1			7.2	37
p-value*	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A
LSD*	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A

Loan value calculated using the Cotton Incorporated Upland Loan Calculator Program (\$52.0 cents/lb base for 41 color, 4 leaf, 34 staple)

STDEV (standard deviation). CV (coefficient of variation). LSD (least significant difference, $p < 0.05$). N/A (not available).

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*Part of the trial accidentally harvested by cooperator. No statistical analysis available due to limited samples for some varieties.

Table 15. Lint yield, quality, and value results from the Terry County irrigated RACE trial. Cooperators Clay and David Lewis. Ranked by highest to lowest lint yield values. Significant dicamba injury to Fibermax varieties noted. Light 2,4-D injury noted. Center pivot, light water.

Variety	Lint Yield lb/a	Turnout %	MIC	Length in.	Uniformity %	Strength g/tex	Color	Leaf	Loan Value cents/lb	Lint Value \$/a
ST5600B2XF	369	0.39	5.0	1.06	81.3	30.2	32, 33, 22	1, 2, 1	49.7	185
CP9598B3XF	342	0.42	4.9	1.05	80.0	27.5	32, 32, 22	2, 1, 1	50.1	172
NG3956B3XF	336	0.37	4.5	1.03	80.4	27.5	32, 33, 22	2, 3, 2	48.5	164
DP1820B3XF	319	0.40	4.6	1.10	79.7	28.9	32, 32, 32	1, 2, 1	52.2	166
NG4792XF	313	0.40	4.6	1.02	80.4	29.6	33, 33, 33	2, 2, 1	46.4	145
NG4777B2XF	311	0.39	4.4	1.01	78.2	23.6	23, 32, 22	1, 1, 2	45.5	141
NG3930B3XF	308	0.38	4.3	1.05	80.9	26.2	32, 32, 22	2, 2, 2	49.9	154
DP1549B2XF	301	0.39	4.5	1.02	80.3	28.4	33, 33, 23	2, 2, 2	46.0	138
WFU19XB9B3XF	300	0.37	4.5	1.11	81.5	30.3	33, 33, 33	2, 3, 2	49.3	148
DP1845B3XF	289	0.38	4.1	1.12	80.8	31.4	32, 32, 32	4, 2, 3	52.4	151
FM2498GLT	129	0.39	4.4	1.10	80.3	28.6	23, 23, 23	2, 1, 3	50.0	64
FM2574GLT	100	0.41	4.4	1.10	79.6	28.7	22, 22, 32	1, 1, 3	53.0	53
Mean	285	0.39	4.5	1.06	80.3	28.4			49.4	140
STDEV	92	0.02	0.2	0.04	1.0	2.4			3.1	47
CV, %	32	3.9	5.4	4.18	1.2	8.3			6.2	34
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001			0.0055	0.0004
LSD	46	0.01	0.1	0.02	0.5	1.2			2.0	26

Loan value calculated using the Cotton Incorporated Upland Loan Calculator Program (\$52.0 cents/lb base for 41 color, 4 leaf, 34 staple)

STDEV (standard deviation). CV (coefficient of variation). LSD (least significant difference, $p < 0.05$).

<https://www.cottoninc.com/cotton-production/ag-resources/cotton-farming-decision-aids/2019-upland-cotton-loan-calculator/>



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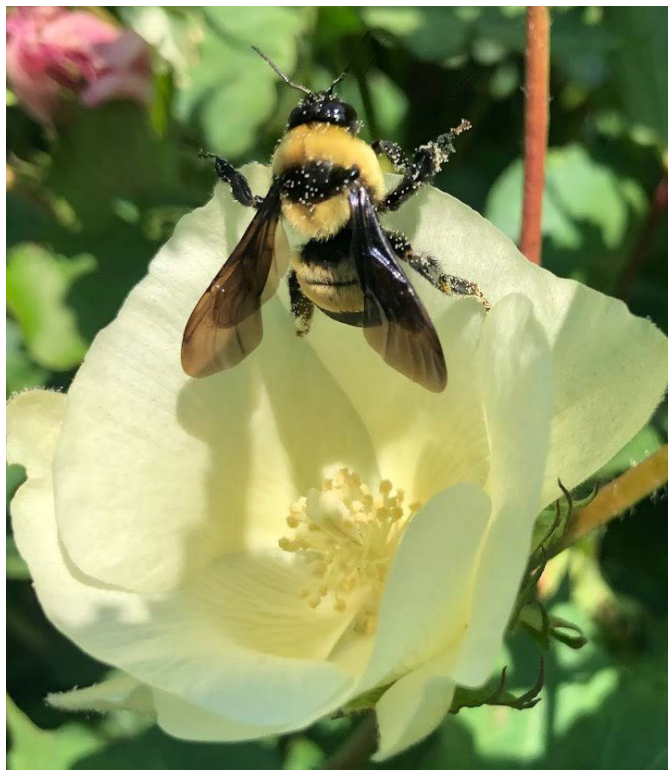
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**2019 Texas Panhandle
Replicated Agronomic Cotton Evaluation (RACE)**



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2019 Texas Panhandle Replicated Agronomic Cotton Evaluation (RACE)

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2019 Texas Panhandle Highlights

The Texas Panhandle RACE trials provide regional producers a comparison of top cotton varieties marketed for Panhandle cotton production systems. Weather-related challenges from planting through harvest including poor stand establishments, hail injury, crop disease, in-season water stress, and freeze related quality discounts resulted in 2019 being one of the most challenging cotton seasons on record.

Regionally, below-average spring temperatures resulted in limited growing degree day (GDD) accumulation in May (Fig. 1). Hot-dry conditions in July and early-August increased crop water demands and resulted in crop stress on dryland and limited irrigated fields.

The 2019 Texas Panhandle RACE Trials were planted at nine locations under varying crop rotations, row spacings and populations (Table 1), and an additional three locations were planned but not planted due to planting delays in May. Four locations were terminated as a result of seedling disease and poor stands (Carson, Deaf Smith, Hutchinson, and Moore/Sunray). Early to early-mid maturing double and triple herbicide stacked varieties were planted at each location as a seed company entry or cooperating producer request.

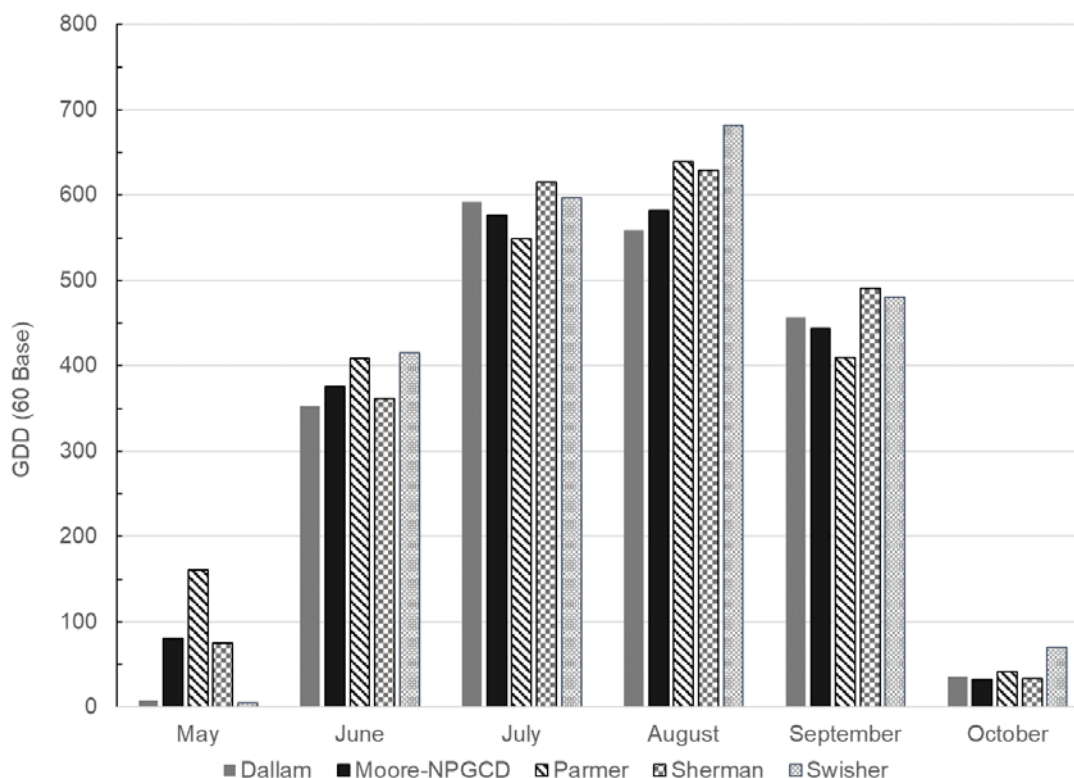


Figure 1. Distribution of growing degree days (GDD60) accumulated from planting for locations where a Texas A&M AgriLife weather station is located.

Although 2019 presented many cotton production challenges, cumulative GDD accumulation (2120) was comparable to the recent four-year average (2176) (Fig. 2). Evaluation of the monthly GDD distribution demonstrates the importance of May and June heat accumulation in Texas Panhandle production systems to optimize production. While GDD accumulation is often low in May, June accumulation is necessary to speed up early-season crop development. Inefficient GDD accumulation in May 2019 and below average GDD accumulation in June 2019 resulted in the crop not initiating squares until early July at most locations. This data also validates producer concerns and potential inadequacies with the use of historical GDD models in non-traditional cotton production environments where >2300 GDDs is the standard from harvest to maturity.

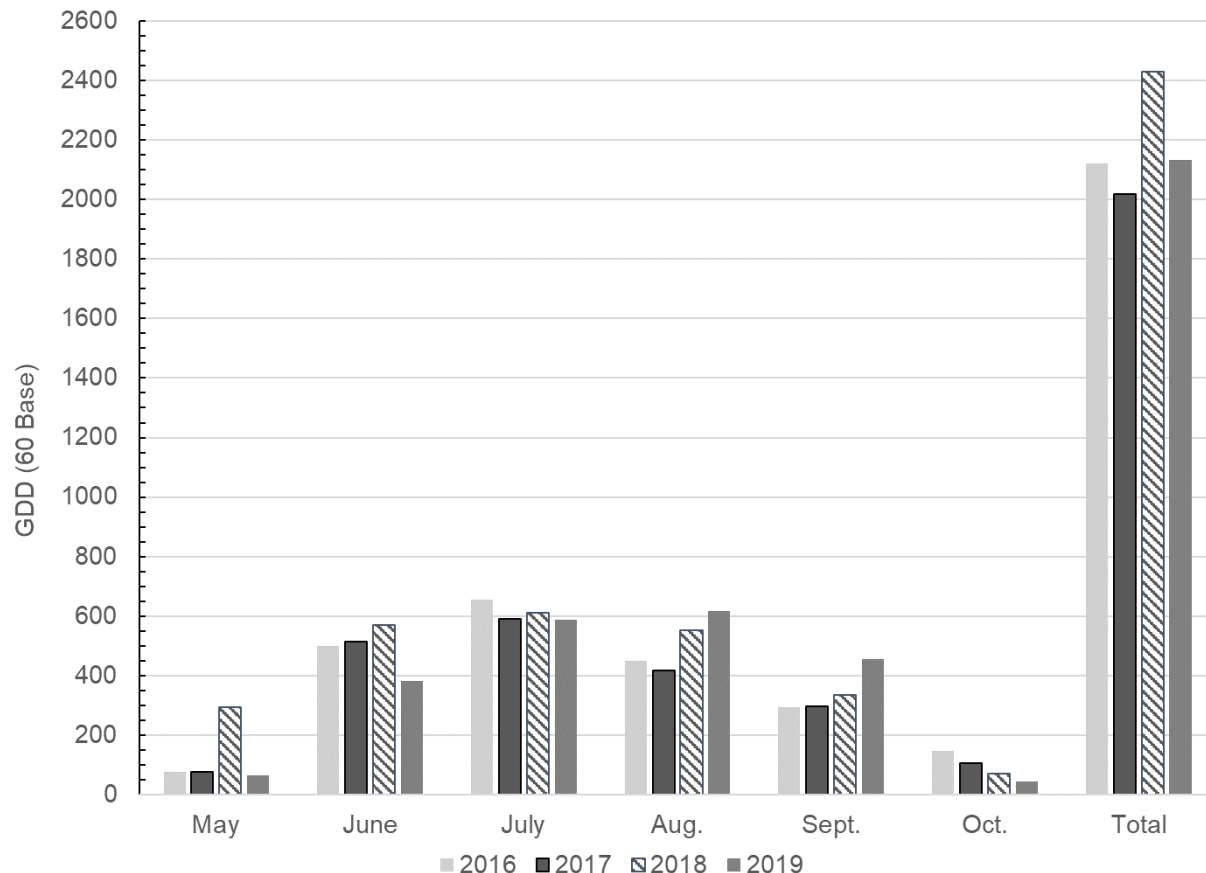


Figure 2. Four-year average growing degree days (GDD60) accumulated at Texas A&M AgriLife Panhandle RACE trial locations by production month and total seasonal accumulation.

Table 1. 2019 Agronomic information by location.

County	Carson	Dallam	Deaf Smith	Hansford - Sherman	Hutchinson	Moore	Parmer	Moore	Swisher
Location (Nearest Town)	Groom	Conlen	Hereford	Gruver	Morse	Dumas	Muleshoe	Sunray	Kress
Elevation (ft.)	3,255	3,819	3,816	3,176	3,205	3,661	4,068	3,507	3,471
Cooperator	Denny Babcock	Jay Willard	Frankie Bezner	Greg Slough	Craig McCloy	NPGCD - Stan Spain	Tony Beauchamp	Tommy Cartrite	Jeremy Reed
County Agent(s)	Jody Bradford	Mike Bragg	Rick Auckerman	Kristy Slough & Matt Whitely	Kristy Slough & Matt Whitely	Marcel Fischbacher	Curtis Preston, Sergio Garza, & J.D. Gonzales	Marcel Fischbacher	John Villabla
Irrigation	Dryland	Irrigated	Irrigated	Irrigated	Irrigated	Early and Late	Irrigated	Dryland	Irrigated
Irrigation inches	----	3.5	----	----	----	7 and 4	----	----	----
Precipitation inches	----	6.9	13.73	11.5	----	11.7	14.8	----	8.7
Previous crop	Wheat	Corn	Corn	Cotton w/ wheat cover	Corn	Corn	Corn	Fallow	Sorghum
Herbicide Technologies	GL and XF	Only XF	GL and XF	GL and XF	GL and XF	Only XF	Only XF	GL and XF	GL and XF
Planting Date	5/18/2019	5/29/2019	5/3/2019	5/15/2019	5/16/2019	5/14/2019	5/6/2019	5/6/2019	5/31/2019
Planting Pop. (Seeds/ac)	35,000	45,000	50,000	55,000	80,000	66,000	40,000	54,000	50,000
Harvest Date	Terminated due to disease and poor vigor	11/11/2019	Terminated due to disease and poor vigor	11/15-11/16/2019	Terminated due to crusting and poor vigor	11/15/2019	11/14/2019	Hailed out 6/22/19	11/13/2019
Varieties #Farmer entry	----	----	----	----	----	----	CP3475 B2XF†	----	----
	----	----	----	DG3385 B2XF†	----	DG3385 B2XF†	----	----	----
	----	----	----	----	----	----	----	DP1522 B2XF†	----
	DP1822 XF	----	----	----	----	----	----	DP1822 XF	----
	----	DP1820 B3XF	DP1820 B3XF	DP1820 B3XF	DP1820 B3XF	DP1820 B3XF	DP1820 B3XF	----	DP1820 B3XF
	----	DP1908 B3XF	DP1908 B3XF	DP1908 B3XF	DP1908 B3XF	DP1908 B3XF	DP1908 B3XF	----	DP1908 B3XF
	DP1909 XF	----	----	----	----	----	----	DP1909 XF	----
	FM1320 GL	----	FM1320 GL	FM1320 GL	FM1320 GL	----	----	FM1320 GL	FM1320 GL
	FM1621 GL	----	FM1621 GL	FM1621 GL	FM1621 GL	----	----	FM1621 GL	FM1621 GL
	FM1888 GL	----	FM1888 GL	FM1888 GL	FM1888 GL	----	----	FM1888 GL	FM1888 GL
	FM2398 GLTP	----	FM2398 GLTP	FM2398 GLTP	FM2398 GLTP	----	----	FM2398 GLTP	FM2398 GLTP
	NG2982 B3XF	NG2982 B3XF	NG2982 B3XF	NG2982 B3XF	NG2982 B3XF	NG2982 B3XF	NG2982 B3XF	NG2982 B3XF	NG2982 B3XF
	NG3406 B2XF†	----	----	----	----	----	NG3406 B2XF	----	----
	NG3640 XF	NG3640 XF	NG3640 XF	NG3640 XF	NG3640 XF	----	NG3640 XF	NG3640 XF	NG3640 XF
	NG3930 B3XF	NG3930 B3XF	NG3930 B3XF	NG3930 B3XF	NG3930 B3XF	NG3930 B3XF	----	NG3930 B3XF	NG3930 B3XF
	NG3956 B3XF	NG3956 B3XF	NG3956 B3XF	NG3956 B3XF	NG3956 B3XF	NG3956 B3XF	NG3956 B3XF	NG3956 B3XF	NG3956 B3XF
	----	----	----	----	----	----	----	----	Phy250 W3FE†
	----	----	----	----	----	----	----	----	Phy350 W3FE†

Table 2. Characteristics of varieties evaluated in 2019 Panhandle RACE trials. All variety characteristics are obtained from company variety descriptions. Varieties represented are either entered by seed companies or requested by cooperating producers.

Variety	Maturity	Herbicide Package	Leaf Type	Storm Tolerance*	Plant Height	Mic	Vert.	Bacterial Blight
CP3475 B2XF†	Early	Glyphos., Glufos., and Dicamba	Semi-Smooth	3	Medium	4.5-4.8	Good	Susceptible
DG3385 B2XF†	Early	Glyphos., Glufos., and Dicamba	Semi-Smooth	7	Medium	4.3-4.7	Good	NA
Deltapine1522 B2XF†	Early-Med	Glyphos., Glufos., and Dicamba	Light Hair	5	Medium	4.3	Susceptible	Susceptible
Deltapine1822 XF	Early-Med	Glyphos., Glufos., and Dicamba	Semi-Smooth	3	Med-Tall	4.3	Moderate	Resistant
Deltapine1820 B3XF	Early-Med	Glyphos., Glufos., and Dicamba	Semi-Smooth	3.5	Med-Tall	4.1	Moderate	Resistant
Deltapine1908 B3XF	Very Early-Early	Glyphos., Glufos., and Dicamba	Smooth	4	Med-Tall	3.4	Mod-Susceptible	Resistant
Deltapine1909 XF	Very Early-Early	Glyphos., Glufos., and Dicamba	Smooth	5	Med-Tall	3.6	Mod-Susceptible	Resistant
FiberMax 1320 GL	Very Early	Glyphosate and Glufosinate	Semi-Smooth	7	Short	3.5	Fair	Susceptible
FiberMax 1621 GL	Early	Glyphosate and Glufosinate	Semi-Hairy	6	Medium	4.2	Fair	Resistant
FiberMax 1888 GL	Early-Med	Glyphosate and Glufosinate	Semi-Smooth	6	Medium	3.6	Fair	Resistant
FiberMax 2398 GLTP	Medium	Glyphosate and Glufosinate	Semi-Smooth	5	Med-Tall	4.4	Very Good	Resistant
NexGen 2982 B3XF	Early	Glyphos., Glufos., and Dicamba	Semi-Smooth	9	Medium	4.0-4.2	Very Good	Resistant
NexGen 3406 B2XF†	Early-Med	Glyphos., Glufos., and Dicamba	Semi-Smooth	6	Medium	4.4-4.6	Good	Susceptible
NexGen 3640 XF	Early-Med	Glyphos., Glufos., and Dicamba	Smooth	6	Med-Tall	4.4-4.8	Very Good	Resistant
NexGen 3930 B3XF	Early-Med	Glyphos., Glufos., and Dicamba	Semi-Smooth	7	Med-Tall	4.1-4.5	Very Good	Resistant
NexGen 3956 B3XF	Early-Med	Glyphos., Glufos., and Dicamba	Semi-Smooth	8	Med-Tall	4.3-4.7	Very Good	Resistant
Phy250 W3FE†	Early	Glyphos., Glufos., and 2-4D	Smooth	9	Short	4.1	Excelent	Resistant
Phy350 W3FE†	Early-Med	Glyphos., Glufos., and 2-4D	Semi-Smooth	8	Med-Tall	4.2	Excelent	Resistant

*Storm Tolerance (1-9): 1=Loose Boll, 9=Tight Boll from Company Variety Descriptions.

†Variety included at the producer's request.

All variety descriptions, rankings and characteristics obtained from on-line seed company details.

Table 3. Four-week post planting stand counts by location.

	Carson	Dallam	NPGCD (Early Irr.)	NPGCD (Late Irr.)	Sherman	Moore	Swisher
Planted Seeds/Acre	35,000	45,000	66,000	66,000	55,000	54,000	50,000
	---- Measured plants/acre----						
CP3475 B2XF†	----*	----	----	----	----	----	----
DG3385 B2XF†	----	----	33,541	41,164	40,220	----	----
DP1522 B2XF†	----	----	----	----	----	15,754	----
DP1822 XF	17,860	----	----	----	----	17,134	----
DP1820 B3XF	----	35,864	25,483	31,363	36,155	----	38,228
DP1908 B3XF	----	34,848	40,075	38,551	36,300	----	38,555
DP1909 XF	16,698	----	----	----	----	11,761	----
FM1320 GL	20,038	----	----	----	42,108	13,213	38,990
FM1621 GL	18,150	----	----	----	40,075	10,600	34,307
FM1888 GL	23,522	----	----	----	43,705	21,344	40,515
FM2398 GLTP	19,021	----	----	----	37,897	12,778	39,535
NG2982 B3XF	23,377	38,768	38,986	40,075	47,045	22,361	40,951
NG3406 B2XF†	18,803	----	----	----	----	----	----
NG3640 XF	17,424	34,412	----	----	40,511	14,230	36,485
NG3930 B3XF	21,344	35,138	35,066	28,967	38,478	23,958	36,485
NG3956 B3XF	18,731	31,073	34,630	39,857	34,848	16,408	37,030
Phy250 W3FE†	----	----	----	----	----	----	38,663
Phy350 W3FE†	----	----	----	----	----	----	41,822
Trial Average	19,543	35,017	34,630	36,663	39,758	16,322	38,464
CV, %	28	11	18	20	41	41	13
p-value	<0.0001	0.0004	0.0023	0.0042	0.0308	<0.0001	0.2840
LSD	4,200	3,042	6,458	7,467	NS	9,427	NS

*Varieties not planted at the respective location.

†Farmer entry

Carson and Moore County trials failed, but stand counts measured prior to crop termination.

Table 4. Four-week post planting stand counts as a fraction of the planted population.

	Carson	Dallam	NPGCD (Early Irr.)	NPGCD (Late Irr.)	Sherman	Moore	Swisher	Average
Planted Seeds/Acre	35,000	45,000	66,000	66,000	55,000	54,000	50,000	53,000
	---- plants/acre as a % of planted seed ----							
CP3475 B2XF†	----	----	----	----	----	----	----	----
DG3385 B2XF†	----	----	0.51	0.62	0.73	----	----	0.62
DP1522 B2XF†	----	----	----	----	----	0.29	----	0.29
DP1822 XF	0.51	----	----	----	----	0.32	----	0.41
DP1820 B3XF	----	0.80	0.39	0.48	0.66	----	0.76	0.62
DP1908 B3XF	----	0.77	0.61	0.58	0.66	----	0.77	0.68
DP1909 XF	0.48	----	----	----	----	0.22	----	0.35
FM1320 GL	0.57	----	----	----	0.77	0.24	0.78	0.59
FM1621 GL	0.52	----	----	----	0.73	0.20	0.69	0.53
FM1888 GL	0.67	----	----	----	0.79	0.40	0.81	0.67
FM2398 GLTP	0.54	----	----	----	0.69	0.24	0.79	0.56
NG2982 B3XF	0.67	0.86	0.59	0.61	0.86	0.41	0.82	0.69
NG3406 B2XF†	0.54	----	----	----	----	----	----	0.54
NG3640 XF	0.50	0.76	----	----	0.74	0.26	0.73	0.60
NG3930 B3XF	0.61	0.78	0.53	0.44	0.70	0.44	0.73	0.60
NG3956 B3XF	0.54	0.69	0.52	0.60	0.63	0.30	0.74	0.58
Phy250 W3FE†	----	----	----	----	----	----	0.77	0.77
Phy350 W3FE†	----	----	----	----	----	----	0.84	0.84
Trial Average	0.56	0.78	0.52	0.56	0.72	0.30	0.77	0.60

Table 5. 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots in Dallam County; Jay Willard Cooperator. Reported by maximum lint yield. Values significant at $p < 0.05$.

Variety	Seed Cotton			Lint Yield --- lb/acre ---	Seed Yield --- lb/acre ---	Micro- naire	Fiber Length (in.)	Unif. --%--	Strength (g/tex)	CGRD	Leaf	Lint loan Value cents/lb	Lint Value --- \$/acre ---	Seed Value --- \$/acre ---
	Yield --- lb/acre ---	Turnout --%--												
NG2982B3XF	3860	a	0.27	1036	1788	2.9	1.15	82.5	35.0	41	2	48.83	505.83	122.71
NG3930B3XF	3424	ab	0.29	984	1604	2.7	1.17	81.6	31.2	41	2	45.33	447.29	116.63
DP1908B3XF	3508	c	0.28	964	1672	2.9	1.23	82.6	33.7	41	3	46.65	449.12	114.19
NG3956B3XF	3296	ab	0.29	946	1625	2.8	1.15	81.1	33.1	41	1	47.75	452.85	112.14
DP1820B3XF	2959	bc	0.31	911	1289	3.0	1.23	81.3	33.7	41	1	49.55	452.37	107.92
NG3640XF	2650	b	0.28	743	1240	3.2	1.13	81.6	34.0	41	1	50.95	379.16	88.03
Test Average	3283	0.28		931	1536	2.9	1.2	81.8	33.5	41	1.8	48.18	447.77	110.27
CV, %	6.2	3.9		7.3	5.8	9.2	1.9	1.0	2.5	5.9	38.7	6.9	11.7	7.3
p-value	0.0002	0.0166		0.0035	<0.0001	0.3915	0.0003	0.1653	0.0034	NS	0.0082	0.4102	0.1930	<0.0001
LSD	360	0.02		121	159	NS	0.04	NS	1.5	NS	1.5	NS	NS	14.30

MeaNS within a column with the same letter are not significantly different at the 0.05 probability level.

CV - coefficient of variation.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a \$0.52/pound base.

Seed value calculated using \$185/ton.

Table 6. 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots on the Hansford-Sherman County line; Greg Slough Cooperator. Reported by maximum lint yield. Values significant at $p < 0.05$.

Variety	Seed Cotton Yield --- lb/acre ---	Turnout --%--	Lint Yield --- lb/acre ---	Seed Yield --- lb/acre ---	Micro- naire	Fiber Length (in.)	Unif. --%--	Strength (g/tex)	CGRD	Leaf	Lint loan Value cents/lb	Lint Value --- \$/acre ---	Seed Value --- \$/acre ---
FM1621 GL	2343 a	0.43	1000	1065	4.8	1.02	79.6	28.1	32	3	47.65	477.71	103.98
DG3385 B2XF*	2724 a	0.35	964	1131	4.5	1.06	81.6	28.8	31	2	48.78	469.87	113.07
NG3956 B3XF	2842 a	0.33	948	1279	4.6	1.06	81.1	29.8	26	1	49.05	465.17	116.65
FM2398 GLTP	2417 a	0.39	941	1005	4.9	1.08	80.7	29.4	23	1	50.07	471.44	107.21
NG2982 B3XF	2730 a	0.34	937	1178	4.4	1.06	81.3	30.4	39	4	49.98	471.02	100.49
NG3930 B3XF	2697 a	0.34	922	1167	4.4	1.10	82.1	29.0	26	2	49.57	457.21	116.27
DP1820 B3XF	2493 a	0.36	907	1005	4.6	1.13	81.1	32.7	26	1	50.57	458.65	113.07
FM1888 GL	2510 a	0.35	882	1072	4.7	1.04	79.1	27.2	25	2	50.08	441.91	106.54
NG3640 XF	2622 a	0.34	881	1163	4.7	1.05	81.6	30.7	30	2	47.78	419.75	117.83
DP1908 B3XF	2459 a	0.33	813	1147	4.5	1.12	81.1	30.1	22	1	54.90	446.28	100.52
FM1320 GL	2336 a	0.34	793	1040	4.7	1.02	79.6	28.9	29	2	49.83	395.35	114.72
Test Average	2561	0.36	908	1114	4.6	1.07	80.81	29.55	28.15	1.92	49.84	452.22	110.03
CV, %	9.4	9.8	10.9	10.3	3.2	1.5	0.9	3.6	6.6	9.1	2.5	3.3	10.3
p-value	0.1548	0.0586	0.4927	0.1587	0.0095	<0.0001	0.0001	0.0002	0.0097	0.0419	<0.0001	0.8400	0.1587
LSD	NS	NS	NS	NS	0.3	0.04	2.3	2.2	9.7	1.9	2.58	NS	NS

MeaNS within a column with the same letter are not significantly different at the 0.05 probability level.

CV - coefficient of variation.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a \$0.52/pound base.

Seed value calculated using \$185/ton.

*Producer Entry

Table 7. 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots located at the North Plains Groundwater Conservation District's Water Conservation Center where irrigation was initiated at pinhead square; Stan Spain cooperator. Reported by maximum lint yield. Values significant at $p < 0.05$.

Variety	Seed Cotton Yield --- lb/acre ---		Turnout --%--	Lint Yield --- lb/acre ---	Seed Yield --- lb/acre ---	Micro- naire	Fiber Length (in.)	Unif. --%--	Strength (g/tex)	CGRD	Leaf	Lint loan Value cents/lb	Lint Value --- \$/acre ---	Seed Value --- \$/acre ---
NG2982 B3XF	4191	a	0.34	1430	1778	4.1	1.14	82.2	33.5	42	6	48.00	687.93	177.78
DG3385 B2XF*	3991	a	0.36	1424	1761	4.0	1.19	83.8	32.1	23	1	51.15	728.35	176.14
DP1908 B3XF	3860	a	0.35	1333	1675	4.4	1.24	84.4	33.5	32	3	54.18	720.90	167.52
NG3930 B3XF	3879	a	0.33	1284	1681	4.0	1.19	84.2	31.3	23	2	51.13	656.47	168.06
DP1820 B3XF	3641	a	0.34	1256	1438	4.1	1.24	83.5	34.6	28	3	50.63	636.04	143.75
NG3956 B3XF	3843	a	0.30	1171	1712	4.0	1.19	82.6	32.5	28	3	50.50	591.12	171.18
Test Average	3901		0.34	1316	1674	4.1	1.19	83.4	32.9	29	3	50.93	670.13	167.41
CV, %	5.3		5.7	6.9	4.7	3.6	3.2	0.9	1.9	23.0	62.8	2.6	7.4	4.7
p-value	0.3076		0.2412	0.1540	0.0396	0.4297	0.0305	0.1249	0.0015	0.1922	0.2450	0.0485	0.1755	0.0396
LSD	NS		NS	NS	193	NS	0.05	NS	1.5	NS	NS	NS	NS	NS

MeaNS within a column with the same letter are not significantly different at the 0.05 probability level.

CV - coefficient of variation.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a \$0.52/pound base.

Seed value calculated using \$185/ton.

*Producer Entry

Table 8. 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots located at the North Plains Groundwater Conservation District's Water Conservation Center where irrigation was initiated at peak bloom; Stan Spain cooperator. Reported by maximum lint yield. Values significant at $p < 0.05$.

Variety	Seed Cotton Yield --- lb/acre ---	Turnout --%--	Lint Yield --- lb/acre ---	Seed Yield --- lb/acre ---	Micro- naire	Fiber Length (in.)	Unif. --%--	Strength (g/tex)	CGRD	Leaf	Lint loan Value cents/lb	Lint Value --- \$/acre ---	Seed Value --- \$/acre ---
DP1908 B3XF	3550 a	0.37	1319	1504	4.6	1.20	82.7	32.1	27	3	54.90	727.25	150.44
DP1820 B3XF	3616 a	0.34	1240	1446	4.2	1.25	83.4	34.7	34	1	49.55	614.68	144.60
DG3385 B2XF*	3408 a	0.35	1192	1485	4.3	1.17	83.8	32.1	33	2	50.30	599.81	148.48
NG3956 B3XF	3550 a	0.31	1115	1590	4.3	1.17	83.1	34.5	28	3	50.53	563.42	159.01
NG3930 B3XF	3323 a	0.32	1077	1441	4.0	1.20	84.0	32.1	23	3	50.80	546.87	144.05
NG2982 B3XF	3235 a	0.31	1007	1385	4.3	1.15	83.6	33.0	42	6	49.53	500.49	138.51
Test Average	3447	0.34	1158	1475	4.3	1.19	83.4	33.1	31	3	50.93	592.09	147.52
CV, %	4.5	8.5	10.1	5.1	2.5	1.5	0.6	2.0	13.9	45.4	4.1	29.1	4.7
p-value	0.2359	0.3580	0.2247	0.2672	0.0195	0.0132	0.2531	0.0162	0.0452	0.0920	0.2408	0.2745	0.0396
LSD	NS	NS	NS	NS	0.3	0.04	NS	1.6	11	NS	NS	NS	10.68

MeaNS within a column with the same letter are not significantly different at the 0.05 probability level.

CV - coefficient of variation.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a \$0.52/pound base.

Seed value calculated using \$185/ton.

*Producer Entry

The RACE trials at the North Plains Groundwater Conservation District's (NPGCD) Water Conservation Center (WCC) were duplicated to evaluate the timing of irrigation initiation on variety performance. Irrigation timing simulated two common irrigation scenarios: 1) early irrigation initiated at pinhead square simulating where irrigation water is dedicated to a cotton crop, and 2) late irrigation initiated at full bloom simulating where irrigation would be shared with a corn crop. Initiating irrigation at full bloom allows the producer to concentrate irrigation resources on the corn crop during tasseling then move irrigation to the cotton crop. In 2019, all plots received 0.65 inches on June 27 when cotton was approximately 2-4 nodes. The irrigation treatment at pinhead square was initiated on July 9, and the irrigation treatment at peak bloom was initiated on August 6. Seasonal irrigation totals were 8 and 4.7 inches for irrigation the pinhead and peak bloom treatments, respectively. Soil moisture was monitored with gypsum blocks. Soil moisture remained greater than 90% of field capacity in June during early vegetative development. Although the trial lint yield average was 158 lbs/acre less when initiating irrigation later in the season at peak bloom, yield data reveals significant variety responses by maturity (Fig. 3). First year data suggests that the evaluated early maturing varieties are more susceptible to yield losses from water stress at early season reproductive stages than the evaluated early-med varieties. Because earlier varieties are often more determinant, they may not have the ability to flex with favorable growing conditions later in the growing season like the early-med maturity varieties. Micronaire values were greater for all varieties except NG3930 B3XF when irrigation was initiated at peak bloom due to a concentration of resources with the reduced boll load; however, micronaire values were still within premium quality standards.

Figure 3. Comparison of lint yield between irrigation initiated two different development periods (pinhead square (PHS) and peak bloom) in the Texas A&M AgriLife RACE trials at the North Plains Ground Water Conservation District's Water Conservation Center.

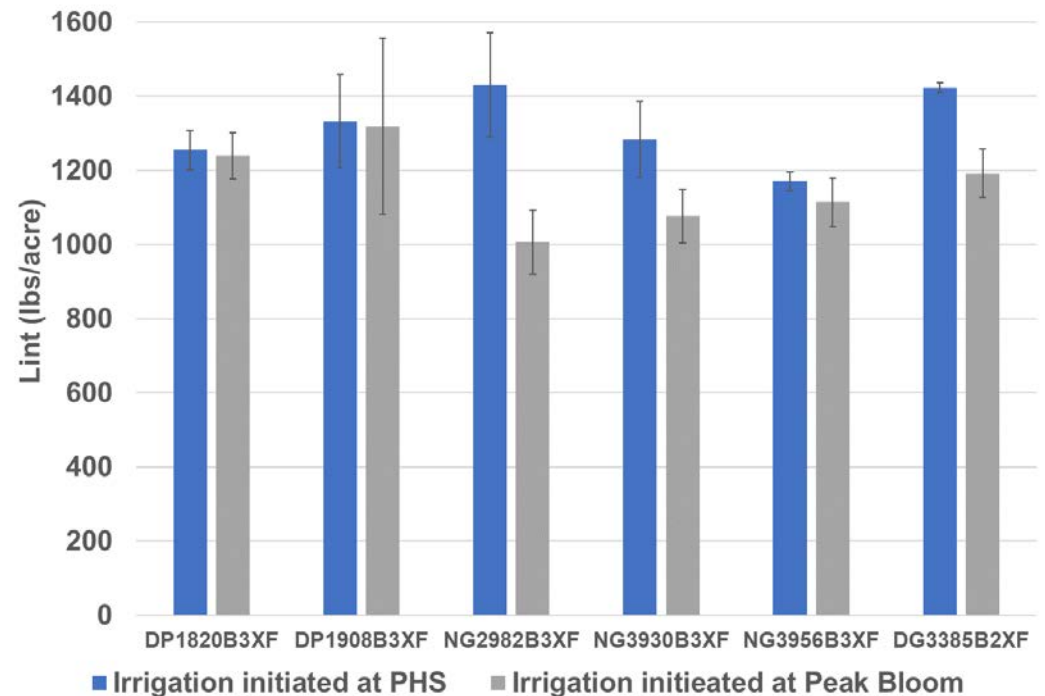


Table 9. 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots in Parmer County; Tony Beauchamp cooperator. Reported by maximum lint yield. Values significant at $p < 0.05$.

Variety	Seed Cotton Yield --- lb/acre ---	Turnout --%--	Lint Yield --- lb/acre ---	Seed Yield --- lb/acre ---	Micro- naire	Fiber Length (in.)	Unif. --%--	Strength (g/tex)	CGRD	Leaf	Lint loan Value cents/lb	Lint Value --- \$/acre ---	Seed Value --- \$/acre ---
NG3956 B3XF	4145 a	0.32	1313	1909	4.8	1.17	83.0	32.2	35	4	51.80	679.83	190.91
CP3475 B2XF*	4175 a	0.31	1310	1876	4.7	1.17	82.8	32.7	32	4	52.30	684.91	187.57
DP1820 B3XF	4055 a	0.31	1279	1719	4.8	1.23	82.5	34.7	32	3	54.47	696.44	171.93
DP1908 B3XF	4199 a	0.30	1255	1913	4.8	1.19	82.0	32.4	31	4	54.42	680.05	191.26
NG3406 B2XF	3993 a	0.31	1251	1786	4.8	1.16	82.5	32.5	32	3	52.97	662.53	178.63
NG2982 B3XF	3827 a	0.32	1209	1734	4.8	1.19	82.6	32.5	32	3	54.75	659.39	173.42
NG3640 XF	3929 a	0.29	1141	1728	4.8	1.17	82.7	35.2	32	3	52.37	598.91	172.77
Test Average	4046	0.31	1251	1809	4.79	1.18	82.6	33.2	32	3	53.30	666.01	180.93
CV, %	12.4	5.2	15.9	5.6	2.3	2.6	10.9	3.9	6.4	8.7	8.6	4.5	5.6
p-value	0.5621	0.2943	0.6508	0.5888	0.7850	0.1156	0.7712	0.0781	0.6612	0.4581	0.6127	0.5708	0.5880
LSD	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

MeanNS within a column with the same letter are not significantly different at the 0.05 probability level.

CV - coefficient of variation.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a \$0.52/pound base.

Seed value calculated using \$185/ton.

*Producer Entry

Table 10. 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots in Swisher County; Jeremy Reed cooperator. Swisher County trial planted on 40-inch rows. Reported by maximum lint yield. Values significant at p<0.05.

Variety	Seed Cotton		Lint Yield	Seed Yield	Micro- naire	Fiber Length (in.)	Unif. --%--	Strength (g/tex)	CGRD	Leaf	Lint loan Value cents/lb	Lint Value \$/acre	Seed Value \$/acre
	Yield --- lb/acre ---	Turnout --%--											
FM1621 GL	3223 a	0.34	1082	1206	5.1	1.06	80.9	31.2	38	4	50.38	545.46	128.21
Phy350 W3FE	3476 a	0.30	1051	1400	4.9	1.10	81.9	30.5	25	2	51.60	542.48	124.48
DP1820B3XF	3201 ab	0.32	1026	1213	4.9	1.12	81.0	31.9	22	1	55.22	565.67	121.55
FM1888GL	3090 ab	0.31	962	1216	5.0	1.08	81.5	30.3	31	3	52.82	508.10	114.01
FM2398GLTP	2678 b	0.35	940	1026	5.4	1.09	82.1	30.3	21	2	49.88	469.10	111.40
NG3930B3XF	2934 ab	0.32	937	1242	4.6	1.11	83.1	30.4	25	3	53.90	505.14	111.08
FM1320GL	3004 ab	0.31	921	1230	5.0	1.05	80.7	30.0	28	2	51.78	477.00	109.08
NG3956B3XF	2982 ab	0.30	908	1278	4.9	1.08	81.4	29.2	29	3	50.87	462.14	107.57
NG3640XF	2894 ab	0.30	873	1203	5.2	1.05	81.6	33.2	29	2	49.27	431.65	103.47
NG2982B3XF	3148 ab	0.28	871	1240	4.5	1.06	81.4	31.9	48	6	46.67	407.32	103.17
DP1908B3XF	2874 ab	0.30	851	1213	4.6	1.15	81.9	32.0	28	3	56.28	478.84	100.83
Phy250W3FE	2798 ab	0.31	787	1014	4.9	1.10	81.4	30.1	31	3	53.20	419.44	93.29
Test Average	3025	0.31	934	1207	4.9	1.09	81.6	30.9	30	3	51.82	484.36	110.68
CV, %	10.6	2.7	9.4	9.0	3.8	1.7	0.9	2.7	5.6	2.1	2.5	10.4	9.9
p-value	0.0420	<0.0001	0.0136	0.0454	0.0002	<0.0001	0.0353	0.0003	<0.0001	0.0004	<0.0001	0.0151	0.0284
LSD	540	0.04	147	211	0.3	0.04	1.5	1.7	9.5	1.9	2.70	74.06	6.70

MeaNS within a column with the same letter are not significantly different at the 0.05 probability level.

CV - coefficient of variation.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a \$0.52/pound base.

Seed value calculated using \$185/ton.

*Producer Entry

Bloom Tagging

Jourdan Bell and Mike Bragg

In response to producer questions about bloom drop and the percent of blooms being retained as harvestable bolls, Bell and Bragg tagged first day/white blooms in NG2982 B3XF at the Dallam and Moore-NPGCD WCC locations. At the WCC, bloom tagging occurred in the early irrigation treatment (irrigation initiated at PHS). The Dallam county location was a deficit irrigated location where 3.5" of irrigation was applied throughout the growing season. At both locations, blooms and candles were tagged every two days from August 8 through August 20 with candles representing the next days bloom. August 20 was chosen as the last tagging date as this date is commonly believed to be the last effective bloom date for the Texas Panhandle cotton production region. By mid-August, bloom shed at both locations exceeded 60%. At the Dallam County trial, it is likely mid-August fluctuations were in response to mid-August precipitation events, but a similar recovery was not observed at the NPGCD WCC even though precipitation and temperatures were similar during this period. Insect pressure and/or injury that would enhance bloom drop was not observed at either location. Overall, there was a steady decline in boll retention over the 13 day evaluation period. It was observed that primary bloom loss was from second and third positions. Bloom tagging evaluations will be continued in 2020 (with tagging being initiated earlier) to capture variations in bloom retention in response to environmental conditions.

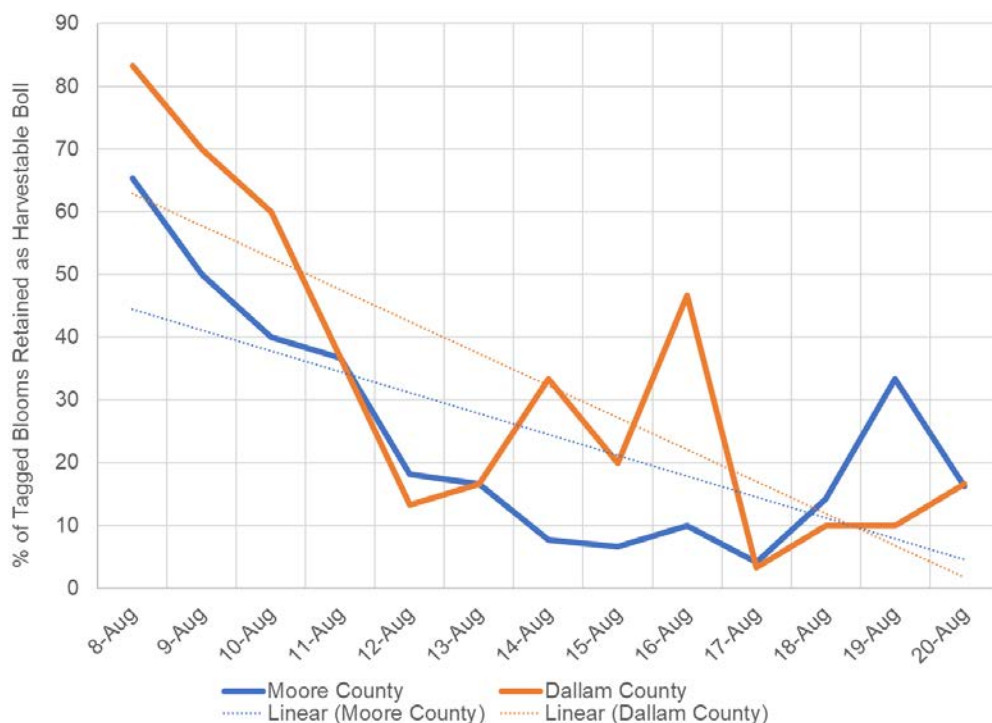


Figure 4. Bloom retention in NG2982 B3XF at Texas A&M AgriLife RACE trials located at Dallam County and NPGCD WCC.

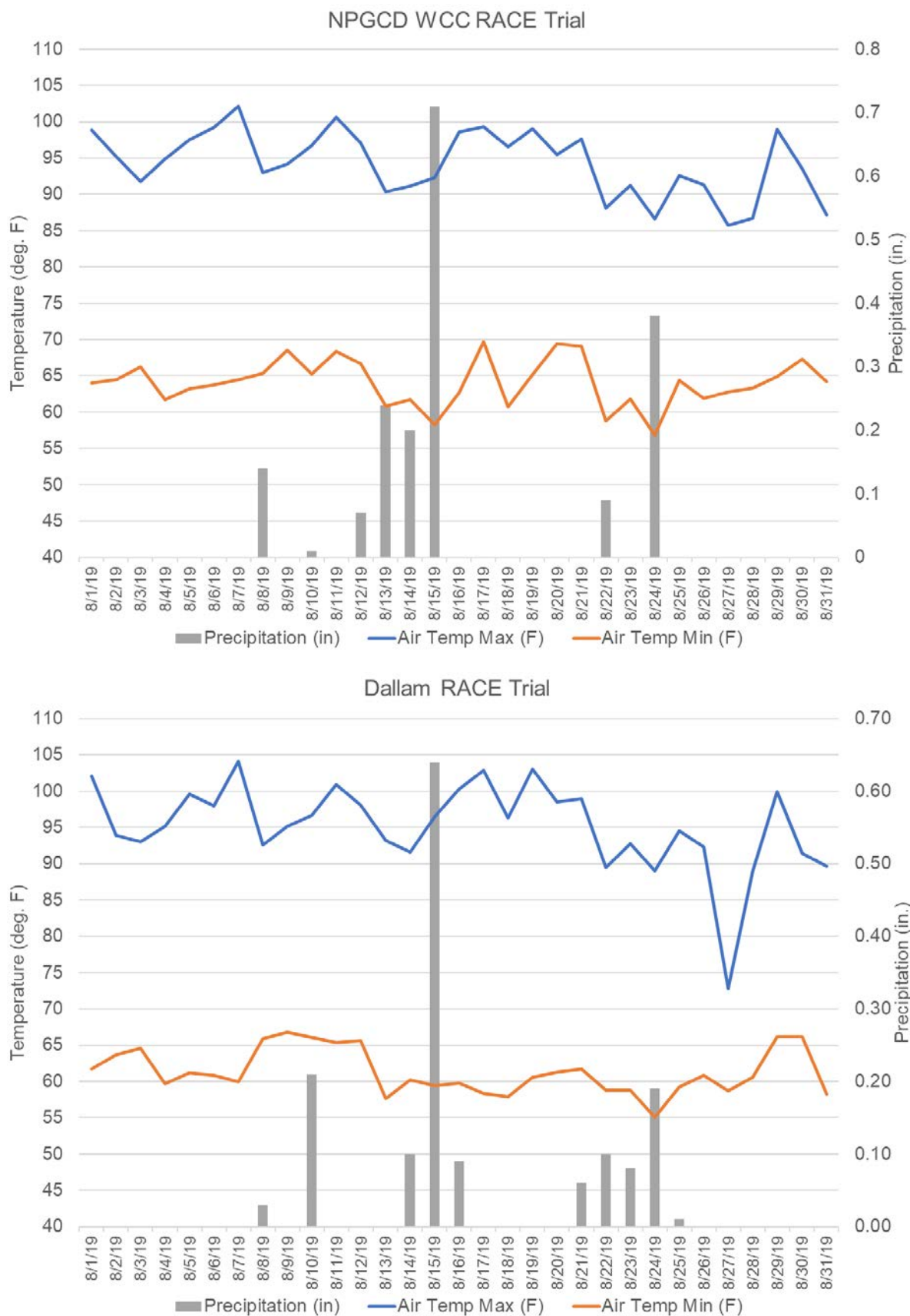


Figure 5. Daily maximum and minimum temperatures and precipitation at Texas A&M AgriLife RACE trials located at Dallam County and NPGCD WCC in August 2019 during the bloom evaluation period.

Texas A&M AgriLife collaborated with North Plains Groundwater Conservation District to provide weekly video updates rotating between RACE trials within District boundaries. The weekly video series, Cotton and Conservation, provided NPGCD cotton producers real-time agronomic updates under the respective environmental and management systems. Videos are available at:

<http://northplainsgcd.org/conservationprograms/agricultural-conservation/cotton/>

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<http://cotton.tamu.edu>