2020 XtendFlex Technology Cotton Variety Trial – Lonestar Gin

Davis Brothers Farm
Dave Davis and Ryan Davis
Pampa, TX

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

Carey McKinney, Lonestar Gin Manager

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 2020, six varieties with Bollgard 3 XtendFlex technology were planted in a center-pivot irrigated field in a scientifically valid trial with three replicates. *This site was essentially undamaged by the June 9th regional high wind event. The trial was able to stay on track with growth and development until the September 9th record low temperature. Visually, it appeared to escape any damage associated with the cold spell, but the overall impact of these factors apparently negatively affected maturity and micronaire. Varieties exhibited preharvest seed cotton losses associated with the ice storm and hard freeze event in late October.*

Harvest results indicated that statistically significant differences were observed. Lint yields ranged from a high of 1556 lb/acre (DP 1820 B3XF) to a low of 1089 lb/acre (DP 2012 B3XF), and averaged 1290 lb/acre (Table 1). Average Loan value for varieties from commercially ginned and classed bales varied from a high of $0.5080/lb (DP 1820 B3XF) to a low of $0.4197/lb (DP 2012 B3XF). Overall Loan value for the trial across all entries was 0.4688/lb. When including lint Loan value on a per acre basis and net gin credit , statistically significant differences were in net value/acre found among varieties. DP 1820 B3XF had the highest net value at $813/acre, and DP 2012 B3XF had the lowest at $468/acre. This is a difference of $345/acre.

Table 2 presents in-season data including stand establishment percentage, vigor, nodes above white flower (NAWF) and plant height on three sampling dates, nodes above cracked boll

(NACB) on October 6, and a visual estimate of storm resistance. NACB values for most varieties were somewhat high on September 30, and averaged 4.7. This would indicate that a fair number of unopened bolls were being pushed well into October to gain additional maturity. Even though NexGen 2982 B3XF had the lowest value of 3.0 NACB on that date, it still exhibited a low micronaire value of 3.0. It is unclear why this may have occurred; however, the September cold spell may have adversely affected the sugar to cellulose conversion that occurs in the fiber.

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 21 and 31. Leaf grades ranged from about 2.8 to 3.7. NexGen 2982 B3XF had the lowest leaf grade quality, with a 3.7 average across commercial bales. Staple ranged from an average high of 37.1 (DP 1820 B3XF) to an average low of 35.6 32nds inch (NG 2982 B3XF). Micronaire was apparently significantly affected by the September 9 cold spell. Average micronaire values ranged from a high of 3.2 (DP 1820 B3XF and NG 3930 B3XF) to a low of 2.6 (DP 2012 B3XF). Bark contamination was noted in commercial bales. Bark incidence ranged from a low of 0% of bales (DP 1820 B3XF) to a high of 50% (ST 4480 B3XF). Fiber strength ranged from a high of 32.8 g/tex to a low of 28.3 g/tex. Uniformity ranged from a high of 81.5% to a low of about 79.8%.

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: 3230 ft

Previous crop: corn harvested in 2019

Tillage system: One disk pass then strip-till

Planted: May 15

Replicates: 3 replicates in a randomized complete block design

Plot width: 8-row plots

Plot length: trial was planted in straight rows; ~3,500 long rows, ~3,150 short rows

Seeding rate: 50,000 seed/acre

Days from planting to first bloom: 68 (July 21)

30-inch rows under center pivot irrigation

Total rainfall May through August: Not recorded at site

Total irrigation May through August: ~9.2 inches

May 1.3, June 1.7, July 3.8, and August 2.4

Fertility management:

No nitrogen fertilizer applied; 16.75 gal/acre 10-28-0-4 (S) -0.4 (Zn) during strip till operation

Chemical Applications:

Preplant burndown – 2 oz/acre Panther (flumioxazin) + 24 oz/acre Weedmaster (dicamba + 2,4-D) on March 20

Preemergence – 20 oz/acre Brawl II (s-metolachlor) + 1 qt/acre Direx (diuron) + 28 oz/acre Parazone (paraquat) on May 17

Post emergence – 12 oz/acre clethodim on July 1

Post emergence – 48 oz/acre Credit Extra (glyphosate) on Aug 2

Plant growth regulators: 24 oz/acre mepiquat chloride on July 27

Insecticides: 4 oz/acre Acephate 97 on July 1

Harvest aid applications: Early October – 1 qt/acre ethephon + 1 pt/acre tribufos (Folex)

Harvesting: Dec 7 using a John Deere CS690, with harvested area calculated by the GPS on the stripper monitor. Entire plot length was harvested with 2 round modules harvested/plot. Round modules were weighed using the CS690 scale.

Commercial ginning: Round modules for all 3 reps of each variety were staged together (2 per plot, with 3 reps = 6 total per variety) and commercially ginned separately by Lonestar 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

Lonestar Gin would like to thank Dave Davis and Ryan Davis for committing equipment, land, and time to conduct and manage the trial. Ryan Davis planted the trial and Dave Davis performed harvesting operations and we appreciate their excellent assistance. Gratitude is expressed to participating seed companies for providing testing seed. These include Deltapine, NexGen, and Stoneville. Gratitude is also expressed to Windstar Inc. Detailed ginning was performed by Malcom Jones, Dalton Skinner and the Lonestar ginning crew and a big thank you is extended to this hard-working group.

2020 XtendFlex Trial Variety Descriptions – Lonestar Gin

Davis Brothers Farm
Pampa, TX

Dr. Randy Boman
Cotton Agronomics Manager

Variety Descriptions from Company Literature and Websites

DP 1820 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-tall plant height, storm resistance 3.5 (on scale of 1 = tight, 9 = loose). ~ 39 staple, strength ~30.6 g/tex. Disease ratings: Fusarium wilt – moderately susceptible, Verticillium wilt – moderately susceptible, Bacterial blight – resistant.

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 2020 B3XF Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and dicamba stacked herbicide tolerance technologies. Early-medium maturity. Semi-smooth leaves, medium to medium-tall plant height, storm resistance 3.5 (on scale of 1 = tight, 9 = loose). ~ 37.7 staple, strength ~30.3 g/tex. Disease ratings: Fusarium wilt – no data, Verticillium wilt – moderately tolerant, Bacterial blight – resistant.

NG 2982 B3XF Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and dicamba stacked herbicide tolerance technologies stacked with Bollgard 3 Bt technology. Early maturity. Storm tolerance 9 (scale of 0 = very loose, 9 = very storm tolerant), leaf hair semi-smooth, plant height medium, node of first fruiting branch (avg) 7, staple 36-37, strength 31-33. Diseases (on scale of 0 very susceptible, 9 superior resistance): Fusarium wilt - no data, Verticillium wilt 7, Bacterial blight 9.

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 4480 B3XF Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and dicamba stacked herbicide tolerance technologies. Early-medium maturity. Semi-smooth leaves, medium plant height, storm resistance 6 (on scale of 0 = very loose, 9 = very storm tolerant). ~ 37.7 staple, strength ~31.1 g/tex. Disease ratings: Root knot nematode/Fusarium wilt – fair, Verticillium wilt – fair, Bacterial blight – resistant.

Table 1. Harvest results for the center pivot irrigated XtendFlex cotton variety trial, Davis Farm, Pampa, TX, 2020.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint loan value	Net gin credit	Net value	
	---------- % ----------		---------- lb/acre ----------			$/lb	---------- $/acre ----------			
DP 1820 B3XF	30.2	34.2	5147	1556	1759	0.5080	791	22	813	a
NG 2982 B3XF	27.9	42.8	5062	1414	2167	0.4699	665	68	733	b
NG 3930 B3XF	28.0	37.1	4864	1360	1807	0.5007	681	37	717	b
ST 4480 B3XF	26.4	35.1	4653	1229	1634	0.4742	583	25	607	c
DP 2020 B3XF	25.1	36.6	4345	1090	1592	0.4401	480	30	510	d
DP 2012 B3XF	25.2	32.4	4327	1089	1403	0.4197	457	11	468	e
Test average	27.1	36.4	4733	1290	1727	0.4688	610	32	641	
CV, %	--	--	2.4	2.3	2.4	--	2.3	2.5	2.3	
OSL	--	--	0.0001	0.0001	0.0001	--	0.0001	0.0001	0.0001	
LSD	--	--	165	44	60	--	21	1	22	

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:
$3.15/cwt commercial ginning cost.
$210/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.

Table 3. Plant observation results from the center pivot irrigated XtendFlex cotton variety trial, Davis Farm, Pampa, TX, 2020.

Entry	Final population	Stand establishment	Vigor	Nodes above white flower			Plant height			Nodes above cracked boll	Storm resistance
				Early bloom	+3 weeks	+5 weeks	Early bloom	+3 weeks	+5 weeks		
	plants/acre	%	1-5 visual scale, 5 best	count			inches			count	1-9 visual scale, 9 tight
	8-Jun	8-Jun	8-Jun	21-Jul	12-Aug	26-Aug	21-Jul	12-Aug	26-Aug	6-Oct	7-Dec
DP 1820 B3XF	35,138	70.3	3.5	10.1	5.3	1.2	20.5	30.0	29.4	4.8	3.8
DP 2012 B3XF	43,560	87.1	4.2	9.5	5.8	1.4	20.7	30.7	29.8	4.8	3.3
DP 2020 B3XF	47,335	94.7	4.3	9.3	5.5	1.0	20.1	29.5	28.9	5.0	3.2
NG 2982 B3XF	41,527	83.1	4.3	8.8	5.3	0.7	19.5	26.1	26.0	3.0	5.2
NG 3930 B3XF	45,883	91.8	4.5	9.6	5.5	1.3	20.1	28.2	28.2	4.2	4.0
ST 4480 B3XF	37,462	74.9	4.0	10.2	6.5	2.1	19.6	28.3	28.0	6.1	4.7
Test average	41,818	83.7	4.1	9.6	5.7	1.3	20.1	28.8	28.4	4.7	4.0
CV, %	10.5	10.4	6.1	4.6	7.1	18.7	5.4	1.7	2.3	9.5	12.9
OSL	0.0411	0.0409	0.0083	0.0239	0.0233	0.0007	0.6968	0.0001	0.0004	0.0002	0.0001
LSD	6,468	12.9	0.4	0.7	0.6	0.4	NS	0.7	1.0	0.7	0.8

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.

Table 3. Commercial classing data for the center pivot irrigated XtendFlex cotton variety trial, Davis Farm, Pampa, TX, 2020.

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 1820 B3XF															
651148	31-1	3	1	2	38	3.0	.	.	33.5	81.8	6.9	2	79.8	118	50.10
651149	31-1	3	1	3	39	3.1	.	.	31.2	81.0	7.5	3	80.7	122	50.20
651150	21-2	2	1	3	37	2.9	.	.	31.4	80.9	7.6	3	79.2	116	47.20
651151	21-2	2	1	3	38	3.0	.	.	30.3	81.0	7.6	4	80.5	118	50.25
651152	31-1	3	1	3	37	3.2	.	.	30.9	80.3	7.7	3	79.3	115	49.35
651153	21-2	2	1	3	37	3.1	.	.	31.5	80.6	7.7	3	79.7	115	49.80
651154	21-2	2	1	2	36	3.1	.	.	31.6	80.6	7.8	2	80.1	113	50.30
651155	31-1	3	1	2	37	3.1	.	.	33.2	81.2	7.3	2	80.4	115	50.45
651156	21-2	2	1	3	37	3.3	.	.	29.9	81.2	7.6	4	80.2	117	51.70
651157	31-1	3	1	3	37	3.3	.	.	33.1	81.3	7.3	2	80.5	116	51.90
651158	31-1	3	1	3	36	3.4	.	.	31.5	80.2	7.6	4	78.9	113	50.85
651159	31-1	3	1	3	37	3.5	.	.	32.3	80.4	7.6	4	79.3	115	56.00
651160	31-1	3	1	3	37	3.4	.	.	32.1	79.9	7.7	3	78.8	114	51.25
651161	31-1	3	1	3	38	3.4	.	.	31.7	81.1	7.5	3	81.9	119	52.00
651162	31-1	3	1	3	36	3.4	.	.	30.5	80.8	7.5	3	78.8	113	50.65
Average	--	2.7	1.0	2.8	37.1	3.2	none	none	31.6	80.8	7.5	3.0	79.9	115.9	50.80
DP 2012 B3XF															
651099	21-2	2	1	3	36	2.4	.	.	27.6	80.9	7.9	3	79.1	113	37.00
651100	31-1	3	1	3	36	2.6	11	level 1 bark	27.4	80.0	8.0	4	78.2	113	37.70
651101	31-1	3	1	3	36	2.6	.	.	27.0	80.2	7.9	3	78.7	111	41.10
651102	21-2	2	1	3	37	2.5	.	.	28.6	80.7	7.6	2	79.4	114	41.85
651103	31-1	3	1	3	36	2.8	.	.	28.0	80.0	7.9	3	79.3	113	46.10
651104	31-1	3	1	3	37	2.5	.	.	28.7	79.8	7.8	4	81.7	114	42.10
651105	31-1	3	1	3	36	2.7	.	.	27.9	79.9	7.8	3	80.1	112	46.60
651106	31-1	3	1	3	36	2.7	11	level 1 bark	29.9	79.2	8.0	3	80.5	112	43.25
651107	31-1	3	1	4	36	2.7	11	level 1 bark	29.5	78.8	7.8	6	80.0	113	41.90
651108	31-1	3	1	4	37	2.7	11	level 1 bark	28.2	78.4	8.0	6	81.0	114	42.10
Average	--	2.8	1.0	3.2	36.3	2.6	4/10 bales	level 1 bark	28.3	79.8	7.9	3.7	79.8	112.9	41.97
DP 2020 B3XF															
651163	21-2	2	1	3	38	2.4	.	.	29.4	80.9	7.7	3	81.0	118	38.10
651164	21-2	2	1	3	36	2.6	.	.	28.0	79.9	8.1	3	80.0	113	41.95
651165	31-1	3	1	3	37	2.7	.	.	29.8	79.8	7.9	3	80.3	114	47.05
651166	31-1	3	1	3	36	2.6	.	.	29.0	80.4	8.0	3	78.9	113	41.15
651167	31-1	3	1	4	36	2.7	.	.	28.4	79.8	8.0	4	77.7	112	44.15
651168	31-1	3	1	3	36	2.6	.	.	27.1	79.1	8.1	3	79.3	112	41.20
651169	31-1	3	1	3	37	2.7	.	.	30.5	79.3	8.3	2	79.5	116	46.75
651170	31-1	3	1	3	37	2.8	11	level 1 bark	28.9	79.3	8.0	4	80.3	115	43.60
651171	31-1	3	1	3	38	2.7	.	.	29.2	79.4	8.0	4	80.4	118	47.20
651172	31-1	3	1	3	37	2.8	11	level 1 bark	30.5	79.6	7.8	5	79.7	114	43.35
651173	31-1	3	1	3	37	3.1	.	.	27.9	79.9	7.7	4	81.1	115	49.60
Average	--	2.8	1.0	3.1	36.8	2.7	2/11 bales	level 1 bark	29.0	79.8	8.0	3.5	79.8	114.5	44.01

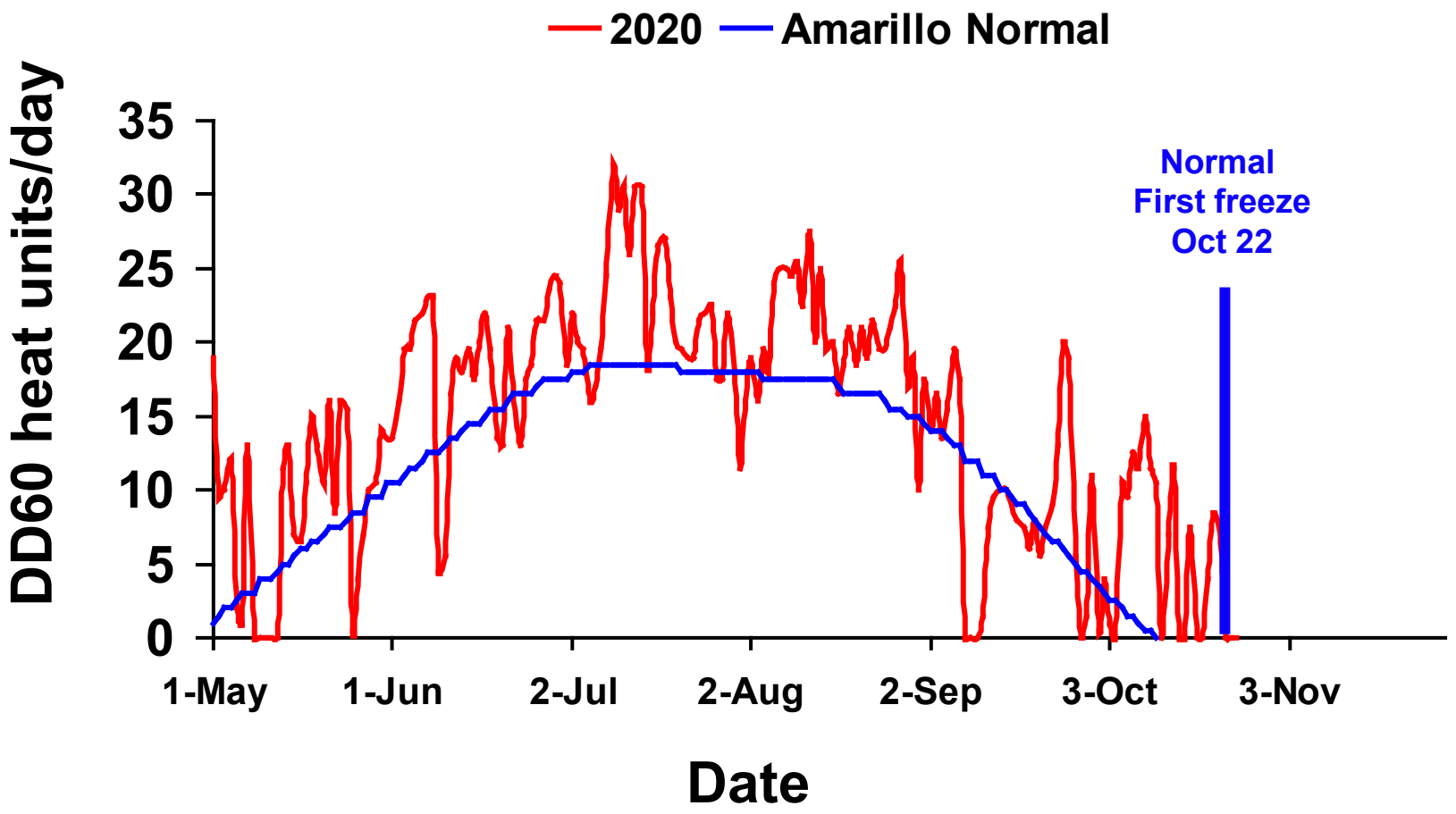
Table 3 (continued). Commercial classing data for the center pivot irrigated XtendFlex cotton variety trial, Davis Farm, Pampa, TX, 2020.

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 2982 B3XF															
651109	31-1	3	1	3	36	2.5	.	.	31.8	80.5	7.0	5	81.7	111	42.15
651110	31-1	3	1	4	35	2.8	.	.	33.4	79.6	7.6	4	81.1	108	44.70
651111	31-2	3	1	3	36	3.0	.	.	33.8	79.4	7.4	4	83.2	113	49.80
651112	31-1	3	1	3	35	3.2	.	.	31.4	79.4	7.6	4	82.5	110	48.35
651113	31-1	3	1	3	36	3.1	.	.	33.0	79.5	7.4	3	81.1	111	49.70
651114	31-2	3	1	4	36	3.1	.	.	32.7	78.5	7.2	5	81.9	113	48.30
651115	31-2	3	1	4	36	3.0	11	level 1 bark	33.3	78.4	7.5	6	81.6	111	44.95
651116	31-2	3	1	5	35	3.0	.	.	32.4	78.0	7.5	6	81.2	110	45.90
651117	31-1	3	1	4	36	2.9	.	.	33.0	78.5	7.5	4	80.9	111	45.75
651118	31-2	3	1	4	35	3.4	.	.	30.9	78.2	7.4	5	81.5	110	48.85
651119	31-2	3	1	4	36	3.0	.	.	33.7	78.2	7.6	5	81.2	111	48.35
651120	31-2	3	1	4	35	3.1	.	.	32.9	78.4	7.6	5	80.7	110	47.25
651121	41-1	4	1	4	35	3.1	.	.	32.4	78.3	7.2	5	81.2	110	46.65
651122	31-2	3	1	3	36	2.9	.	.	33.9	79.4	7.3	4	81.6	111	47.10
Average	--	3.1	1.0	3.7	35.6	3.0	1/14 bales	level 1 bark	32.8	78.9	7.4	4.6	81.5	110.7	46.99
NG 3930 B3XF															
651135	31-1	3	1	3	37	2.6	.	.	30.3	79.8	7.5	3	80.5	114	42.35
651136	21-2	2	1	3	37	3.3	11	level 1 bark	29.4	80.2	8.3	3	80.8	114	48.30
651137	21-2	2	1	3	37	3.1	.	.	27.8	79.9	8.1	2	82.1	115	49.90
651138	21-2	2	1	3	37	3.2	.	.	29.2	80.0	8.1	3	80.5	115	49.90
651139	31-1	3	1	3	37	3.2	.	.	28.6	79.2	8.3	3	80.4	114	49.60
651140	31-1	3	1	3	37	3.1	.	.	29.5	80.1	8.0	4	80.3	114	49.65
651141	21-2	2	1	3	36	3.2	.	.	30.1	80.0	8.3	2	80.6	113	49.70
651142	31-1	3	1	3	37	3.4	.	.	27.9	80.1	8.0	3	82.3	114	51.45
651143	21-2	2	1	3	37	3.3	.	.	28.8	79.5	8.1	3	80.5	114	51.65
651144	31-1	3	1	3	37	3.2	.	.	29.0	80.4	7.8	3	81.5	114	49.65
651145	31-1	3	1	2	37	3.2	.	.	30.4	81.1	7.4	3	81.9	115	50.20
651146	31-1	3	1	2	37	3.3	.	.	28.7	81.1	7.5	2	83.1	116	51.85
651147	31-1	3	1	2	38	3.5	.	.	29.1	81.2	7.4	2	83.7	118	56.70
Average	--	2.6	1.0	2.8	37.0	3.2	1/13 bales	level 1 bark	29.1	80.2	7.9	2.8	81.4	114.6	50.07
ST 4480 B3XF															
651123	31-1	3	1	3	37	2.9	.	.	29.8	81.6	6.6	4	79.5	117	46.55
651124	31-1	3	1	3	37	3.1	11	level 1 bark	31.4	81.8	6.9	3	79.7	116	46.15
651125	31-1	3	1	3	37	2.9	.	.	31.6	81.1	6.9	4	80.2	116	47.45
651126	31-1	3	1	3	37	3.0	.	.	32.5	81.4	6.9	4	79.2	116	49.55
651127	31-1	3	1	3	37	3.1	11	level 1 bark	30.9	81.8	6.8	3	80.4	117	46.45
651128	31-1	3	1	3	37	3.1	.	.	30.6	81.8	6.7	5	79.2	115	49.35
651129	31-1	3	1	3	37	3.1	11	level 1 bark	31.2	81.9	6.6	3	80.7	115	46.65
651130	31-1	3	1	2	37	3.1	11	level 1 bark	32.1	82.5	6.6	2	79.8	114	46.50
651131	31-1	3	1	3	37	2.9	11	level 1 bark	32.3	81.5	6.5	4	79.5	117	43.55
651132	31-1	3	1	3	37	3.1	11	level 1 bark	30.4	81.7	6.4	3	80.1	114	46.45
651133	31-1	3	1	3	38	3.1	.	.	33.1	82.1	6.7	4	80.1	120	50.25
651134	31-1	3	1	3	37	3.0	.	.	33.3	82.5	6.6	3	80.4	116	50.10
Average	--	3.0	1.0	2.9	37.1	3.0	6/12 bales	level 1 bark	31.6	81.8	6.7	3.5	79.9	116.1	47.42

Appendix

Amarillo 2020 Cotton Heat Units and Weather Data

Amarillo
30-Year Normal (1981-2010) and 2020
Daily Heat Units



Total Accumulated Heat Units
From May 1 through Hard Freeze:

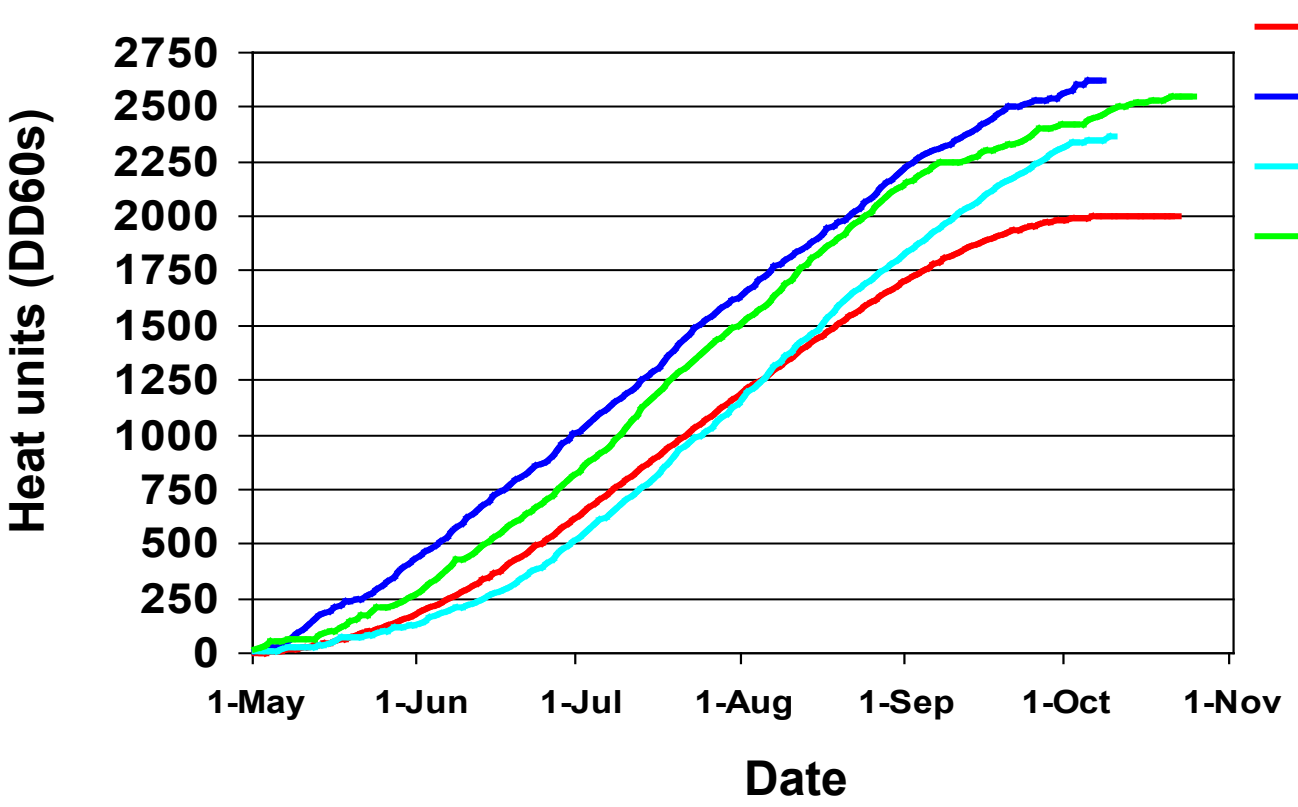
Normal: 2001
2020: 2552
% of normal: +28%

July had 10 days of 100 degrees or greater

Aug had 7 days of 100 degrees or greater

Hard freeze on Oct 25

Amarillo 30-Yr Normal (1981-2010) vs. 2018, 2019, and 2020 Cotton Heat Unit Accumulation for May 1 Through First Hard Freeze



1981-2010 (2001)
2018 (2621)
2019 (2362)
2020 (2552)

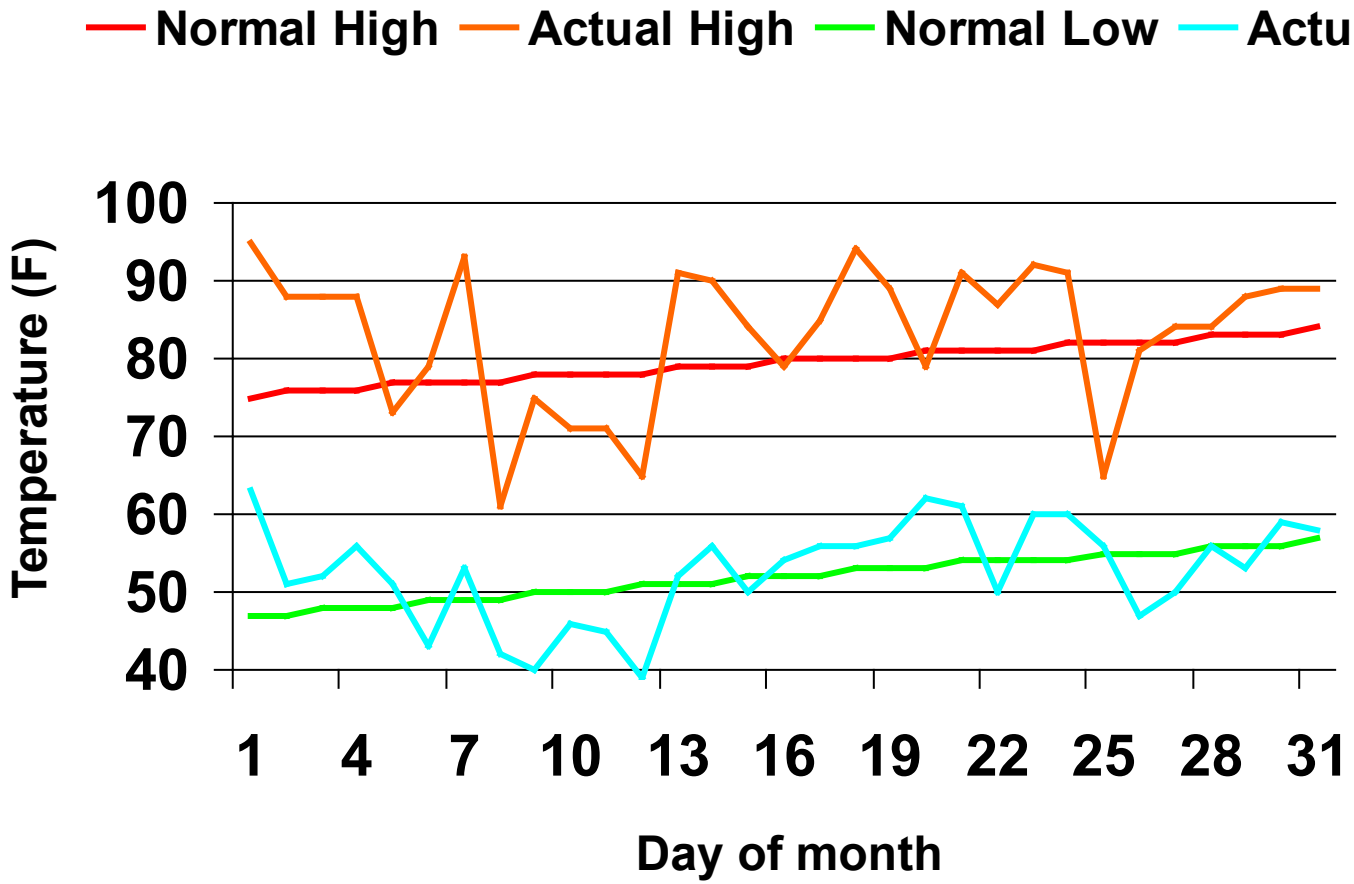
From May 1 through First Hard Freeze
Normal: 2001

2020: 2552
% of Normal: +28%

2019: 2362
% of Normal: +18%

2018: 2621
% of Normal: +31%

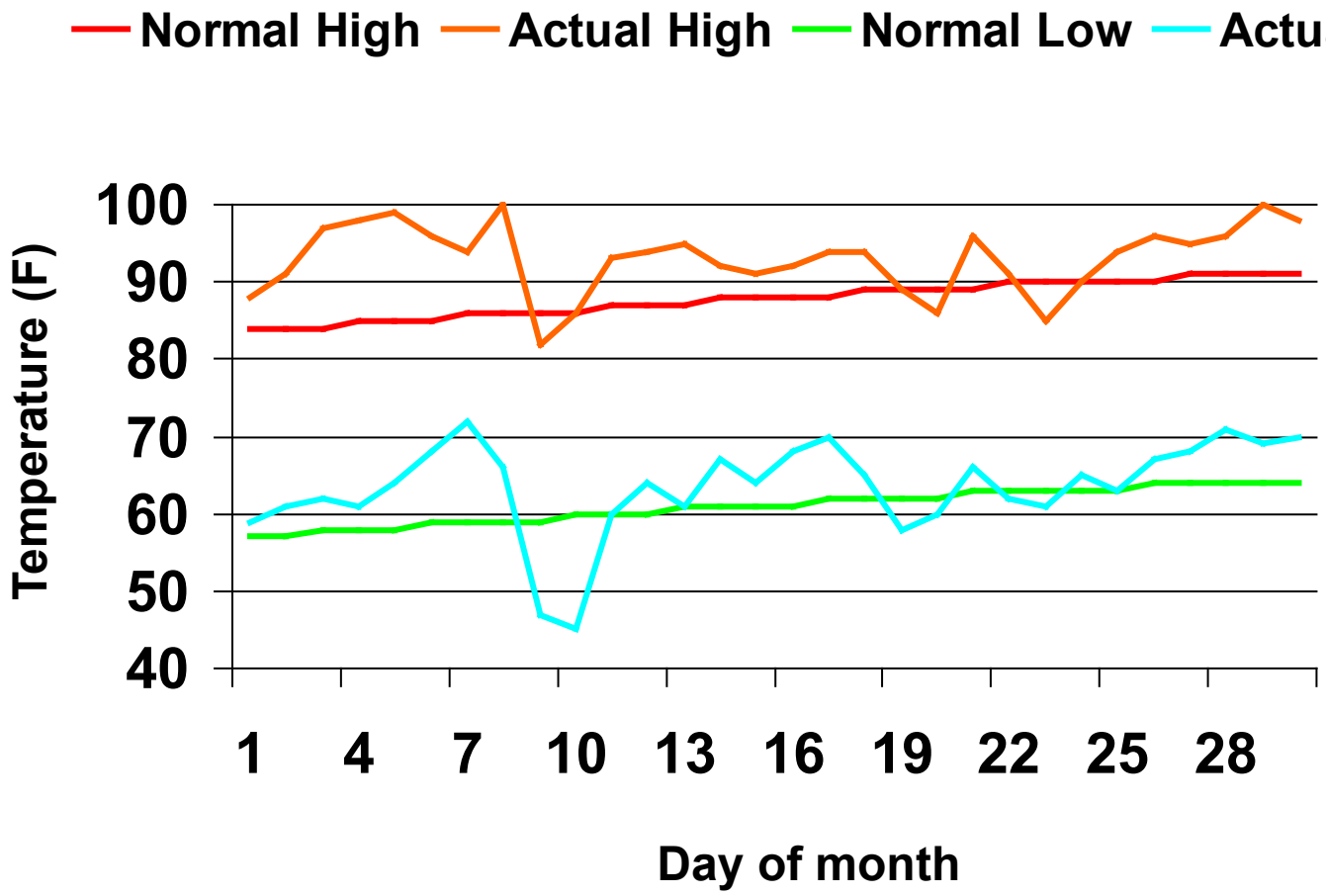
Amarillo
30-Yr Normal (1981-2010) and May 2020 Air Temperatures



Heat Units

Normal: 177
2020: 269
% of normal: +52

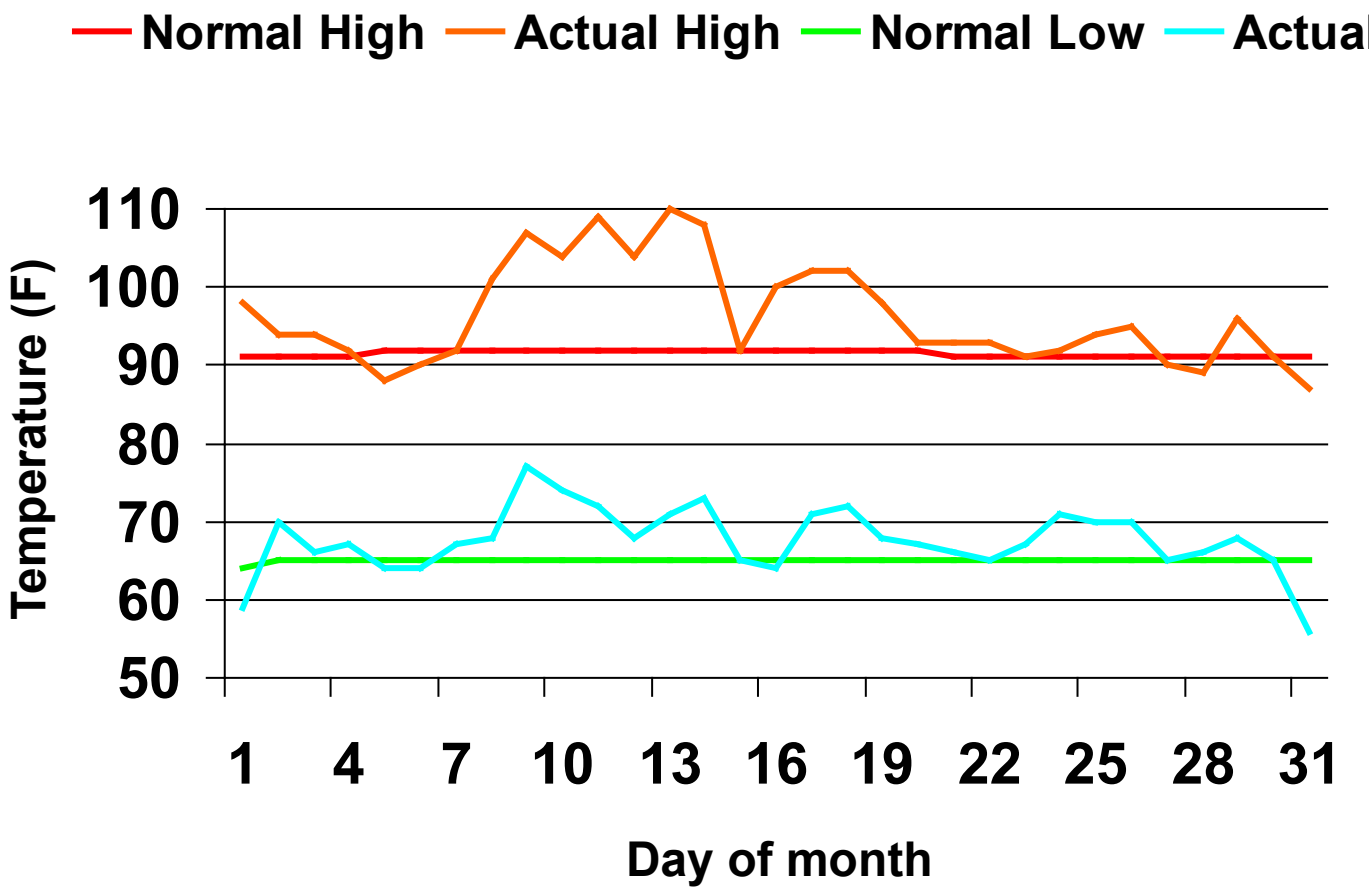
Amarillo
30-Yr Normal (1981-2010) and June 2020 Air Temperatures



Heat Units

Normal total: 433
2020: 548
% of normal: +27

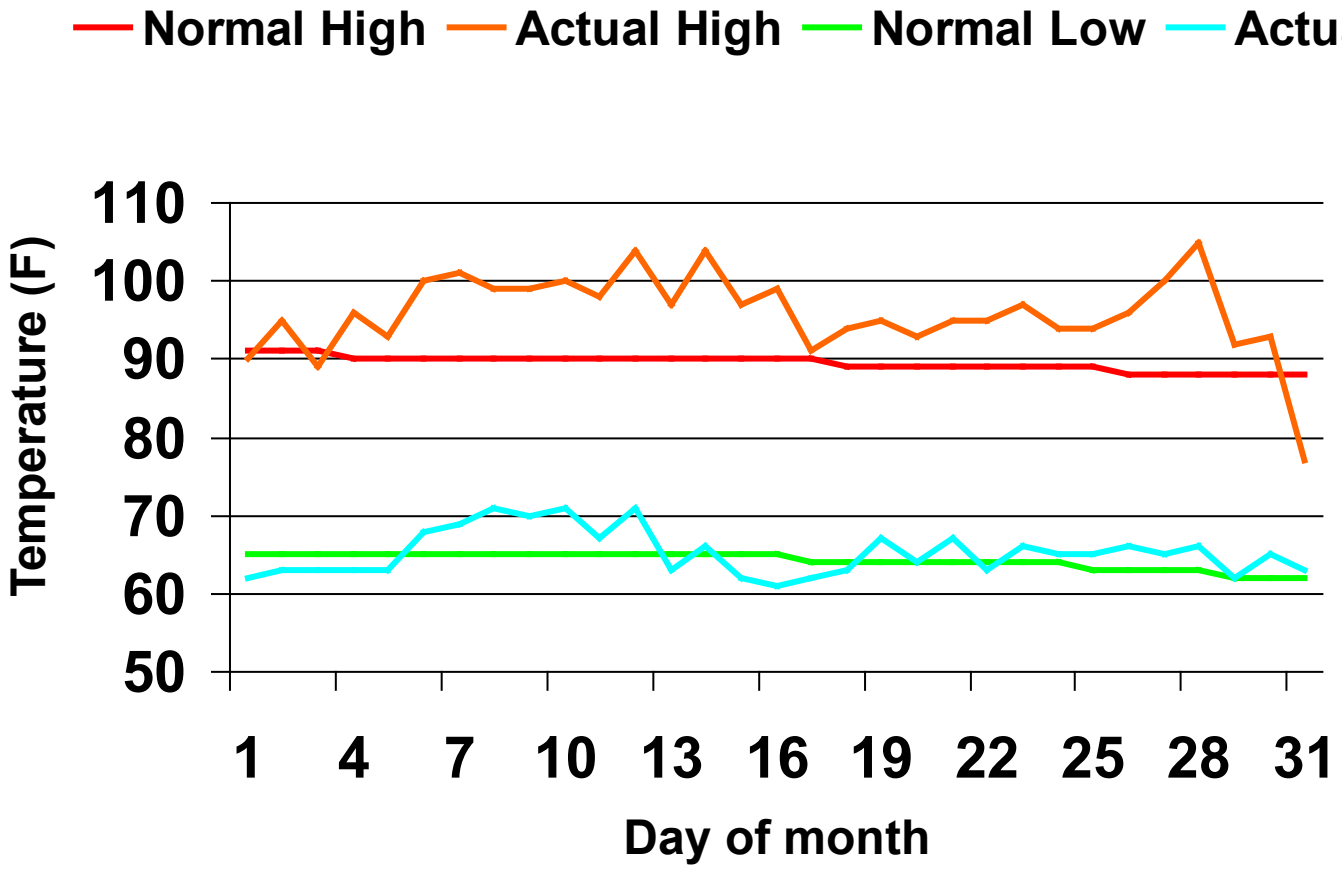
Amarillo
30-Yr Normal (1981-2010) and July 2020 Air Temperatures



Heat Units

Normal total: 566
2020: 683
% of normal: +21

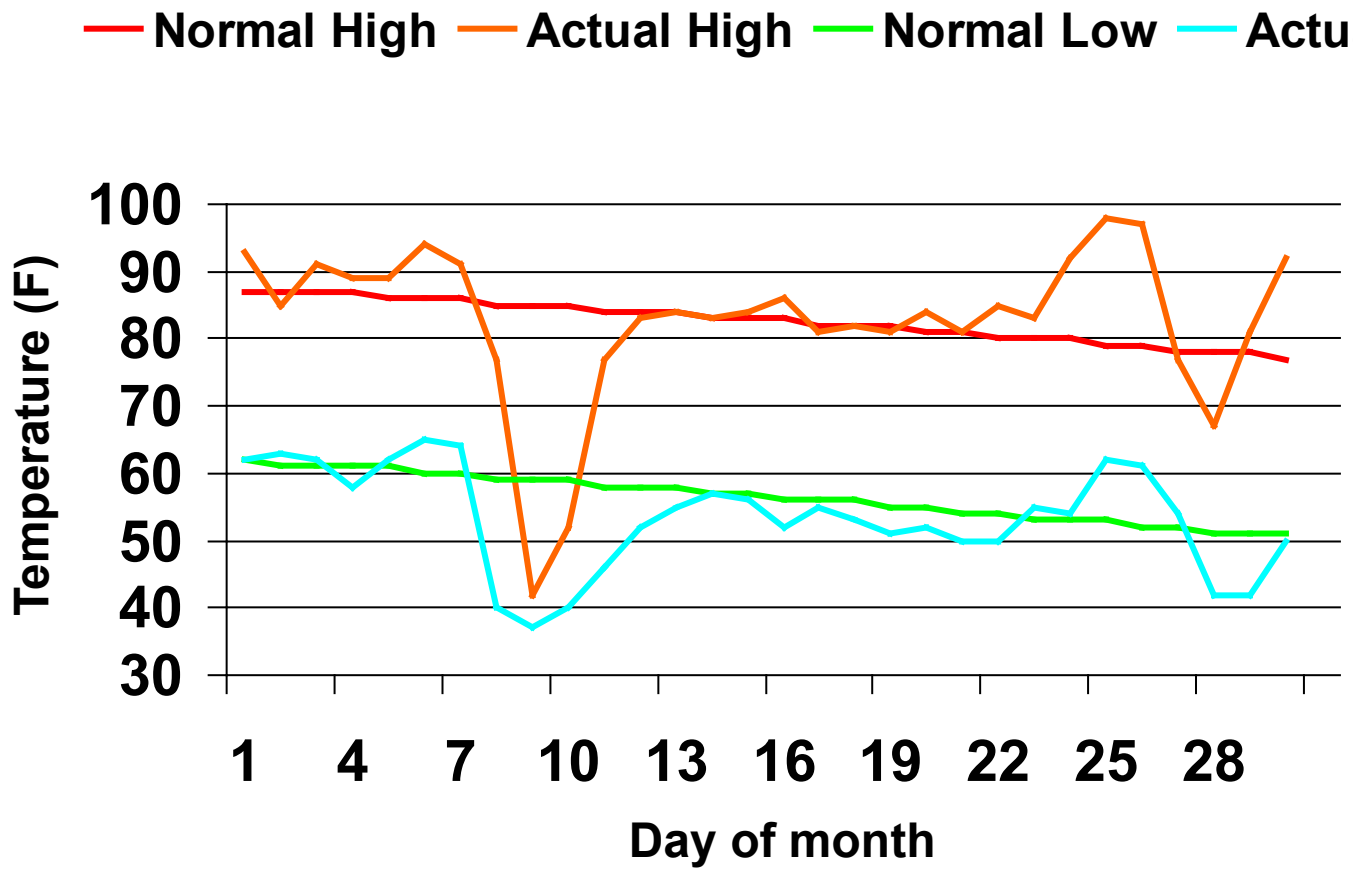
Amarillo
30-Yr Normal (1981-2010) and August 2020 Air Temperatures



Heat Units

Normal for Month: 522
2020: 637
% of normal: +22

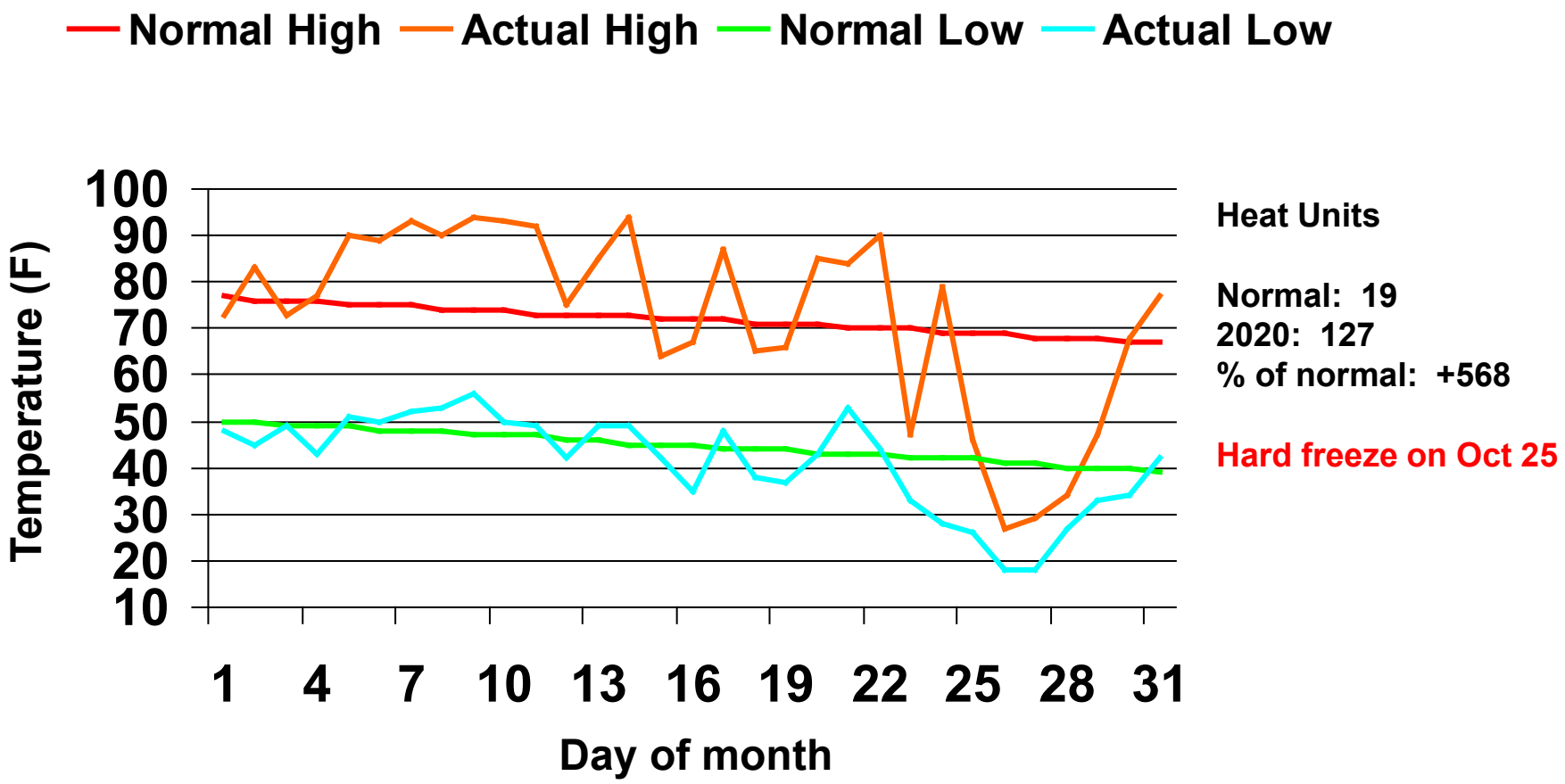
Amarillo
30-Yr Normal (1981-2010) and September 2020 Air Temperatures



Heat Units

Normal for Month: 286
2020: 283
% of normal: -1

Amarillo
30-Yr Normal (1981-2010) and October 2020 Air Temperatures



Heat Units

Normal: 19
2020: 127
% of normal: +568

Hard freeze on Oct 25