2021 Limited Irrigation Mixed Technology Cotton Variety Trial – Adobe Walls Gin

Dusty Sargent Farm
Stinnett, TX

Dr. Randy Boman, Cotton Agronomics Manager – Windstar Inc.

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Summary

In 2019, a cotton variety testing program was established as a new service created by Windstar Inc. affiliated gins. These gins are working together to support a Cotton Agronomics Manager position. One of the components of this program is to work with local producers to scientifically evaluate varieties in a commercial on-farm setting from planting through ginning. These unique replicated trials are planted and harvested with the grower's commercial equipment. Each variety's round modules are combined across all replicates and then ginned and classed separately in an extremely detailed manner. Purging and weighing any remnant bale of from the press is also performed for each variety. All lint samples from each variety's commercial bales are then classed by the USDA-AMS classing office. This detailed ginning and classing management of all round modules for each variety is key to the success of this program and to the best of our knowledge is without peer in the U.S. ginning industry.

At this site in 2021, six varieties with Bollgard 3 XtendFlex technology and three with Glytol-Liberty Link herbicide technologies (one with the TwinLink Plus Bt trait) were planted in a low-capacity center-pivot irrigated field in a scientifically valid trial with three replicates. *This trial progressed well after planting, but encountered significant moisture stress from the late-bloom period until harvest. There were no challenging weather events in the trial. No Verticillium wilt disease pressure was noted. Minor phenoxy herbicide (2,4-D) symptomology was observed in the trial in July and August.*

Harvest results indicated that highly statistically significant differences were observed. Lint yields ranged from a high of 1397 lb/acre (FM 1621 GL) to a low of 1149 lb/acre (DP 2123 B3XF), and averaged 1264 lb/acre (Table 1). Average Loan value for varieties from commercially ginned and classed bales varied from a high of $0.5778/lb (FM 1730 GLTP) to a low of $0.5608/lb (DP 2123 B3XF). Overall Loan value for the trial across all entries was $0.5705/lb. When including lint Loan value on a per acre basis and net gin credit, highly statistically significant differences were found in net value/acre among varieties. FM 1621 GL had the highest net value at $785/acre, and DP 2123 B3XF had the lowest at $640/acre.

Table 2 presents in-season data including stand establishment percentage, vigor, nodes above white flower (NAWF) on two sampling dates, plant height on three sampling dates, nodes above cracked boll (NACB) on September 30, and a visual estimate of storm resistance. NACB values for most varieties were low (indicating excellent maturity) on September 30, and averaged 2.3.

Table 3 provides the USDA-AMS classing results from each commercial bale for each variety and the variety averages. Averages indicate that color grades were typically 11 and 21 across entries, but FM 1621 GL color grades were all 21. Leaf grades ranged from 1 to 3. FM 1621 GL had the lowest leaf grade quality, with the average across bales of 2.4, and exhibited more leaf grade 3 values than any other entry. Staple ranged from an average high of 37.9 (FM 1730 GLTP) to an average low of 35.4 32nds inch (NG 3195 B3XF). Average micronaire values ranged from a high of 4.5 (FM 1621 GL) to a low of 4.0 (DP 2012 B3XF). No bark contamination was noted in any commercial bales of any entries. Fiber strength ranged from a high of 33.1 g/tex (FM 1730 GLTP) to a low of 30.0 g/tex (NG 3195 B3XF and NG 3930 B3XF). Uniformity ranged from a high of 82.5% to a low of 80.2%.

Disclaimer: Readers should realize that results from one trial do not represent conclusive evidence that the same response would occur where conditions vary. Multi-site and multi-year data are always best. For this trial, good scientific techniques were used and the results are presented to indicate what actually occurred in the trial. Context of the environment, overall growing season impact, management techniques, and trial methodology used are important and must be considered.

Site Information and Methods

Elevation: 3375 ft

Previous crop: seed sorghum 2020

Tillage system: no-till

Planted: May 25

Replicates: 3 replicates in a randomized complete block design

Plot width: 8-row plots

Plot length: trial was planted in straight rows, ~2,400 ft long

Seeding rate: 56,000 seed/acre

Days from planting to first bloom: 62 (July 25), ~7 nodes above white flower

30-inch rows under low-capacity center pivot irrigation

Fertility management:

50 lb/acre N, 50 lb/acre P_2O_5

Chemical Applications:

Preplant burndown (March) – 1 qt/acre glyphosate + 1 pt/acre Weedmaster + 3 oz/acre flumioxazin + 17 lb/100 gal ammonium sulfate

Preemergence (May 25) – 1 qt/acre paraquat + 1 qt/acre diuron + 1 gal/acre crop oil concentrate

Post emergence (June 28) – 1 qt/acre Liberty + 1 pt/acre Outlook + 0.6 oz/acre Assail + 8 oz/acre Pentia + 3 lb/acre ammonium sulfate

Post emergence (July 12) – 1 qt/acre Liberty + 0.6 oz/acre Assail + 1 pt/acre mepiquat chloride + 3 lb/acre ammonium sulfate

Post emergence (August 16) – 40 oz/acre Roundup PowerMax + 3 pt/acre Warrant + 40 oz/acre mepiquat chloride + 17 lb/100 gal ammonium sulfate

Insecticides: 0.6 oz/acre Assail on June 28 and July 12

Harvest aid application: 3 pt/acre ethephon + 12 oz/acre Folex on October 20

Harvesting: November 15 using a John Deere CS690, with harvested area calculated by the GPS on the stripper monitor. Entire plot length was harvested with 1 round module harvested/plot. Round modules were weighed using the CS690 scale, and all three round modules for each variety were weighed at the Adobe Walls Gin.

Commercial ginning: Round modules for all 3 replicates of each variety were staged together (1 per plot, with 3 replicates = 3 total per variety) and commercially ginned separately by Adobe Walls Gin. Commercial ginning included: cleaning module feeder, clearing gin stream, dumping seed rolls, and purging remnant bale in press. This process was initiated before the first variety module was ginned and then repeated for each variety module in trial.

Remnants were ejected from the bale press and weighed, but not sampled for USDA-AMS classing. Only data from commercial bales are included in classing data for each variety.

Lint value: Table 1 is based on CCC Loan value from commercial ginning and USDA-AMS classing results.

List of Tables

Acknowledgements

Adobe Walls Gin would like to thank Dusty Sargent for committing equipment, land, and time to conduct and manage the trial. Gratitude is expressed to participating seed companies for providing testing seed. These include Deltapine, FiberMax/Stoneville, and NexGen. Gratitude is also expressed to Windstar Inc. Detailed ginning was performed by the Adobe Walls crew including Malcom Jones and Aaron Moore, and a big thank you is extended to this hard-working group.

ADOBE WALLS GIN

2021 Mixed Technology Trial Variety Descriptions – Adobe Walls Gin

Dusty Sargent Farm
Stinnett, TX

Dr. Randy Boman
Cotton Agronomics Manager

Variety Descriptions from Company Literature and Websites

DP 2012 B3XF Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and dicamba stacked herbicide tolerance technologies. Early maturity. Smooth leaves, medium to medium-tall plant height, storm resistance 3.5 (on scale of 1 = tight, 9 = loose). ~ 38 staple, strength ~31.3 g/tex. Disease ratings: Fusarium wilt – no data, Verticillium wilt – moderately tolerant, Bacterial blight – resistant.

DP 2115 B3XF Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and dicamba stacked herbicide tolerance technologies stacked with Bollgard 3 Bt technology. Early maturity. Semi-smooth leaves, medium plant height, storm resistance 4 (on scale of 1 = tight, 9 = loose). ~ 37.2 staple, strength ~30.4 g/tex. Disease ratings: Fusarium wilt – n/a, Verticillium wilt – moderately susceptible, Bacterial blight – susceptible.

DP 2123 B3XF Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and dicamba stacked herbicide tolerance technologies stacked with Bollgard 3 Bt technology. Early to early-medium maturity. Semi-smooth leaves, medium plant height, storm resistance 4 (on scale of 1 = tight, 9 = loose). ~ 36.5 staple, strength ~30.7 g/tex. Disease ratings: Fusarium wilt – n/a, Verticillium wilt – moderately tolerant, Bacterial blight – moderately susceptible.

NG 3195 B3XF Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and dicamba stacked herbicide tolerance technologies stacked with Bollgard 3 Bt technology. Early-Medium maturity. Storm tolerance 7 (scale of 0 = very loose, 9 = very storm tolerant), leaf hair smooth, plant height medium, node of first fruiting branch (avg) 6.0, staple 36-37, strength 30-31. Diseases (on scale of 0 very susceptible, 9 superior resistance): Fusarium wilt - no data, Verticillium wilt 5, Bacterial blight 2.

NG 3930 B3XF Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and dicamba stacked herbicide tolerance technologies stacked with Bollgard 3 Bt technology. Early-Medium maturity. Storm tolerance 7 (scale of 0 = very loose, 9 = very storm tolerant), leaf hair semi-smooth, plant height medium-tall, node of first fruiting branch (avg) 6.7, staple 37-38, strength 29-30. Diseases (on scale of 0 very susceptible, 9 superior resistance): Fusarium wilt - no data, Verticillium wilt 7, Bacterial blight 8.

ST 4993 B3XF Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and dicamba stacked herbicide tolerance technologies stacked with Bollgard 3 Bt technology. Early-medium maturity. Semi-smooth leaves, medium plant height, storm resistance 6 (on scale of 0 = very loose, 9 = very storm tolerant). ~ 36.5 staple, strength ~31.9 g/tex. Disease ratings: Root knot nematode/Fusarium wilt – fair, Verticillium wilt – fair, Bacterial blight – resistant.

FM 1621 GL GlyTol (glyphosate) and Liberty Link (glufosinate) stacked herbicide tolerance technologies. Early maturity. Semi-hairy leaves, medium/moderate plant height, storm resistance 6 (on scale of 9 = tight, 0 = loose). ~ 36.5 staple, strength ~31 g/tex. Disease ratings: Fusarium wilt – good, Verticillium wilt – fair, Bacterial blight - resistant.

FM 1730 GLTP GlyTol (glyphosate) and Liberty Link (glufosinate) stacked herbicide tolerance technologies stacked with TwinLink Plus Bt technology. Early-medium maturity. Semi-smooth leaves, short/compact plant height, storm resistance 5 (on scale of 9 = tight, 0 = loose). ~ 37.4 staple, strength ~32 g/tex. Disease ratings: Fusarium wilt – very good, Verticillium wilt – good, Bacterial blight - resistant.

FM 2202 GL GlyTol (glyphosate) and Liberty Link (glufosinate) stacked herbicide tolerance technologies. Mid maturity. Semi-smooth leaves, moderate plant height, storm resistance 5 (on scale of 9 = tight, 0 = loose). ~35.5 staple, strength ~32 g/tex. Disease ratings: RKN/Fusarium wilt – fair, Verticillium wilt – outstanding, Bacterial blight - resistant.

For the latest Texas A&M AgriLife Research and Extension information from Dr. Terry Wheeler, and Dr. Cecilia Monclova-Santana (lubbock.tamu.edu):

Bacterial blight disease variety reaction information:
https://lubbock.tamu.edu/files/2021/01/Variety-guide-for-bacterial-blight-ratings-Jan-2021.pdf

Verticillium wilt disease variety reaction information:
https://lubbock.tamu.edu/files/2021/11/Verticillium-wilt-variety-trials-2021.pdf

Fusarium wilt disease variety reaction information:
https://lubbock.tamu.edu/files/2021/12/Cotton-Disease-Report-2021.pdf

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Table 1. Harvest results for the center pivot limited irrigation mixed technology cotton variety trial, Sargent Farm, Stinnett, TX, 2021.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint loan value	Net gin credit	Seed/tech cost	Net value	
	---------- % ----------		---------- lb/acre ----------			$/lb	---------- $/acre ----------				
FM 1621 GL	35.2	38.9	3974	1397	1546	0.5743	802	47	64	785	a
NG 3195 B3XF	36.0	43.1	3727	1343	1605	0.5622	755	61	99	718	b
ST 4993 B3XF	37.5	42.5	3511	1315	1491	0.5682	747	55	98	705	bc
DP 2012 B3XF	34.0	43.9	3729	1266	1638	0.5720	724	65	100	689	bc
FM 2202 GL	34.8	41.0	3537	1230	1449	0.5715	703	50	64	689	bc
DP 2115 B3XF	35.8	41.9	3564	1274	1492	0.5727	730	54	100	684	bc
NG 3930 B3XF	33.2	44.0	3676	1222	1618	0.5749	702	65	90	677	cd
FM 1730 GLTP	32.7	42.6	3602	1179	1536	0.5778	681	58	94	645	de
DP 2123 B3XF	31.3	46.0	3669	1149	1689	0.5608	644	73	78	640	e
Test average	34.5	42.6	3665	1264	1563	0.5705	721	59	87	692	
CV, %	--	--	3.1	3.1	3.1	--	3.1	3.3	--	3.5	
OSL	--	--	0.0045	0.0001	0.0002	--	0.0001	0.0001	--	0.0001	
LSD	--	--	161	56	69	--	32	3	--	35	

For net value/acre, means within a column with the same letter are not significantly different.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.10 level, NS - not significant.
Note: some columns may not add up due to rounding error.

Assumes:
$3.30/cwt commercial ginning cost.
$230/ton for seed.
Net gin credit is defined as seed credit minus ginning expense.
Value for lint based on CCC loan value from commercial ginning and USDA-AMS classing results.

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Table 2. Plant observation results from the center pivot limited irrigation mixed technology cotton variety trial, Sargent Farm, Stinnett, TX, 2021.

Entry	Final population	Stand establishment	Vigor	Nodes above white flower		Plant height			Nodes above cracked boll	Storm resistance
				Early bloom	Late bloom	Prebloom	Early bloom	Final		
	plants/acre	%	1-5 visual scale, 5 best	count		inches			count	1-9 visual scale, 9 tight
	15-Jun	15-Jun	15-Jun	27-Jul	12-Aug	13-Jul	27-Jul	30-Sep	30-Sep	15-Nov
DP 2012 B3XF	49,949	89.2	3.5	6.7	2.5	19.1	20.6	20.5	2.2	5.2
DP 2115 B3XF	51,982	92.8	3.2	6.4	2.3	16.9	18.5	18.9	2.2	6.0
DP 2123 B3XF	50,820	90.8	3.0	6.6	2.4	17.4	19.2	19.4	2.3	6.3
NG 3195 B3XF	42,979	76.8	3.2	6.4	2.5	19.3	20.2	20.9	2.9	5.0
NG 3930 B3XF	49,658	88.7	3.5	6.5	2.1	17.5	18.3	19.6	1.9	6.3
ST 4993 B3XF	38,914	69.5	3.3	6.6	2.5	17.3	19.3	20.3	3.0	6.8
FM 1621 GL	48,207	86.1	3.7	6.5	2.7	17.1	18.2	19.3	2.1	7.2
FM 1730 GLTP	44,141	78.8	3.3	5.9	2.3	16.1	17.5	16.8	1.3	4.5
FM 2202 GL	46,174	82.4	3.0	6.5	2.6	16.5	18.7	18.6	2.4	6.3
Test average	46,980	83.9	3.3	6.5	2.4	17.5	18.9	19.4	2.3	6.0
CV, %	9.3	9.3	10.7	3.1	19.0	4.1	5.3	7.3	21.3	5.1
OSL	0.0326	0.0324	0.3071	0.0104	0.8063	0.0006	0.0337	0.0784	0.0146	0.0001
LSD	6,199	11.1	NS	0.3	NS	1.0	1.4	2.0	0.7	0.43

CV - coefficient of variation.

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

LSD - least significant difference at the 0.10 level, NS - not significant.

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Table 3. Commercial classing data for the center pivot limited irrigation mixed technology cotton variety trial, Sargent Farm, Stinnett, TX, 2021.

Variety and Bale Number	Color Grade-Quadrant grade-quadrant	Color digit 1	Color digit 2	Leaf grade	Staple 32nds inch	Micronaire units	Extraneous matter	Remarks --	Strength g/tex	Rd %	+b %	Trash % area	Uniformity %	Length 100ths inch	Loan rate cents/lb
DP 2012 B3XF															
9108297	11-1	1	1	2	36	4.0	.	.	30.3	82.6	8.2	1	80.8	112	57.05
9108298	11-1	1	1	1	36	4.0	.	.	32.8	83.1	8.3	1	79.9	113	56.70
9108299	11-2	1	1	1	37	4.0	.	.	31.7	82.7	8.1	1	81.4	114	57.80
9108300	21-1	2	1	1	36	4.0	.	.	31.2	82.1	8.3	1	80.3	112	57.25
9108301	11-1	1	1	2	36	4.0	.	.	31.4	82.8	8.4	1	81.6	112	57.25
9108302	11-1	1	1	1	36	4.1	.	.	31.9	82.6	8.5	1	80.3	113	57.25
9108303	11-1	1	1	2	36	4.0	.	.	32.3	82.8	8.3	1	81.5	112	57.25
9108304	11-2	1	1	1	36	4.0	.	.	30.7	82.7	8.0	1	81.1	111	57.05
Average	--	1.1	1.0	1.4	36.1	4.0	none	none	31.5	82.7	8.3	1.0	80.9	112.4	57.20
DP 2115 B3XF															
9108305	21-1	2	1	2	36	4.1	.	.	30.6	81.5	8.3	1	81.3	113	57.05
9108306	11-1	1	1	2	36	4.2	.	.	31.7	81.6	8.7	1	81.5	113	57.25
9108307	21-1	2	1	2	36	4.2	.	.	31.2	81.4	8.4	1	80.9	111	57.25
9108308	11-2	1	1	2	36	4.1	.	.	29.6	81.2	8.8	1	80.7	112	57.35
9108309	11-2	1	1	2	36	4.1	.	.	30.4	80.9	9.0	1	81.2	112	57.05
9108310	11-2	1	1	1	36	4.3	.	.	29.6	81.8	8.4	1	81.5	111	57.25
9108311	11-2	1	1	1	36	4.2	.	.	31.5	82.0	8.5	1	82.1	112	57.30
9108312	11-2	1	1	2	37	4.1	.	.	30.5	81.6	8.5	1	82.6	116	57.65
Average	--	1.3	1.0	1.8	36.1	4.2	none	none	30.6	81.5	8.6	1.0	81.5	112.5	57.27
DP 2123 B3XF															
9108321	11-1	1	1	2	37	4.1	.	.	33.4	81.6	8.7	1	81.8	117	57.85
9108322	21-1	2	1	1	36	4.3	.	.	30.9	81.4	8.7	1	82.0	113	57.00
9108323	21-1	2	1	2	35	4.2	.	.	31.1	80.8	8.7	1	80.8	110	55.85
9108324	11-2	1	1	2	36	4.4	.	.	29.9	80.7	8.9	2	80.2	113	57.25
9108325	21-1	2	1	2	37	4.2	.	.	30.8	80.8	8.7	2	80.4	115	57.60
9108326	21-1	2	1	2	35	4.3	.	.	31.1	80.6	8.4	2	79.6	109	55.20
9108327	21-1	2	1	2	35	4.3	.	.	29.4	80.8	8.7	2	79.3	110	55.30
9108328	11-2	1	1	2	34	4.4	.	.	28.9	80.6	8.8	1	77.1	107	52.55
Average	--	1.6	1.0	1.9	35.6	4.3	none	none	30.7	80.9	8.7	1.5	80.2	111.8	56.08

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Table 3 (continued). Commercial classing data for the center pivot limited irrigation mixed technology cotton variety trial, Sargent Farm, Stinnett, TX, 2021.

Variety and Bale Number	Color Grade-Quadrant grade-quadrant	Color digit 1	Color digit 2	Leaf grade	Staple 32nds inch	Micronaire units	Extraneous matter	Remarks --	Strength g/tex	Rd %	+b %	Trash % area	Uniformity %	Length 100ths inch	Loan rate cents/lb
NG 3195 B3XF															
9108337	21-1	2	1	2	36	4.1	.	.	30.3	80.6	8.2	2	81.3	111	57.05
9108338	21-1	2	1	2	36	4.1	.	.	29.5	81.3	8.4	1	80.1	112	57.35
9108339	11-2	1	1	1	35	4.3	.	.	30.2	81.5	8.6	1	81.4	110	55.55
9108340	11-2	1	1	2	36	4.3	.	.	29.3	81.6	8.6	1	80.7	112	57.25
9108341	11-2	1	1	2	35	4.2	.	.	31.1	81.5	8.4	1	79.6	108	55.30
9108342	21-1	2	1	2	36	4.3	.	.	32.3	81.3	8.6	1	81.1	113	57.15
9108343	11-2	1	1	2	35	4.5	.	.	28.0	81.5	8.6	1	81.0	110	55.35
9108344	21-1	2	1	2	35	4.2	.	.	30.5	81.4	8.6	1	80.5	109	55.65
9108345	11-1	1	1	1	35	4.5	.	.	28.6	81.9	8.7	1	81.1	109	55.35
Average	--	1.4	1.0	1.8	35.4	4.3	none	none	30.0	81.4	8.5	1.1	80.8	110.4	56.22
NG 3930 B3XF															
9108313	31-1	3	1	2	36	4.0	.	.	29.7	79.3	8.3	1	80.8	113	56.85
9108314	21-1	2	1	1	37	4.1	.	.	31.8	80.7	8.7	1	82.4	116	57.85
9108315	11-2	1	1	2	36	4.0	.	.	30.8	81.0	8.9	1	80.3	113	57.05
9108316	11-2	1	1	2	37	4.1	.	.	29.0	81.1	8.8	2	82.6	114	57.95
9108317	21-1	2	1	1	37	4.1	.	.	29.9	80.9	8.6	1	81.6	114	57.90
9108318	11-1	1	1	2	36	4.2	.	.	29.5	81.6	8.9	1	81.1	113	57.35
9108319	11-2	1	1	2	37	4.1	.	.	28.3	80.6	8.8	1	80.0	114	57.40
9108320	11-2	1	1	1	37	4.1	.	.	30.9	81.1	9.0	1	81.3	116	57.60
Average	--	1.5	1.0	1.6	36.6	4.1	none	none	30.0	80.8	8.8	1.1	81.3	114.1	57.49
ST 4993 B3XF															
9108329	21-1	2	1	2	36	4.2	.	.	32.6	81.3	8.7	2	80.9	112	57.25
9108330	11-1	1	1	2	36	4.5	.	.	33.7	81.6	9.0	1	82.2	111	57.25
9108331	11-1	1	1	1	36	4.4	.	.	33.1	82.2	8.7	1	81.0	111	57.20
9108332	11-1	1	1	1	35	4.3	.	.	30.4	81.7	9.0	1	80.4	109	55.55
9108333	11-1	1	1	1	35	4.4	.	.	31.2	81.5	9.1	1	81.1	110	55.75
9108334	11-2	1	1	2	36	4.3	.	.	32.5	80.8	9.1	1	81.9	113	57.15
9108335	11-1	1	1	1	36	4.4	.	.	31.8	81.7	8.9	1	82.2	112	57.20
9108336	11-2	1	1	2	36	4.6	.	.	34.3	81.2	8.8	1	80.8	112	57.20
Average	--	1.1	1.0	1.5	35.8	4.4	none	none	32.5	81.5	8.9	1.1	81.3	111.3	56.82

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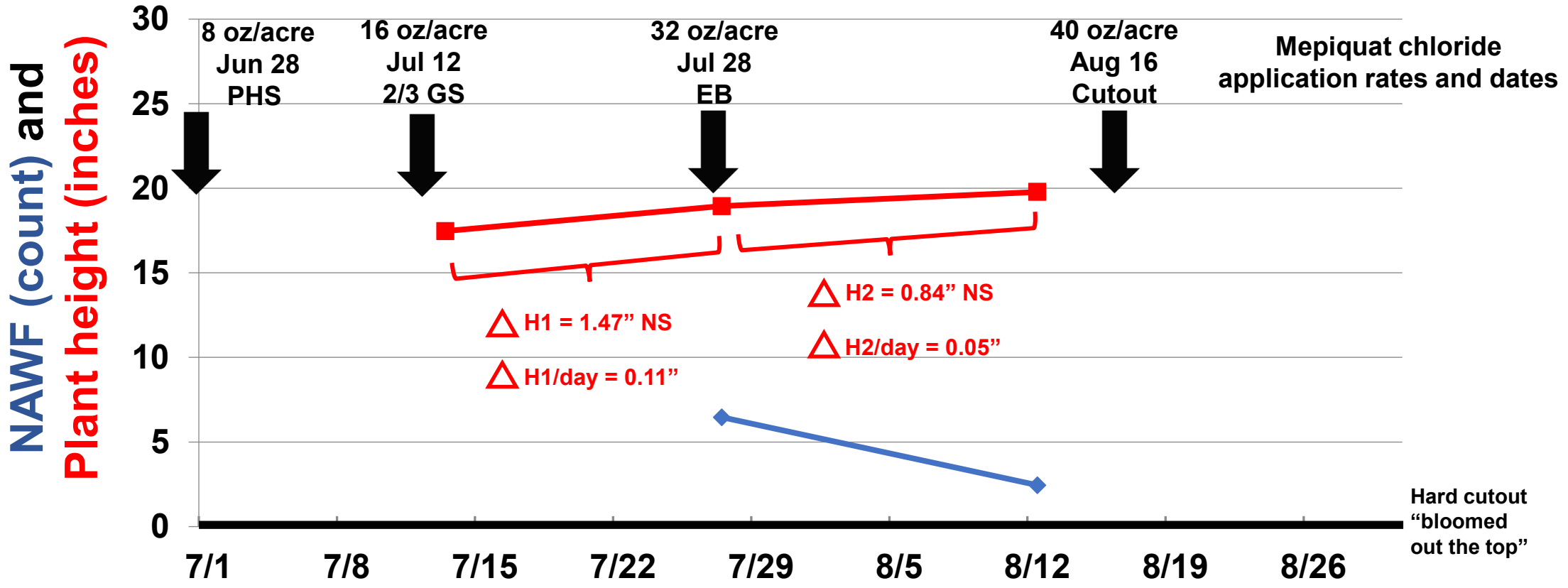
Table 3 (continued). Commercial classing data for the center pivot limited irrigation mixed technology cotton variety trial, Sargent Farm, Stinnett, TX, 2021.

Variety and Bale Number	Color Grade-Quadrant grade-quadrant	Color digit 1	Color digit 2	Leaf grade	Staple 32nds inch	Micronaire units	Extraneous matter	Remarks --	Strength g/tex	Rd %	+b %	Trash %	Uniformity %	Length 100ths inch	Loan rate cents/lb
FM 1621 GL															
9108362	21-2	2	1	2	37	4.6	.	.	33.4	80.2	8.3	2	82.6	114	57.80
9108363	21-1	2	1	3	37	4.6	.	.	32.2	80.8	8.6	3	80.2	114	57.15
9108364	21-2	2	1	2	37	4.5	.	.	32.1	80.4	8.4	2	81.8	115	57.70
9108365	21-1	2	1	2	36	4.5	.	.	31.7	80.4	8.5	2	81.7	111	57.15
9108366	21-1	2	1	3	37	4.6	.	.	32.4	80.5	8.5	2	82.8	116	57.20
9108367	21-1	2	1	2	37	4.5	.	.	31.2	79.7	8.6	2	82.2	114	57.75
9108368	21-1	2	1	3	37	4.4	.	.	31.8	81.0	8.2	2	81.2	114	57.15
9108369	21-1	2	1	2	37	4.4	.	.	32.2	80.1	8.5	2	82.3	115	57.75
9108370	21-1	2	1	3	37	4.4	.	.	31.4	80.4	8.5	3	82.3	114	57.20
Average	--	2.0	1.0	2.4	36.9	4.5	none	none	32.0	80.4	8.5	2.2	81.9	114.1	57.43
FM 1730 GLTP															
9108354	11-2	1	1	1	38	4.4	.	.	32.5	82.5	8.0	1	83.1	120	57.95
9108355	11-2	1	1	3	37	4.3	.	.	32.6	82.6	8.1	4	81.2	116	57.15
9108356	11-1	1	1	2	39	4.3	.	.	33.6	82.8	8.4	2	83.1	121	58.00
9108357	11-2	1	1	1	38	4.3	.	.	32.7	82.1	8.5	1	82.3	118	57.90
9108358	21-1	2	1	2	38	4.3	.	.	34.7	82.3	8.2	2	83.1	119	58.00
9108359	11-2	1	1	2	38	4.2	.	.	33.7	82.8	8.1	2	82.7	119	58.05
9108360	21-1	2	1	3	38	4.3	.	.	33.0	81.7	8.3	2	82.8	119	57.45
9108361	11-2	1	1	1	37	4.4	.	.	32.3	81.8	8.5	1	81.4	117	57.70
Average	--	1.3	1.0	1.9	37.9	4.3	none	none	33.1	82.3	8.3	1.9	82.5	118.6	57.78
FM 2202 GL															
9108346	21-1	2	1	2	36	4.3	.	.	28.9	80.7	8.3	2	79.5	111	56.20
9108347	21-1	2	1	2	37	4.0	.	.	31.1	80.7	8.6	2	81.6	116	57.80
9108348	21-1	2	1	2	37	4.3	.	.	32.6	80.6	8.7	2	81.7	114	57.70
9108349	21-1	2	1	2	35	4.2	.	.	27.5	80.5	8.6	2	81.6	110	55.45
9108350	21-1	2	1	2	37	4.2	.	.	32.7	80.5	8.6	2	82.6	114	57.85
9108351	21-1	2	1	2	37	4.3	.	.	32.4	80.5	8.5	2	82.5	115	57.75
9108352	21-2	2	1	2	36	4.2	.	.	31.8	80.2	8.4	2	81.7	111	57.25
9108353	21-1	2	1	2	36	4.3	.	.	32.0	80.3	8.7	1	82.5	112	57.20
Average	--	2.0	1.0	2.0	36.4	4.2	none	none	31.1	80.5	8.6	1.9	81.7	112.9	57.15

Appendix

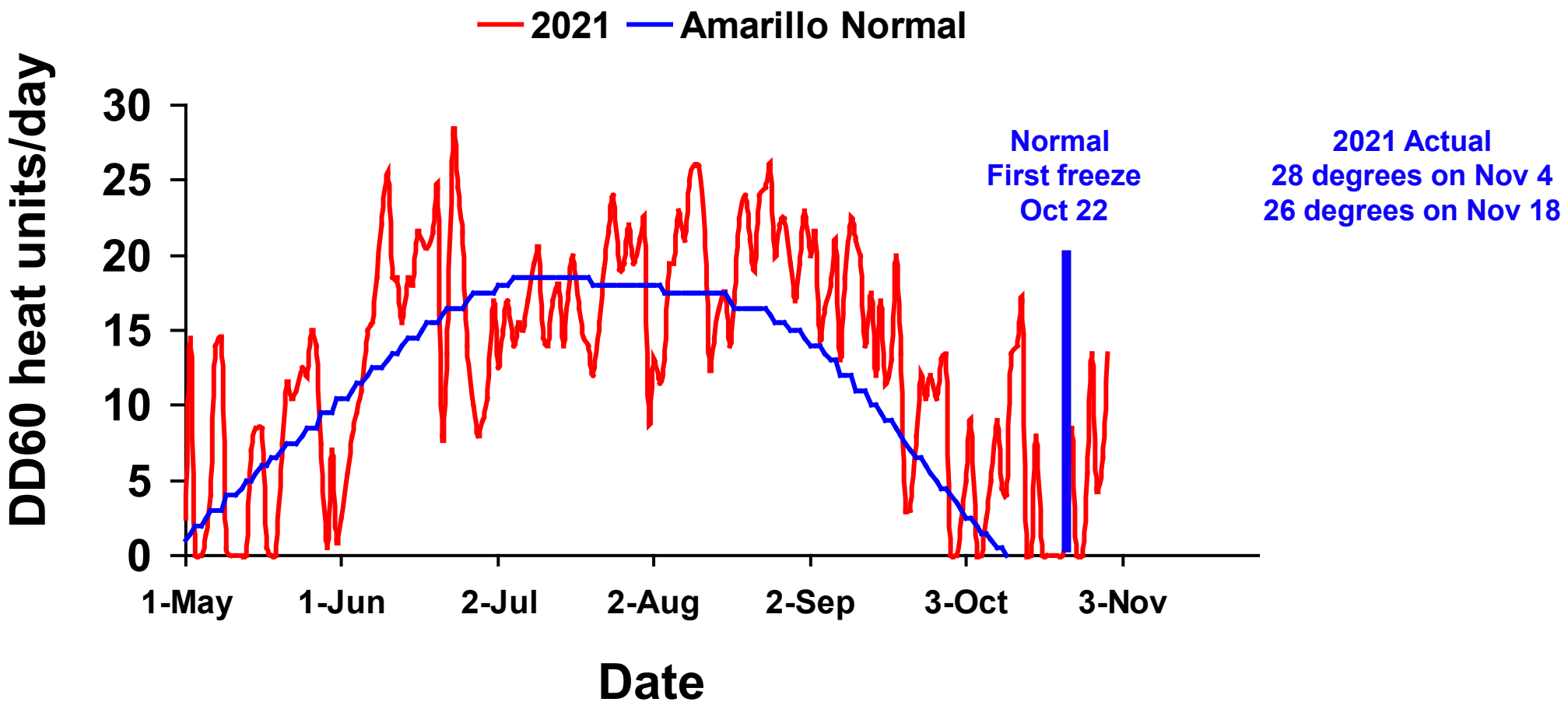
Sargent Mixed Technology Variety Trial – Plant Height and NAWF Graph
Amarillo 2021 Cotton Heat Units and Weather Data

Sargent Mixed Technology Variety Trial (Across All Entries) Stinnett – 2021



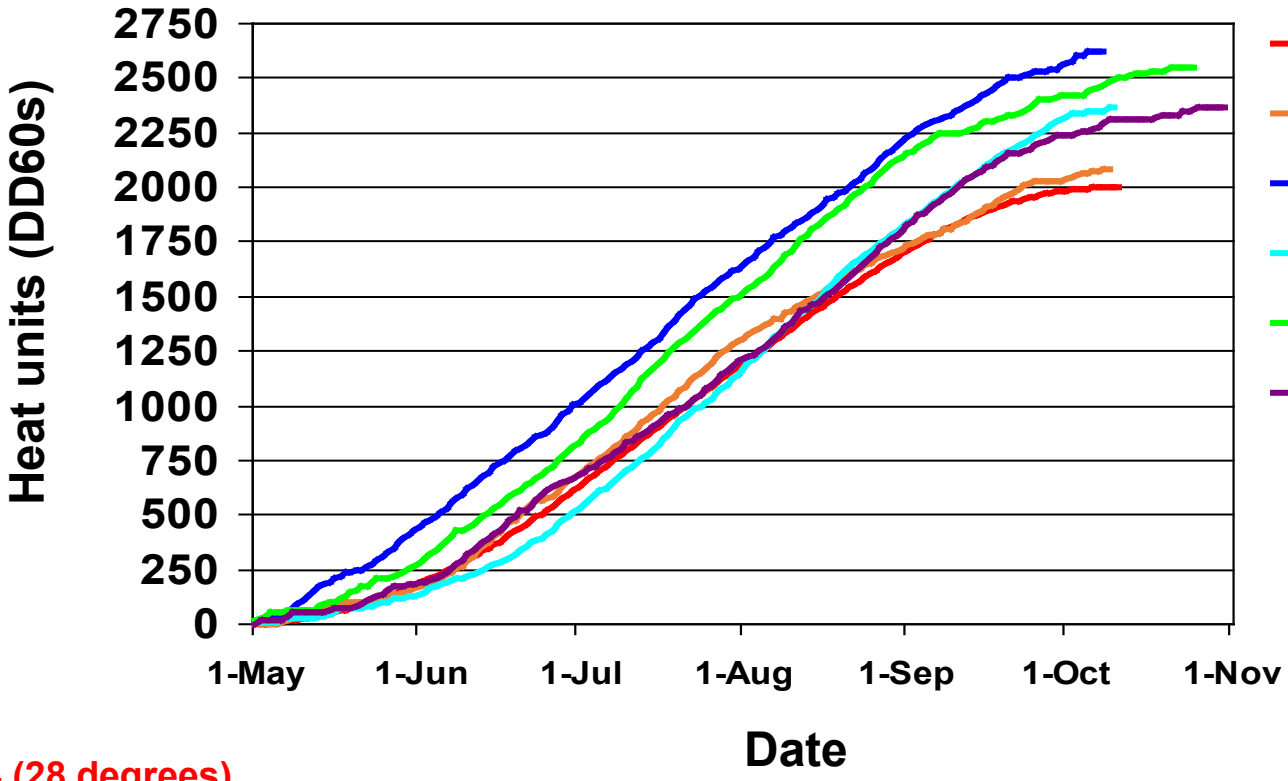
Planted: May 25
Days to bloom: 62
First bloom date: Jul 25

Amarillo
30-Year Normal (1981-2010) and 2021
Daily Heat Units



Amarillo 30-Yr Normal (1981-2010) vs. 2017, 2018, 2019, 2020, and 2021 Cotton Heat Unit Accumulation

From May 1 Through First Hard Freeze



1981-2010 (2001 total seasonal)
2017 (2085 total seasonal)
2018 (2621 total seasonal)
2019 (2362 total seasonal)
2020 (2552 total seasonal)
2021

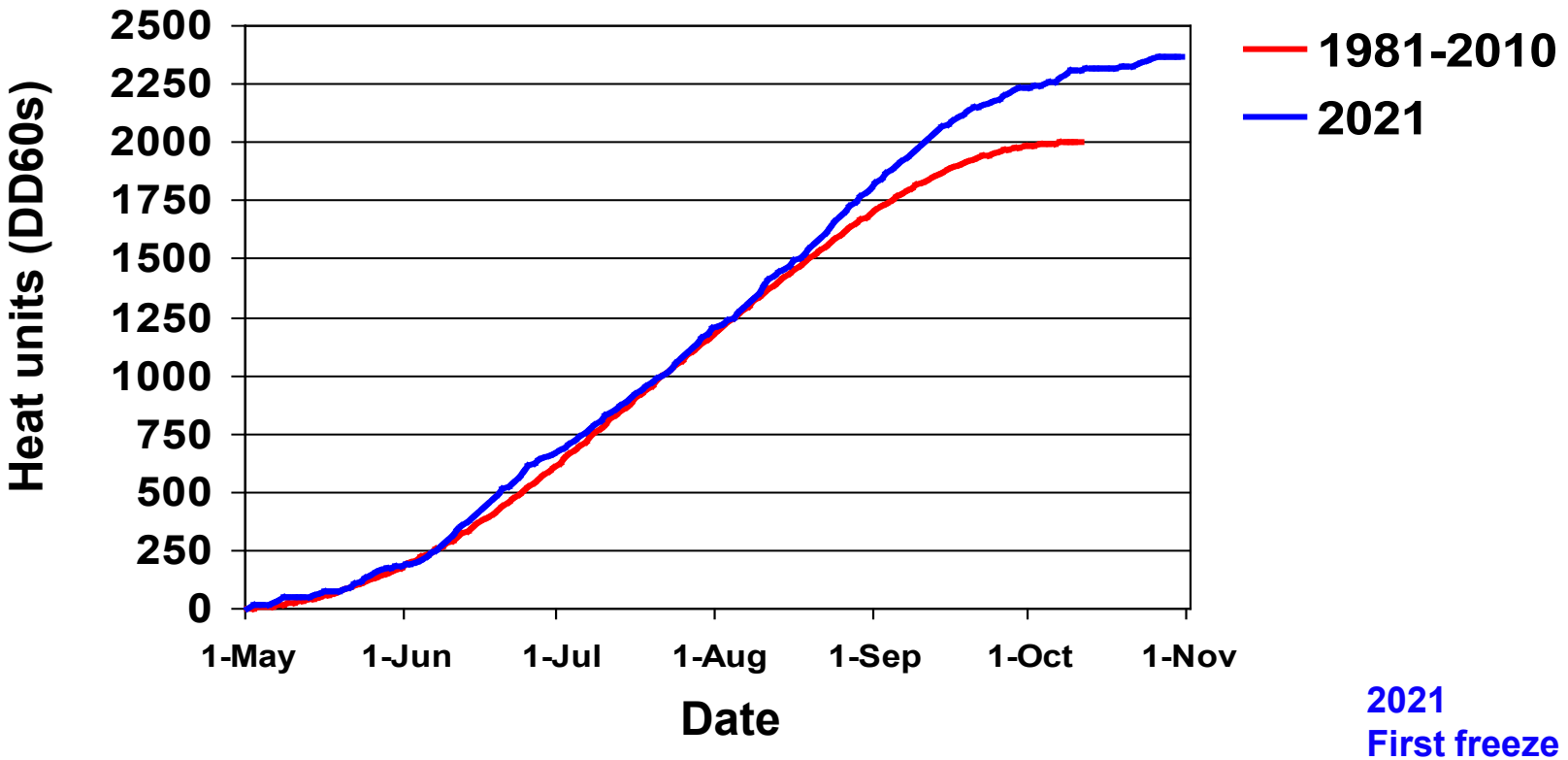
From May 1 through Sep 30
Normal: 1983
2021: 2238
% of Normal: +13

From May 15 through Sep 30
Normal: 1938
2021: 2179
% of Normal: +12

From May 20 through Sep 30
Normal: 1908
2021: 2162
% of Normal: +13

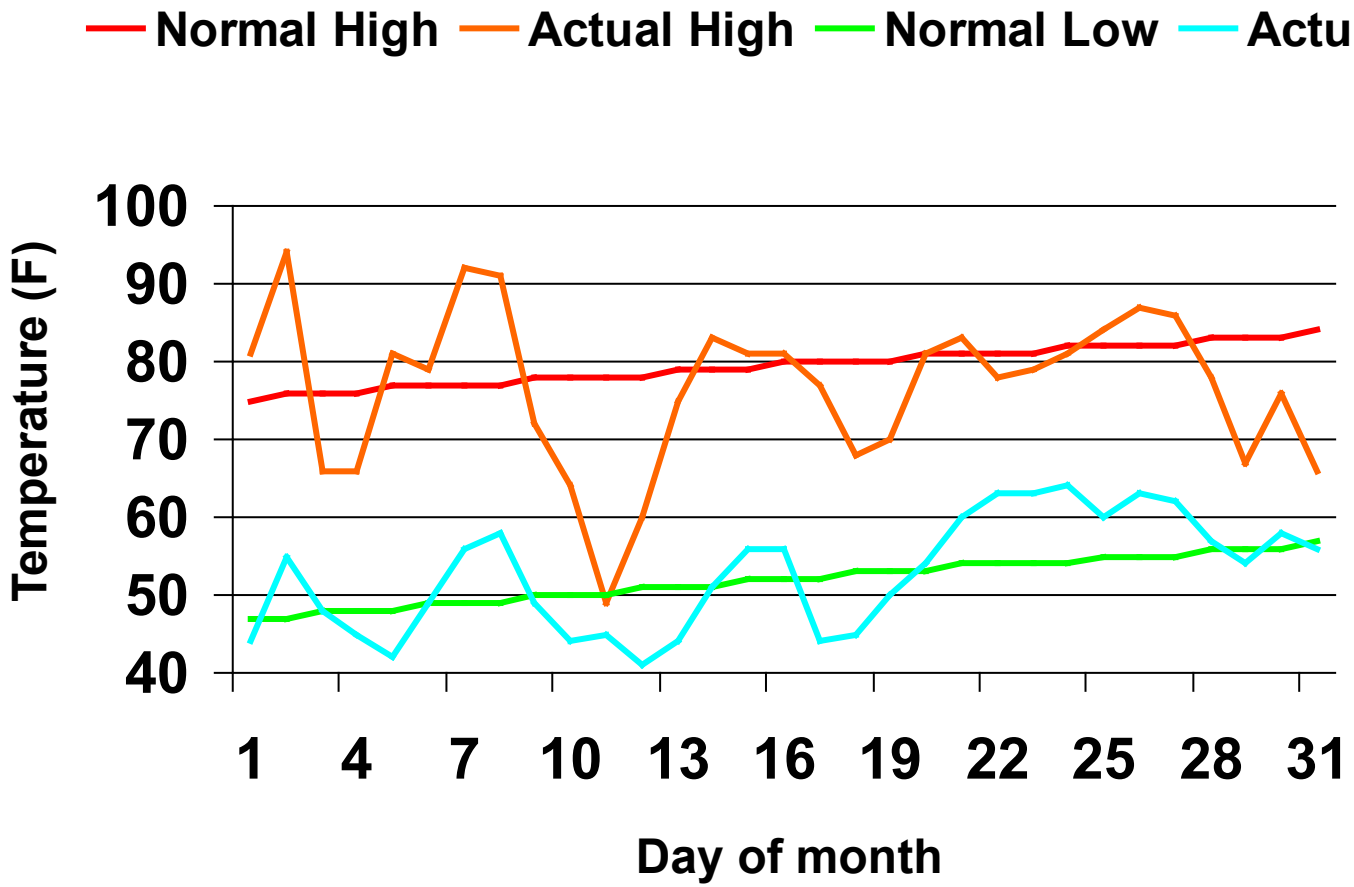
2021
First freeze on Nov 4 (28 degrees)
Hard freeze on Nov 18 (26 degrees)

Amarillo 30-Yr Normal (1981-2010) vs. 2021
Cotton Heat Unit Accumulation
From May 1



2021
First freeze on Nov 4 (28 degrees)
Hard freeze on Nov 18 (26 degrees)

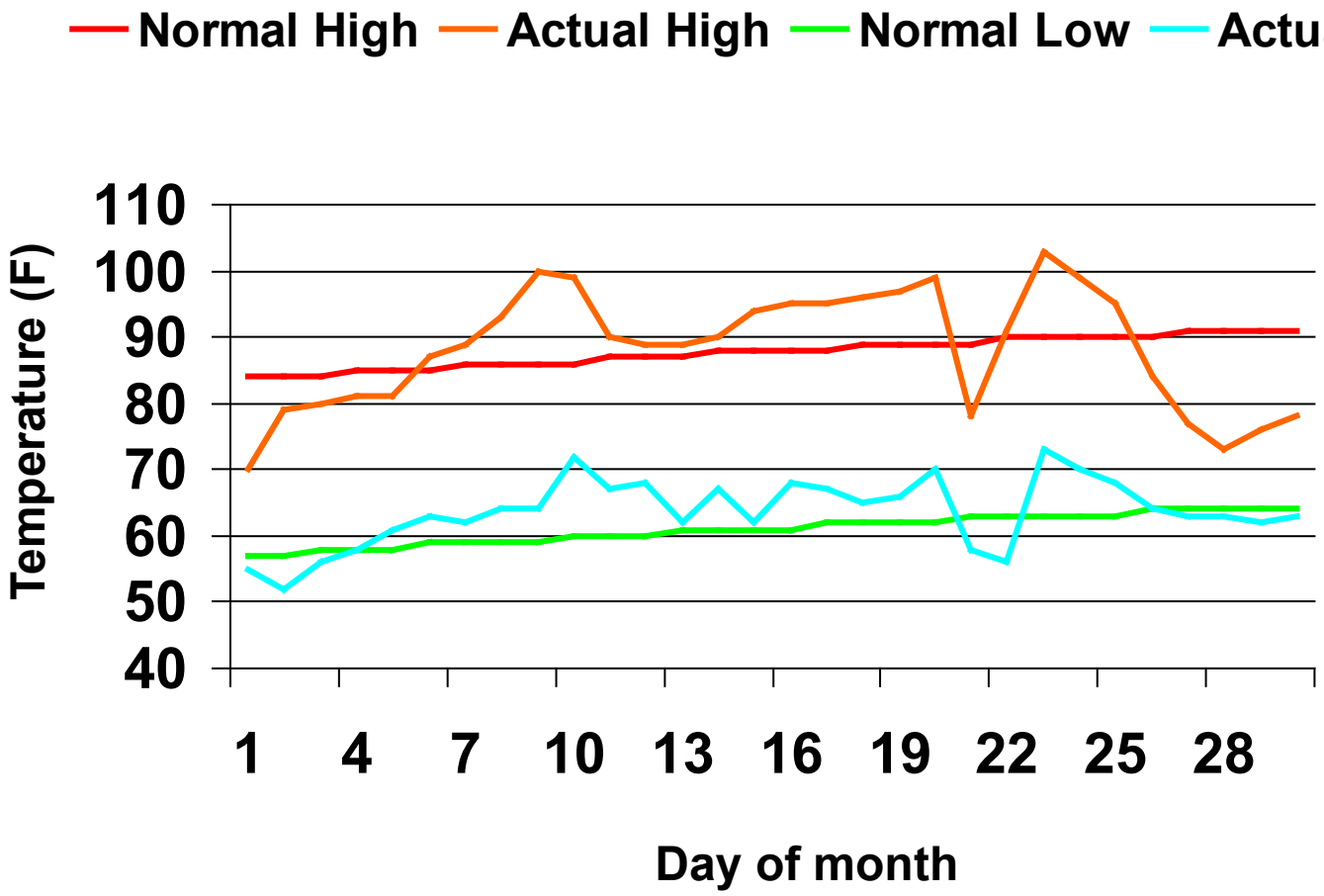
Amarillo
30-Yr Normal (1981-2010) and May 2021 Air Temperatures



Heat Units

Normal for month: 177
2021: 186
% of normal: +5

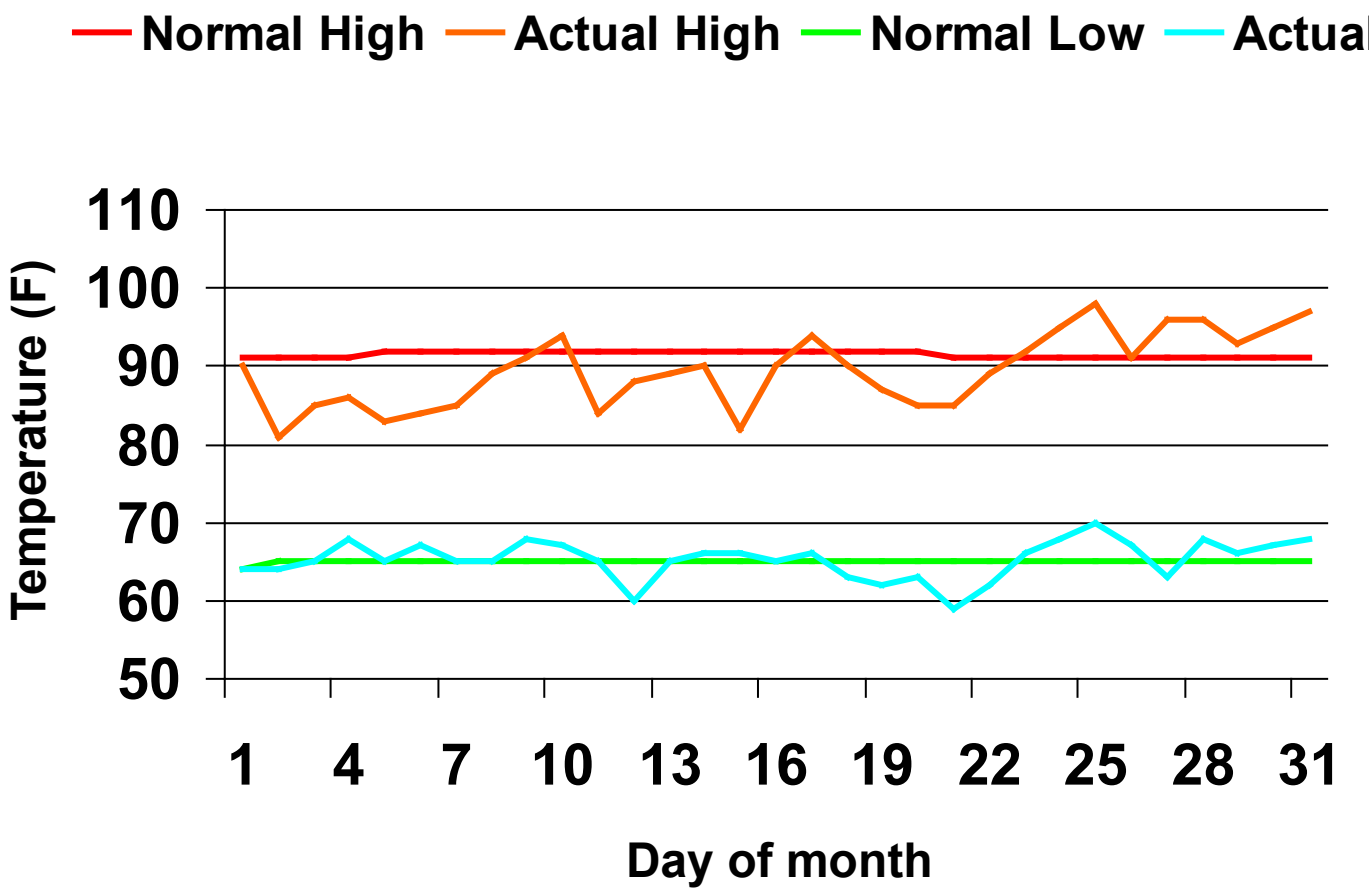
Amarillo
30-Yr Normal (1981-2010) and June 2021 Air Temperatures



Heat Units

Normal total: 433
2021: 475
% of normal: +10

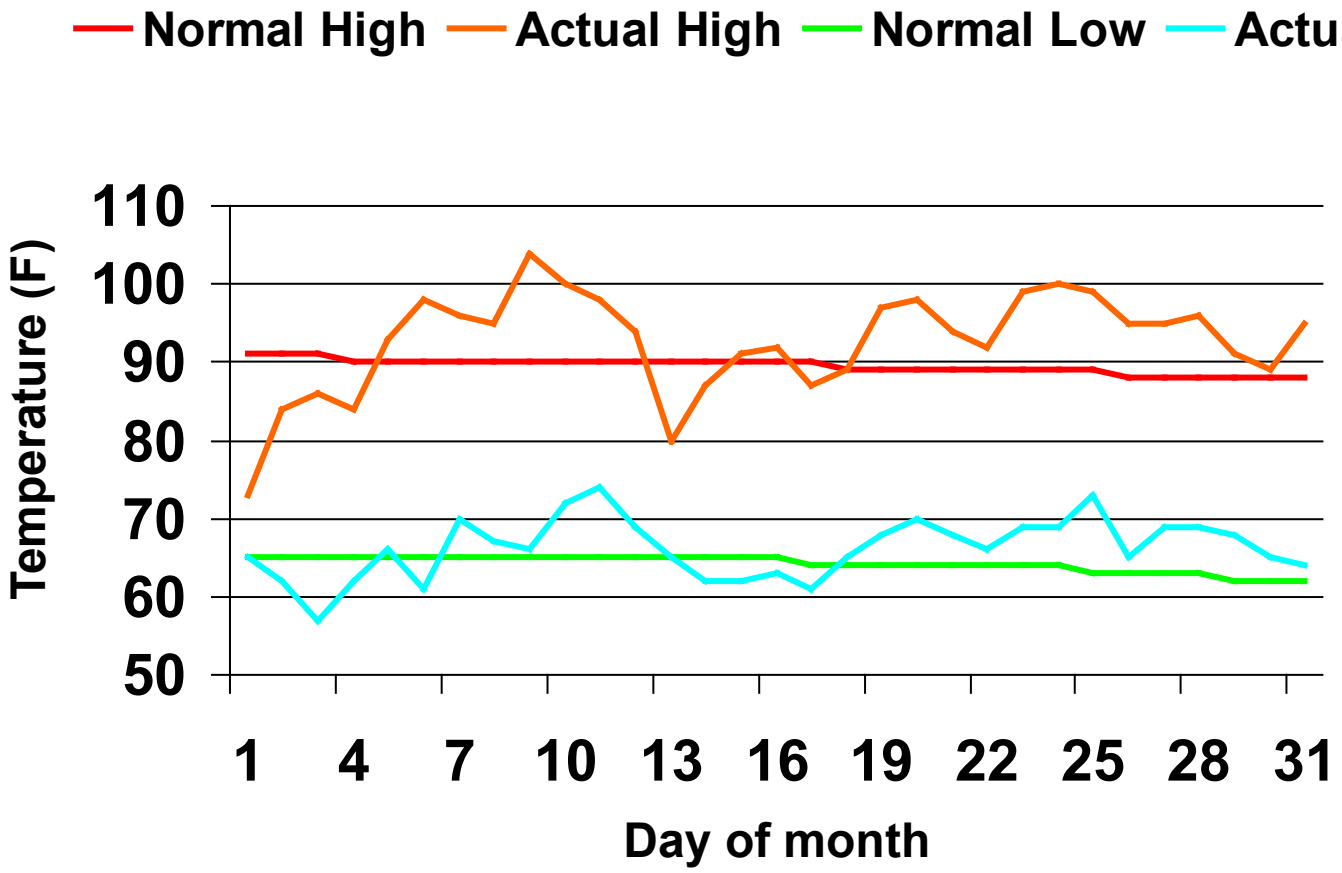
Amarillo
30-Yr Normal (1981-2010) and July 2021 Air Temperatures



Heat Units

Normal total: 566
2021: 539
% of normal: -5

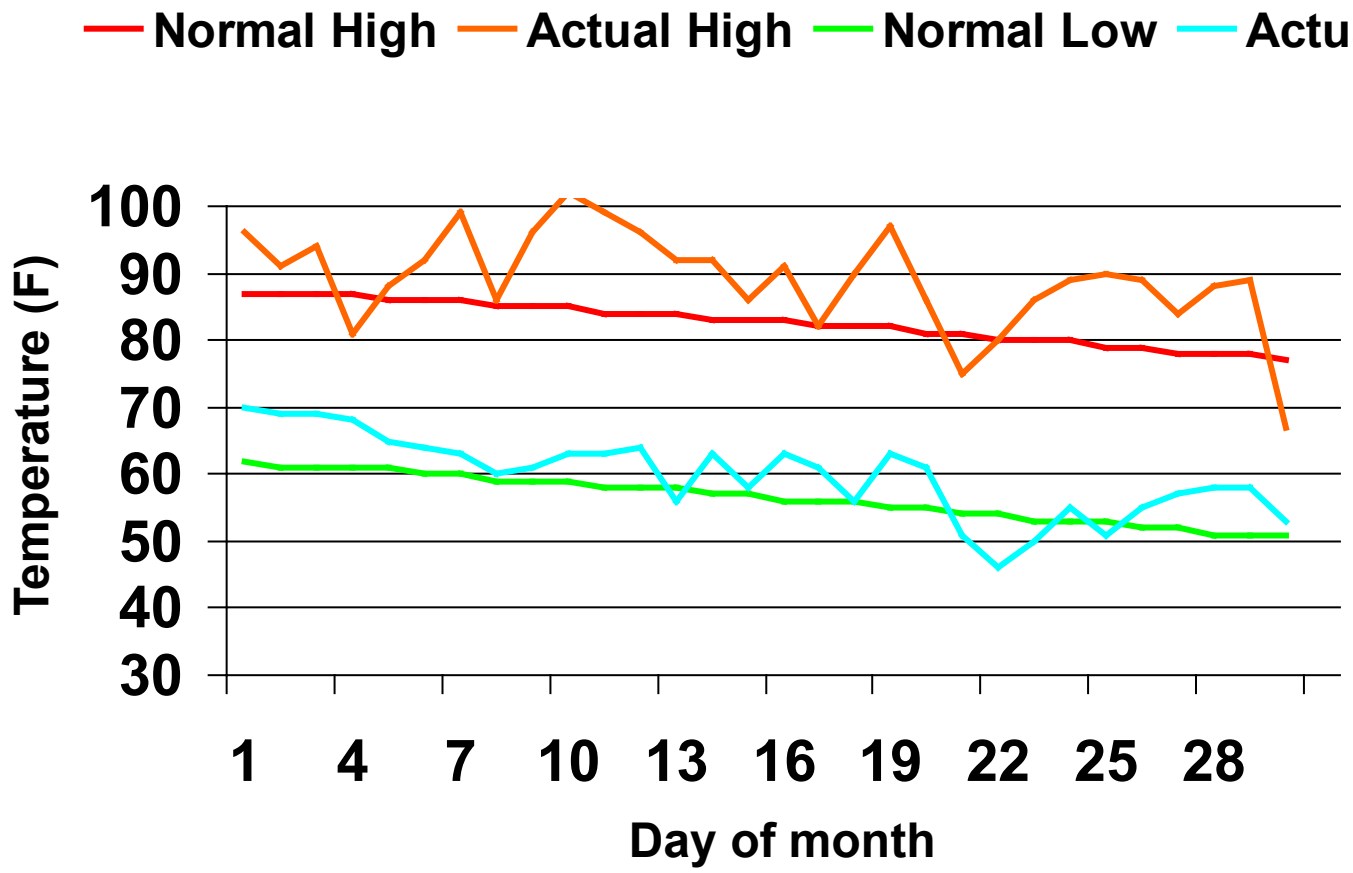
Amarillo
30-Yr Normal (1981-2010) and August 2021 Air Temperatures



Heat Units

Normal total: 522
2021: 602
% of normal: +15

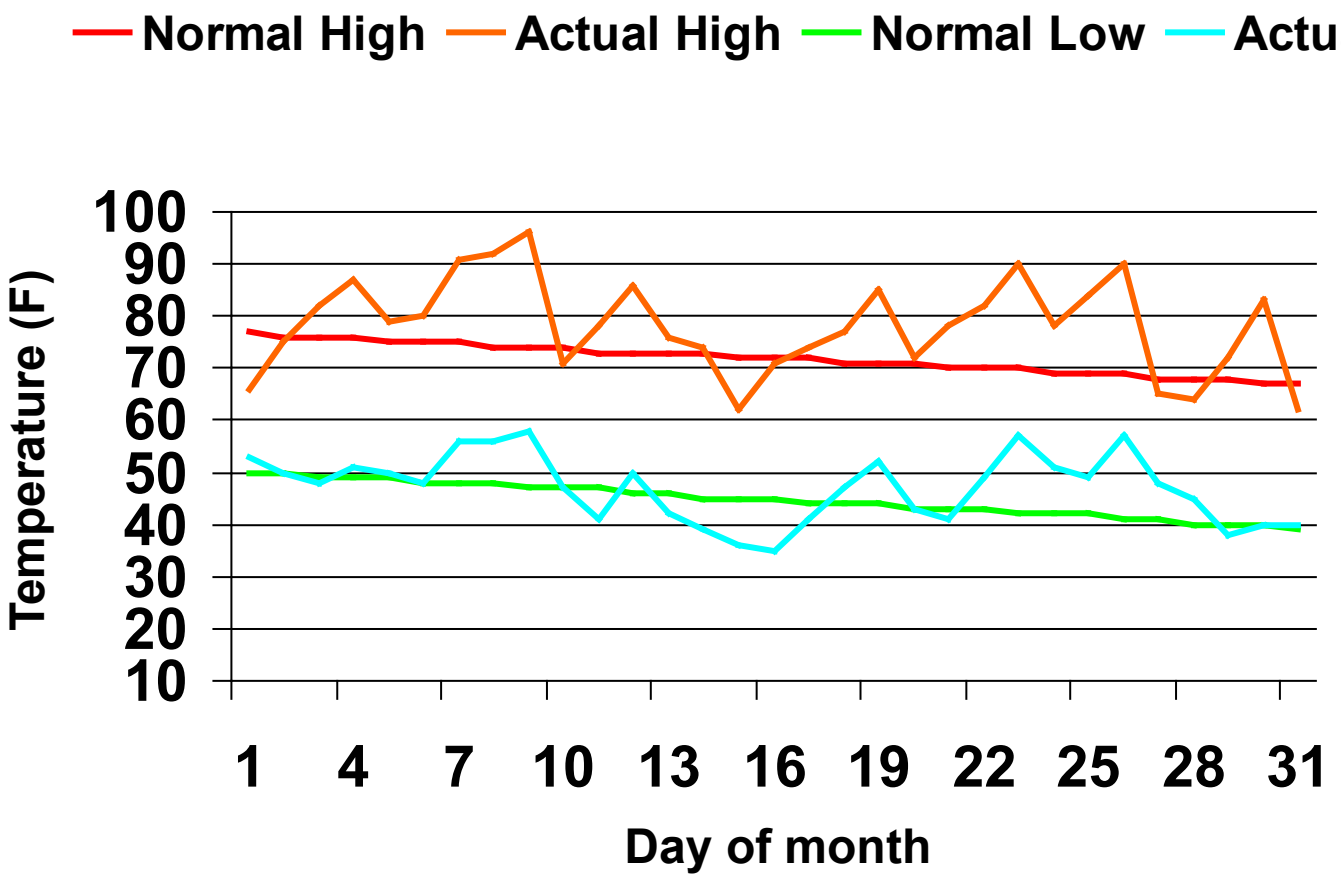
Amarillo
30-Yr Normal (1981-2010) and September 2021 Air Temperatures



Heat Units

Normal for Month: 286
2021: 434
% of normal: +52

Amarillo
30-Yr Normal (1981-2010) and October 2021 Air Temperatures



Heat Units

Normal: 19
2021: 133
% of normal: +600

First freeze on Nov 4 (28 degrees)
Hard freeze on Nov 18 (26 degrees)