WINDSTAR GINS

2019 Mixed Technology Cotton Variety Trial – Edcot Gin

Bobby Byrd Farm
Plainview, 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 new Cotton Agronomics Manager position. The objective of this program is to work with local producers to scientifically evaluate varieties in a commercial setting from planting through ginning.

At this site, eleven varieties were planted in a sub-surface drip irrigated field in a scientifically valid trial with three replicates. Although early weather was extremely challenging, subsequent growing conditions were such that good yields and quality were obtained.

Harvest results indicated that statistically significant differences were noted. Lint yields ranged from a high of 1608 lbs/acre to a low of 1218 lbs/acre, and averaged 1371 lbs/acre (Table 1).

Cash bids were obtained for commercially ginned and classed bale quality for each variety. This was performed on December 27 (at 69.20 March 2020 futures) using the USDA-AMS classing results. These values ranged from a high of $0.6879/lb to a low of $0.6321/lb. Net value/acre (defined as gross lint cash value/acre plus net gin credit minus planting seed costs) ranged from a high of $982/acre to a low of $723/acre, a difference of $259/acre (Table 1). These differences were statistically significant.

Average Loan value for varieties from commercially ginned and classed bales varied from a high of $0.5666/lb to a low of 0.5246/lb (Table 2). Net value/acre (defined as gross lint loan value/acre plus net gin credit minus planting seed costs) ranged from a high of $809/acre to a low of $594, a difference of $215/acre. These differences were statistically significant.

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 indicate what 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: 3415 ft

Previous crop: corn harvested in 2018

Tillage system: conventional till

Verticillium wilt: none

Planted: May 17

Replicates: 3 replicates in a randomized complete block design

Plot width: 6-row plots

Plot length: length of field (~2,400 ft)

Seeding rate: 42,000 seed/acre

30/50 inch rows on 40-inch sub-surface drip irrigation

Total irrigation: ~9 inches of irrigation

Fertility: 120 lbs/acre N, 40 lbs/acre P_2O_5, 20 lbs/acre S, 4 lbs/acre Zn

Herbicides: diruron + metolachlor preemergence, 3 Liberty post-emergence applications, 2 clethodim post-emergence applications

Plant growth regulators: 3 Stance applications (2 oz/acre pre-bloom, 3/acre oz early bloom, 3 oz/acre mid-bloom)

Insecticides: none

Harvest aids: ethephon

Harvesting: Dec 3 using a John Deere CS690, with harvested area calculated by the GPS on the stripper monitor. Average harvested plot length was about 2,000 ft. Platform scales were provided by BASF and were used to determine round module weights.

Commercial ginning: One round module/plot, round modules for all 3 reps of each variety were staged together (3 total) and commercially ginned separately by Edcot 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: Two methods were used for lint value. Table 1 is based on cash bids for each variety obtained on December 27, 2019 using commercial ginning and USDA-AMS classing results. Table 2 is based on CCC Loan value from commercial ginning and USDA-AMS classing results.

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Acknowledgements

Edcot Gin would like to thank Bobby Byrd for committing his equipment, land, and time to conduct and manage the trial. Also recognized is Tad Nixon for properly staging the round modules for each variety. Gratitude is expressed to the supporting seed companies and Windstar Inc. Detailed ginning was performed by Edcot “Ginner Ernie” and the crew and a big thank you is extended to this hard-working group. Landon Kidd assisted with data collection and his capable assistance is also acknowledged. A thank you is also extended to Tim Culpepper with BASF for providing the round module scale system.

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Cotton Agronomics Manager

Variety Descriptions From Company Literature and Websites

FM 2498 GLT GlyTol (glyphosate) and Liberty Link (glufosinate) stacked herbicide tolerance technologies stacked with TwinLink Bt technology. Medium maturity. Semi-smooth leaves, medium-tall/aggressive plant height, storm resistance 6 (on scale of 9 = tight, 0 = loose). ~ 37.8 staple, strength ~30.0 g/tex. Disease ratings: Fusarium wilt – fair, Verticillium wilt – very good, Bacterial blight - resistant.

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 1822 XF 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 3.0 (on scale of 1 = tight, 9 = loose). ~ 38 staple, strength ~30.4 g/tex. Disease ratings: Fusarium wilt – moderately resistant, Verticillium wilt – moderately susceptible, Bacterial blight – resistant.

DGX 19916 B3XF Experimental entry from Dyna-Gro/Nutrien. Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and dicamba stacked herbicide tolerance technologies.

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.

NG 3956 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 8 (scale of 0 = very loose, 9 = very storm tolerant), leaf hair semi-smooth, plant height medium-tall, node of first fruiting branch (avg) 6.9, staple 36-37, strength 30-31. Diseases (on scale of 0 very susceptible, 9 superior resistance): Fusarium wilt no data, Verticillium wilt 8, Bacterial blight 9.

FM 2398 GLTP GlyTol (glyphosate) and Liberty Link (glufosinate) stacked herbicide tolerance technologies stacked with TwinLink Plus Bt technology. Medium maturity. Semi-smooth leaves, medium-tall/aggressive plant height, storm resistance 5.5 (on scale of 9 = tight, 0 = loose). ~ 37 staple, strength ~30.1 g/tex. Disease ratings: Fusarium wilt – fair, Verticillium wilt – very good, 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). ~ 37 staple, strength ~31.2 g/tex. Disease ratings: Fusarium wilt – good, Verticillium wilt – fair, Bacterial blight - resistant.

FM 1830 GLT GlyTol (glyphosate) and Liberty Link (glufosinate) stacked herbicide tolerance technologies stacked with TwinLink Bt technology. Early-medium maturity. Smooth leaves, medium/moderate plant height, storm resistance 5 (on scale of 9 = tight, 0 = loose). ~ 38.4 staple, strength ~31.9 g/tex. Disease ratings: Fusarium wilt – fair, Verticillium wilt – very good, Bacterial blight - resistant.

PHY 250 W3FE Enlist Technology: Widestrike 3 Bt technology stacked with triple herbicide technologies including Roundup Ready Flex (glyphosate) tolerance, Liberty Link (glufosinate), and Enlist herbicide (2,4-D choline) tolerance. Early maturity. Short growth habit. Smooth leaf, storm tolerance - excellent. Bacterial blight - resistant. Verticillium wilt - excellent. ~37.1 staple, ~30.9 g/tex strength.

PHY 350 W3FE Enlist Technology: Widestrike 3 Bt technology stacked with triple herbicide technologies including Roundup Ready Flex (glyphosate) tolerance, Liberty Link (glufosinate), and Enlist herbicide (2,4-D choline) tolerance. Early-medium maturity. Medium-tall plant height. Semi-smooth leaf, storm tolerance – very good. Bacterial blight - resistant. Verticillium wilt - excellent. ~36.2 staple, ~29.8 g/tex strength.

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Table 1. Harvest results with lint cash value from the drip-irrigated mixed technology cotton variety trial, Bobby Byrd Farm, Plainview, TX, 2019.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint cash value	Lint cash value	Net gin credit	Seed/tech cost	Net value	
	---------- % ----------		---------- lb/acre ----------			$/lb	---------- $/acre ----------				
FiberMax FM 1621 GL	35.8	38.2	4496	1608	1716	0.6321	1017	13	48	982	a
Deltapine DP 1822 XF	32.2	43.4	4479	1443	1945	0.6879	993	34	48	978	a
FiberMax FM 2398 GLTP	36.9	39.8	4119	1521	1641	0.6560	998	18	69	947	ab
PhytoGen PHY 350 W3FE	32.3	41.6	4344	1404	1807	0.6841	960	26	72	914	abc
FiberMax FM 2498 GLT	34.6	42.2	4160	1437	1756	0.6547	941	27	67	901	abcd
FiberMax FM 1830 GLT	33.7	40.9	3945	1330	1613	0.6874	914	21	67	868	bcde
Deltapine DP 1820 B3XF	34.3	37.4	3861	1325	1445	0.6881	912	9	75	845	cde
PhytoGen PHY 250 W3FE	31.8	40.0	4076	1297	1632	0.6672	866	18	72	812	def
NexGen NG 3930 B3XF	31.7	38.9	3984	1263	1549	0.6860	867	14	81	800	ef
NexGen NG 3956 B3XF	31.1	43.5	3981	1240	1730	0.6720	833	31	81	783	ef
Dyna-Gro DGX 19916 B3XF	31.7	40.6	3843	1218	1559	0.6384	778	19	74	723	f
Test average	33.3	40.6	4117	1371	1672	0.6685	916	21	69	868	
CV, %	--	--	5.7	6.2	5.6	--	5.9	6.6	--	6.3	
OSL	--	--	0.0197	0.0003	0.0002	--	0.0004	0.0001	--	0.0001	
LSD	--	--	399	145	161	--	92	2	--	94	

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 0.05 level.
Note: some columns may not add up due to rounding error.

Assumes:
$3.15/cwt commercial ginning cost.
$180/ton for seed.
Net gin credit is defined as seed credit minus ginning expense.
Lint value based on cash bids for each variety on December 27 at 69.20 March 2020 futures using commercial ginning and USDA-AMS classing results.

Table 2. Harvest results with lint loan value from the drip-irrigated mixed technology cotton variety trial, Bobby Byrd Farm, Plainview, TX, 2019.

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 ----------				
FiberMax FM 1621 GL	35.8	38.2	4496	1608	1716	0.5246	844	13	48	809	a
Deltapine DP 1822 XF	32.2	43.4	4479	1443	1945	0.5648	815	34	48	801	a
FiberMax FM 2398 GLTP	36.9	39.8	4119	1521	1641	0.5426	825	18	69	775	ab
PhytoGen PHY 350 W3FE	32.3	41.6	4344	1404	1807	0.5649	793	26	72	746	abc
FiberMax FM 2498 GLT	34.6	42.2	4160	1437	1756	0.5424	779	27	67	740	abcd
FiberMax FM 1830 GLT	33.7	40.9	3945	1330	1613	0.5638	750	21	67	704	bcde
Deltapine DP 1820 B3XF	34.3	37.4	3861	1325	1445	0.5666	751	9	75	684	cde
PhytoGen PHY 250 W3FE	31.8	40.0	4076	1297	1632	0.5544	719	18	72	665	def
NexGen NG 3930 B3XF	31.7	38.9	3984	1263	1549	0.5575	704	14	81	638	ef
NexGen NG 3956 B3XF	31.1	43.5	3981	1240	1730	0.5538	686	31	81	636	ef
Dyna-Gro DGX 19916 B3XF	31.7	40.6	3843	1218	1559	0.5331	649	19	74	594	f
Test average	33.3	40.6	4117	1371	1672	0.5517	756	21	69	708	
CV, %	--	--	5.7	6.2	5.6	--	5.9	6.6	--	6.5	
OSL	--	--	0.0197	0.0003	0.0002	--	0.0005	0.0001	--	0.0001	
LSD	--	--	399	145	161	--	76	2	--	78	

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 0.05 level.
Note: some columns may not add up due to rounding error.

Assumes:
$3.15/cwt commercial ginning cost.
$180/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 drip-irrigated mixed technology cotton variety trial, Bobby Byrd Farm, Plainview, TX, 2019.

Entry	Final population	Vigor	Nodes above white flower					Final plant height	Nodes above cracked boll	Storm resistance
			First flower	+1 week	+2 weeks	+3 weeks	+4 weeks			
	plants/acre	1-5 visual scale, 5 best	count					inches	count	1-9 visual scale, 9 tightest
	27-Jun	27-Jun	31-Jul	9-Aug	15-Aug	23-Aug	29-Aug	17-Sep	7-Oct	2-Dec
FiberMax FM 2498 GLT	29,839	4.3	6.6	4.2	2.3	1.1	0.1	22.9	2.3	6.7
Deltapine DP 1820 B3XF	12,415	1.0	10.2	8.7	6.5	4.2	2.3	29.8	4.9	4.7
Deltapine DP 1822 XF	19,384	2.7	9.2	7.2	5.5	2.6	1.2	26.1	4.3	5.0
Dyna-Gro DGX 19916 B3XF	20,256	3.0	8.0	6.6	4.4	1.8	0.3	26.2	3.7	4.0
NexGen NG 3930 B3XF	21,344	2.3	8.6	7.3	4.7	2.5	0.9	26.5	3.7	5.3
NexGen NG 3956 B3XF	20,255	2.7	8.8	7.0	4.7	2.5	0.9	26.3	3.9	7.0
FiberMax FM 2398 GLTP	25,047	3.3	7.0	5.4	3.9	1.8	0.3	24.3	3.0	6.3
FiberMax FM 1621 GL	23,958	3.7	8.4	5.3	3.6	1.5	0.2	23.9	2.7	6.7
FiberMax FM 1830 GLT	21,780	3.0	8.0	5.7	3.7	1.8	0.5	23.3	3.1	4.3
PhytoGen PHY 250 W3FE	29,403	4.0	7.4	5.2	3.2	1.5	0.3	22.2	2.7	5.7
PhytoGen PHY 350 W3FE	27,878	4.0	7.8	5.4	4.1	1.7	0.5	25.0	3.4	4.7
Test average	22,869	3.1	8.2	6.2	4.2	2.1	0.7	25.1	3.4	5.5
CV, %	9.4	15.7	--	7.2	12.2	16.0	33.5	4.9	16.1	7.2
OSL	0.0001	0.0001	--	0.0001	0.0001	0.0001	0.0001	0.0001	0.0006	0.0001
LSD	3,655	0.8	--	0.8	0.9	0.6	0.4	2.1	0.9	0.7

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level.

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Table 4. Commercial classing data for the drip-irrigated mixed technology cotton variety trial, Bobby Byrd Farm, Plainview, TX, 2019.

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
FM 2498 GLT															
4043316	31-1	3	1	2	35	5.2	.	.	30.0	79.0	7.9	2	81.6	110	52.25
4043317	31-1	3	1	2	36	5.2	.	.	31.6	78.9	7.9	2	82.6	113	53.85
4043318	31-1	3	1	3	36	4.9	.	.	32.5	79.0	8.0	3	79.8	112	55.30
4043319	21-2	2	1	3	37	4.4	.	.	33.0	79.5	8.1	2	81.0	116	56.55
4043320	31-1	3	1	2	36	4.9	.	.	31.2	79.0	8.1	2	80.7	111	56.10
4043321	31-1	3	1	3	36	4.9	.	.	31.5	79.5	8.0	3	81.6	113	55.80
4043322	31-1	3	1	3	35	5.1	.	.	29.6	78.9	7.9	3	80.2	110	51.80
4043323	31-1	3	1	2	35	5.1	.	.	30.5	80.0	8.0	2	80.8	110	52.25
Average	--	2.9	1.0	2.5	35.8	5.0	none	none	31.2	79.2	8.0	2.4	81.0	111.9	54.24
DP 1820 B3XF															
4043324	21-2	2	1	2	37	4.7	.	.	34.1	78.4	8.9	2	78.9	116	56.55
4043325	21-2	2	1	2	38	4.5	.	.	33.9	78.7	8.7	2	80.4	119	57.25
4043326	21-2	2	1	3	39	4.5	.	.	34.3	78.0	8.9	3	80.8	121	56.70
4043327	31-1	3	1	3	38	4.4	.	.	31.8	78.3	8.7	3	80.0	120	56.35
4043328	31-1	3	1	3	38	4.5	.	.	34.0	78.2	8.7	2	80.5	119	56.45
4043329	31-1	3	1	3	38	4.3	.	.	33.6	78.0	8.6	3	81.3	118	56.45
4043330	31-1	3	1	2	38	4.3	.	.	35.5	78.0	8.7	3	82.0	120	56.85
Average	--	2.6	1.0	2.6	38.0	4.5	none	none	33.9	78.2	8.7	2.6	80.6	119.0	56.66
DP 1822 XF															
4043331	21-2	2	1	2	37	4.5	.	.	33.3	77.6	8.9	2	81.3	116	57.15
4043332	31-1	3	1	2	38	4.5	.	.	34.1	77.2	8.8	2	81.1	118	56.80
4043333	21-2	2	1	3	37	4.5	.	.	34.5	78.0	9.0	2	81.9	116	56.55
4043334	31-1	3	1	3	38	4.3	.	.	34.6	77.4	8.9	3	79.7	118	55.95
4043335	31-1	3	1	3	38	4.2	.	.	32.0	77.2	8.9	3	80.2	120	56.45
4043336	31-1	3	1	3	37	4.3	.	.	32.8	77.9	8.8	3	80.0	116	56.20
4043337	31-3	3	1	3	37	4.3	.	.	34.2	77.1	9.0	3	80.4	116	56.30
4043338	21-2	2	1	3	38	4.4	.	.	30.6	77.7	9.0	3	80.5	118	56.45
Average	--	2.6	1.0	2.8	37.5	4.4	none	none	33.3	77.5	8.9	2.6	80.6	117.3	56.48

Table 4 (continued). Commercial classing data for the drip-irrigated mixed technology cotton variety trial, Bobby Byrd Farm, Plainview, TX, 2019.

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
DGX 19916 B3XF															
4043339	32-1	3	2	3	35	4.6	.	.	31.2	75.3	9.4	3	81.4	108	52.20
4043340	32-1	3	2	3	35	4.5	.	.	32.2	76.0	9.7	3	82.7	109	52.25
4043341	31-3	3	1	2	36	4.4	.	.	32.2	76.1	9.4	2	81.9	112	56.10
4043342	31-3	3	1	3	36	4.4	.	.	30.0	75.9	9.4	3	82.3	111	55.70
4043343	32-1	3	2	3	35	4.4	.	.	30.4	76.0	9.6	4	81.6	108	52.05
4043344	32-1	3	2	3	35	4.4	.	.	30.4	76.0	9.6	4	81.6	108	52.05
4043345	32-1	3	2	3	36	4.5	.	.	30.4	76.0	9.6	2	81.9	111	52.80
Average	--	3.0	1.7	2.9	35.4	4.5	none	none	31.0	75.9	9.5	3.0	81.9	109.6	53.31
NG 3930 B3XF															
4043346	31-1	3	1	3	36	4.3	.	.	27.3	77.1	8.8	3	80.8	111	55.40
4043347	31-1	3	1	3	37	4.3	.	.	31.1	77.2	8.8	3	80.8	114	56.20
4043348	31-1	3	1	3	36	4.1	.	.	27.6	77.4	8.6	3	79.6	113	55.00
4043349	31-1	3	1	3	37	4.1	.	.	31.0	76.7	8.9	4	80.8	116	56.30
4043350	31-3	3	1	3	37	4.0	.	.	31.6	77.4	9.1	2	80.7	115	56.30
4043351	31-3	3	1	3	36	4.3	.	.	27.4	76.9	9.1	4	80.8	113	55.40
4043352	31-3	3	1	3	36	4.3	.	.	30.4	77.2	9.1	4	81.1	112	55.65
Average	--	3.0	1.0	3.0	36.4	4.2	none	none	29.5	77.1	8.9	3.3	80.7	113.4	55.75
NG 3956 B3XF															
4043353	21-4	2	1	3	36	4.6	.	.	31.7	76.8	9.3	3	81.5	112	56.00
4043354	21-4	2	1	2	36	4.5	.	.	30.6	77.5	9.3	2	80.7	111	56.35
4043355	31-3	3	1	2	35	4.3	.	.	28.9	77.3	9.1	2	79.5	109	53.80
4043356	21-4	2	1	3	36	4.4	.	.	29.6	77.5	9.2	4	81.3	112	55.65
4043357	31-3	3	1	3	36	4.6	.	.	30.4	76.2	9.2	4	82.0	111	55.70
4043358	21-4	2	1	3	36	4.5	.	.	28.6	76.6	9.3	3	80.7	111	55.60
4043359	21-4	2	1	3	35	4.4	.	.	30.0	76.9	9.5	3	80.6	110	54.55
Average	--	2.3	1.0	2.7	35.7	4.5	none	none	30.0	77.0	9.3	3.0	80.9	110.9	55.38

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Table 4 (continued). Commercial classing data for the drip-irrigated mixed technology cotton variety trial, Bobby Byrd Farm, Plainview, TX, 2019.

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 2398 GLTP															
4043360	31-1	3	1	2	36	5.0	.	.	32.2	79.4	8.0	2	82.3	112	53.85
4043361	31-1	3	1	2	35	5.1	.	.	29.5	79.1	8.4	2	81.0	110	52.05
4043362	31-1	3	1	2	37	4.8	.	.	31.5	78.9	8.4	2	81.1	116	56.60
4043363	31-1	3	1	2	37	4.7	.	.	30.3	78.0	8.5	2	81.9	116	56.45
4043364	21-2	2	1	2	37	4.7	.	.	30.9	79.5	8.2	2	81.3	114	56.90
4043365	31-1	3	1	3	36	5.2	.	.	31.0	79.0	8.4	3	81.3	113	53.50
4043366	21-2	2	1	2	36	5.3	.	.	31.2	79.1	8.5	2	81.4	112	52.70
4043367	31-2	3	1	4	36	5.2	.	.	30.9	76.3	8.2	5	81.4	111	52.05
Average	--	2.8	1.0	2.4	36.3	5.0	none	none	30.9	78.7	8.3	2.5	81.5	113.0	54.26
FM 1621 GL															
4043368	31-2	3	1	4	36	5.2	.	.	30.9	76.3	8.2	5	81.4	111	52.05
4043369	31-1	3	1	4	35	5.1	.	.	31.0	77.0	8.4	4	81.3	109	51.05
4043370	31-1	3	1	4	37	5.1	.	.	33.1	77.5	8.0	5	82.0	115	52.60
4043371	31-2	3	1	4	37	5.1	.	.	32.2	77.3	7.9	5	81.5	114	52.45
4043372	31-2	3	1	4	36	5.0	.	.	31.2	77.7	7.8	5	82.0	113	52.25
4043373	31-2	3	1	3	36	5.0	.	.	31.6	77.4	7.8	4	80.7	111	53.50
4043374	31-1	3	1	4	36	5.2	.	.	31.5	77.8	8.2	4	81.8	113	52.20
4043375	31-2	3	1	4	35	4.0	.	.	33.7	77.1	7.7	5	81.0	110	53.55
Average	--	3.0	1.0	3.9	36.0	5.0	none	none	31.9	77.3	8.0	4.6	81.5	112.0	52.46
FM 1830 GLT															
4043376	31-1	3	1	3	37	4.7	.	.	34.2	79.1	7.7	3	81.8	117	56.30
4043377	31-1	3	1	2	38	4.8	.	.	32.3	79.1	7.8	2	81.2	118	56.70
4043378	31-1	3	1	3	37	4.7	.	.	32.7	79.3	7.6	2	80.1	114	56.20
4043379	31-1	3	1	3	38	4.3	.	.	33.9	79.5	7.7	2	79.9	119	55.95
4043380	31-1	3	1	3	37	4.5	.	.	33.2	79.7	7.8	3	80.0	116	56.30
4043381	31-1	3	1	2	38	4.7	.	.	33.9	79.3	7.9	2	81.2	120	56.80
4043382	31-1	3	1	2	37	4.7	.	.	31.5	79.3	8.0	2	80.7	116	56.60
4043383	31-1	3	1	2	37	4.7	.	.	33.2	79.6	8.0	2	79.9	116	56.20
Average	--	3.0	1.0	2.5	37.4	4.6	none	none	33.1	79.4	7.8	2.3	80.6	117.0	56.38

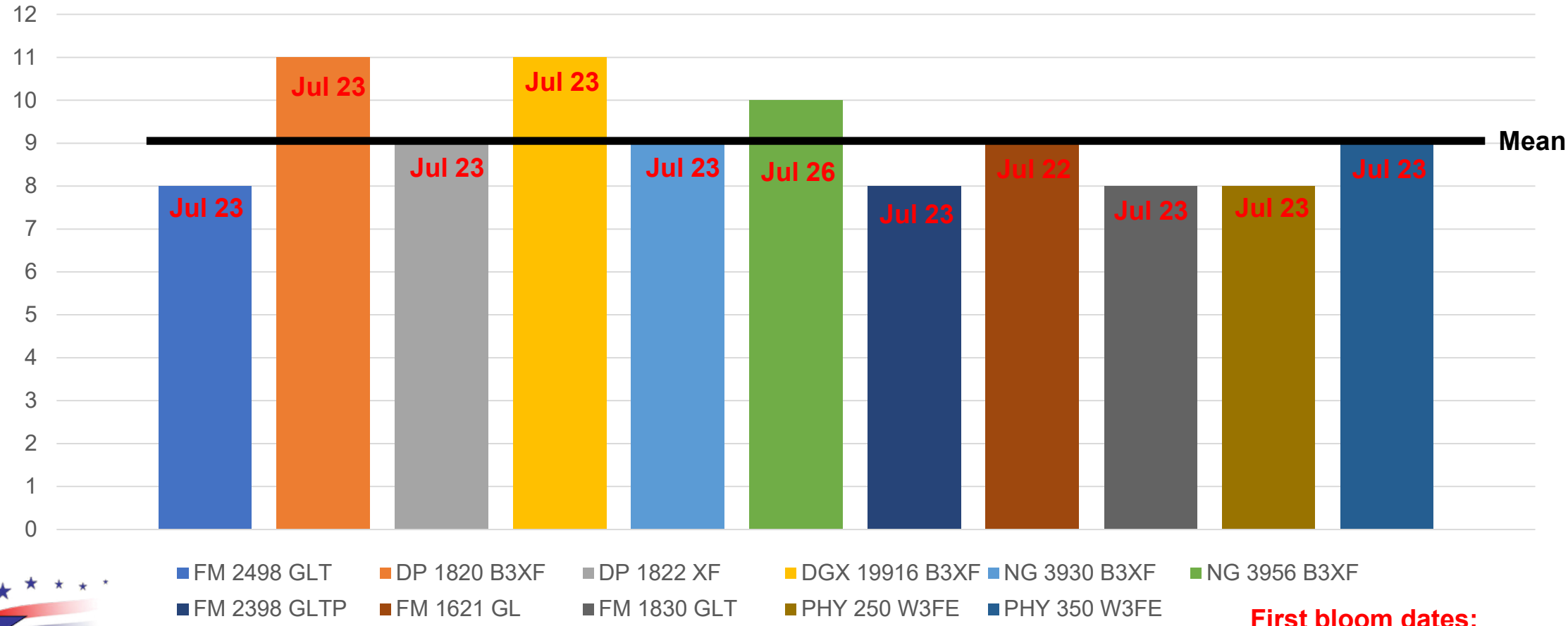
Table 4 (continued). Commercial classing data for the drip-irrigated mixed technology cotton variety trial, Bobby Byrd Farm, Plainview, TX, 2019.

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
PHY 250 W3FE															
4043384	31-1	3	1	3	36	4.8	.	.	32.6	79.4	7.7	3	80.8	113	55.80
4043385	31-1	3	1	3	36	4.7	.	.	31.0	80.1	7.8	2	80.8	111	55.80
4043386	31-1	3	1	2	35	4.8	.	.	29.2	80.7	7.4	2	79.4	109	53.85
4043387	21-2	2	1	2	37	4.4	.	.	33.4	80.8	7.7	2	80.1	117	57.15
4043388	31-1	3	1	3	38	4.6	.	.	32.3	80.2	7.8	2	79.7	118	55.85
4043389	31-1	3	1	3	36	4.7	.	.	32.0	79.9	7.9	3	81.1	112	55.80
4043390	31-1	3	1	2	35	4.7	.	.	31.0	80.1	7.8	2	80.4	109	54.70
4043391	31-1	3	1	2	35	4.7	.	.	30.9	78.5	8.3	2	81.6	110	54.55
Average	--	2.9	1.0	2.5	36.0	4.7	none	none	31.6	80.0	7.8	2.3	80.5	112.4	55.44
PHY 350 W3FE															
4043392	31-2	3	1	2	36	4.5	.	.	31.4	76.8	8.2	3	81.8	113	56.10
4043393	21-2	2	1	2	36	4.7	.	.	31.1	79.4	8.5	2	81.3	113	56.50
4043394	21-2	2	1	2	37	4.2	.	.	31.1	78.7	8.6	2	79.9	114	56.65
4043395	21-2	2	1	2	37	4.4	.	.	31.1	80.2	8.2	1	81.0	115	57.05
4043396	31-1	3	1	2	36	4.5	.	.	32.3	78.6	8.3	2	81.3	113	56.10
4043397	31-1	3	1	2	37	4.5	.	.	30.2	78.7	8.4	2	81.0	114	56.45
4043398	31-1	3	1	2	37	4.6	.	.	31.8	78.4	8.4	1	81.0	115	56.60
Average	--	2.6	1.0	2.0	36.6	4.5	none	none	31.3	78.7	8.4	1.9	81.0	113.9	56.49

Appendix

Nodes above white flower at first bloom, days from planting to first bloom, trial average nodes above white flower by observation date, and Amarillo 2019 weather data.

Byrd Mixed Technology Trial – 2019
Nodes Above White Flower at First Bloom



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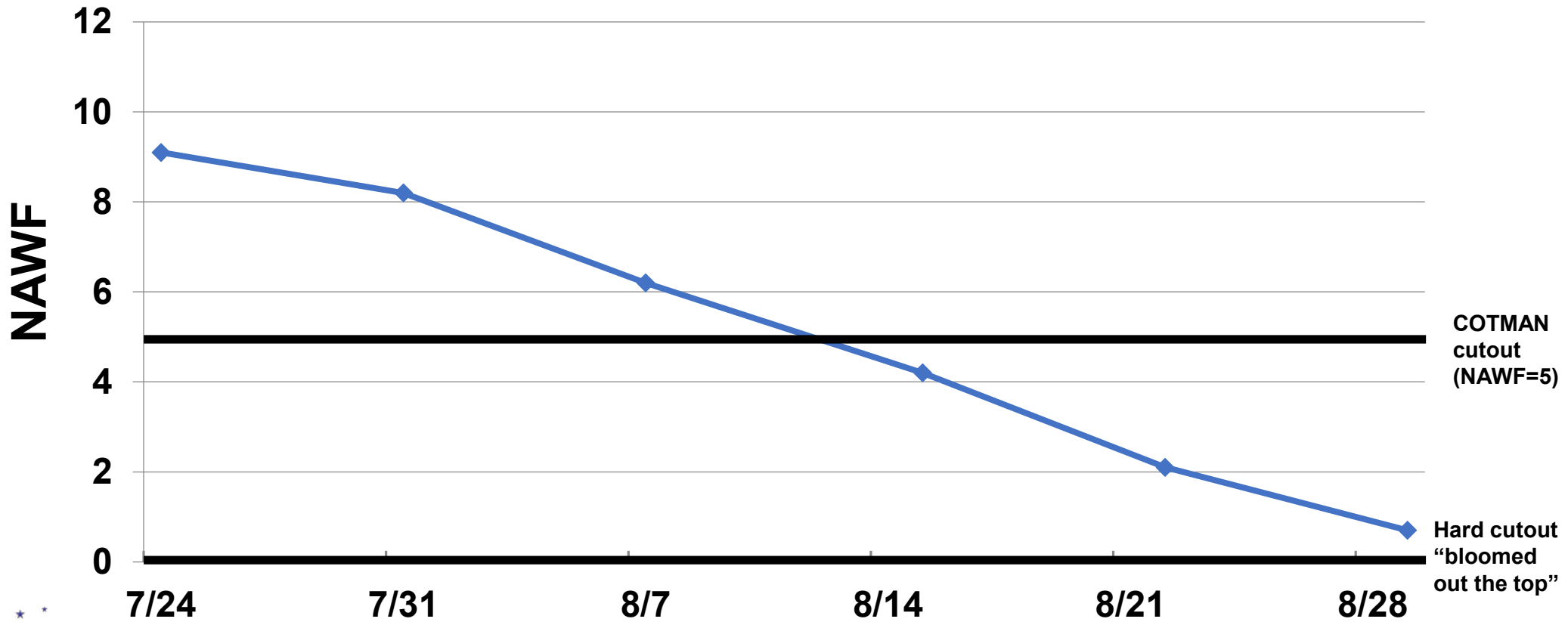
First bloom dates:
Jul 22 = 66 Days After Planting
Jul 26 = 70 Days After Planting

Byrd Mixed Technology Trial - 2019
Mean Nodes Above White Flower by Week



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Amarillo 2019 Weather vs. 30-Year Normal

Month	Normal DD60 (Actual)	Percent of Normal
May	177 (130)	-27%
June	433 (383)	-12%
July	566 (632)	+12%
August	522 (677)	+30%
September	286 (494)	+73%
October	19 (48)	+152 Hard freeze on Oct 11
Season (May 1 to end of season)	2001 (2362)	+18%

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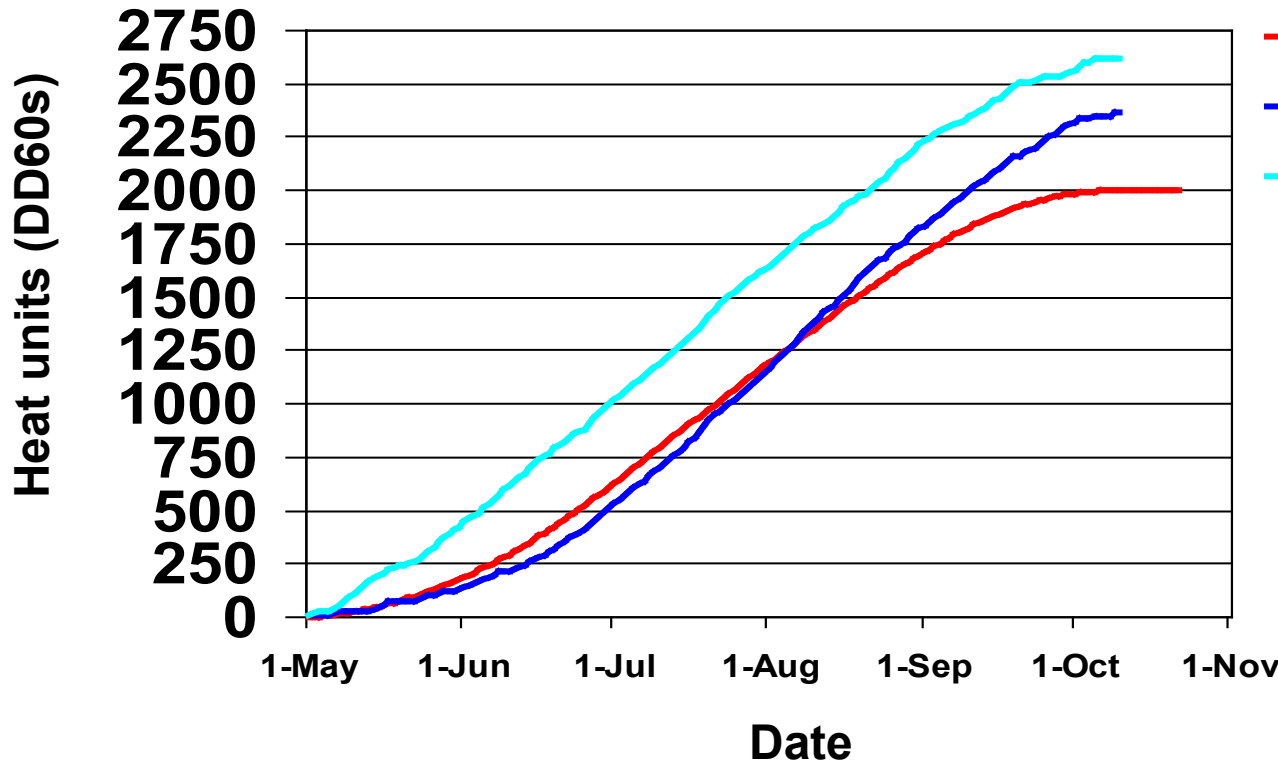
Amarillo 30-Yr Normal (1981-2010) vs. 2018 and 2019 Cotton Heat Unit Accumulation for May 1 Through October 10



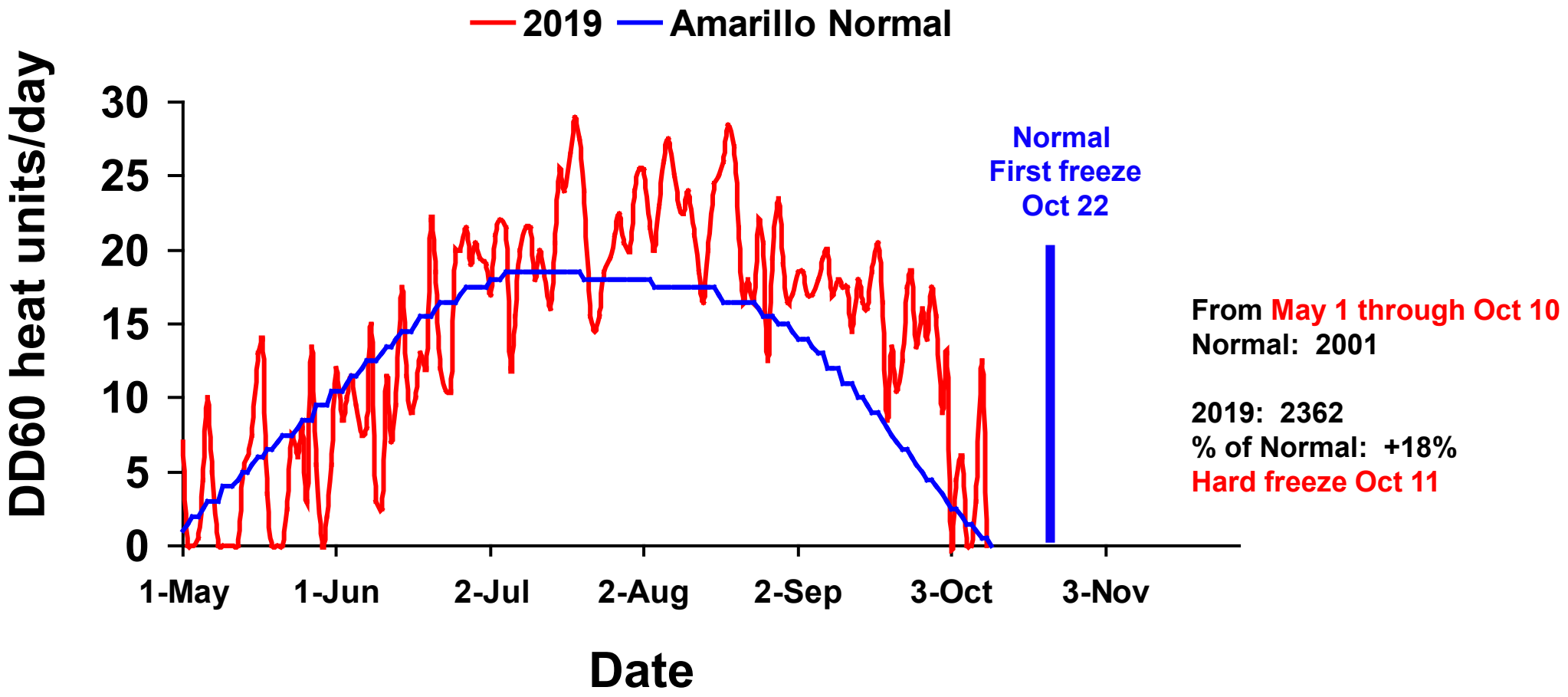
From May 1 through October 10
Normal: 2001

2019: 2362
% of Normal: +18%
Hard freeze Oct 11

2018: 2621
% of Normal: +30%

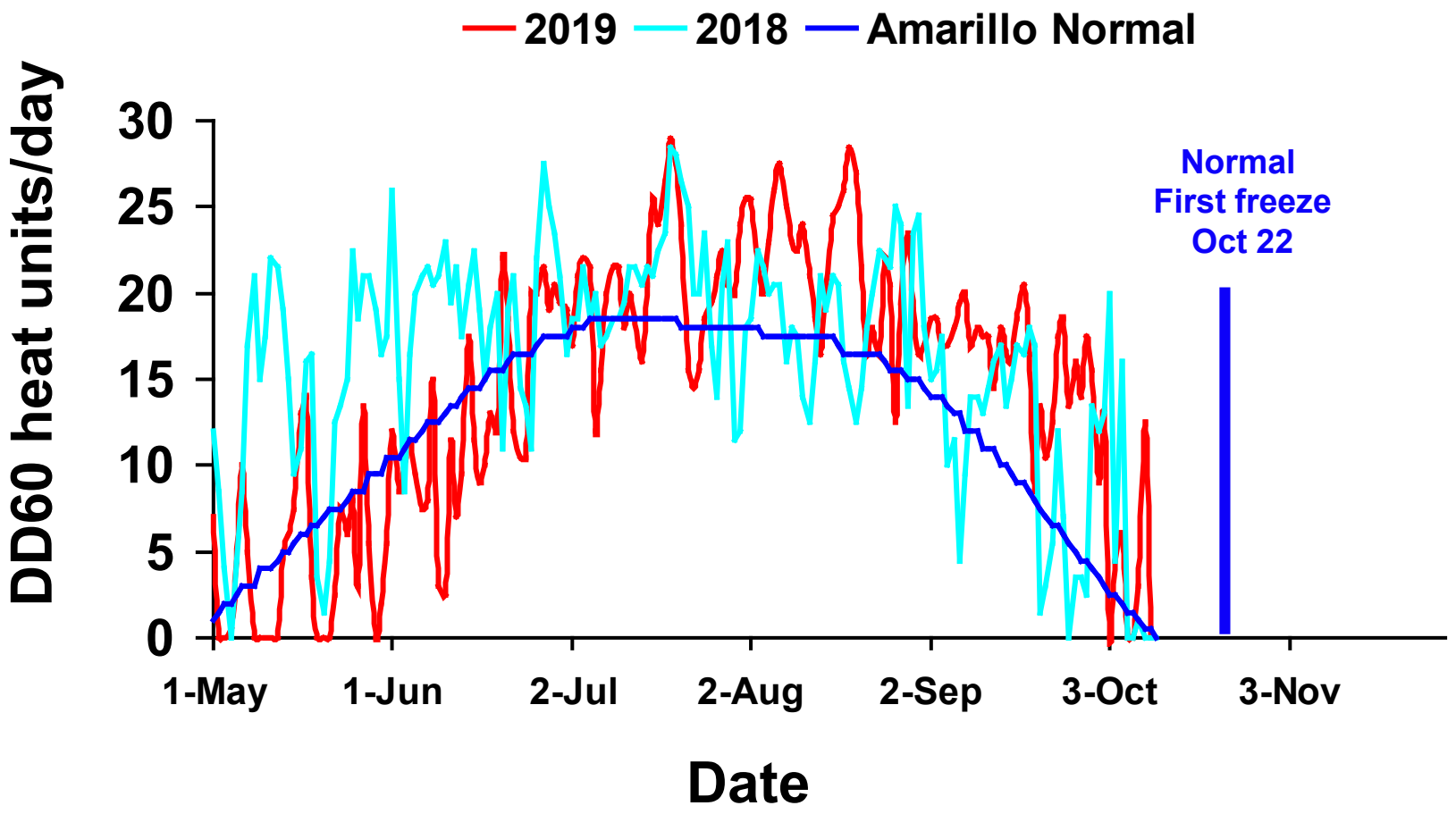
WINDSTAR GINS

Amarillo
30-Year Normal (1981-2010) and 2019
Daily Heat Units



WINDSTAR GINS

Amarillo
30-Year Normal (1981-2010), 2018 and 2019
Daily Heat Units



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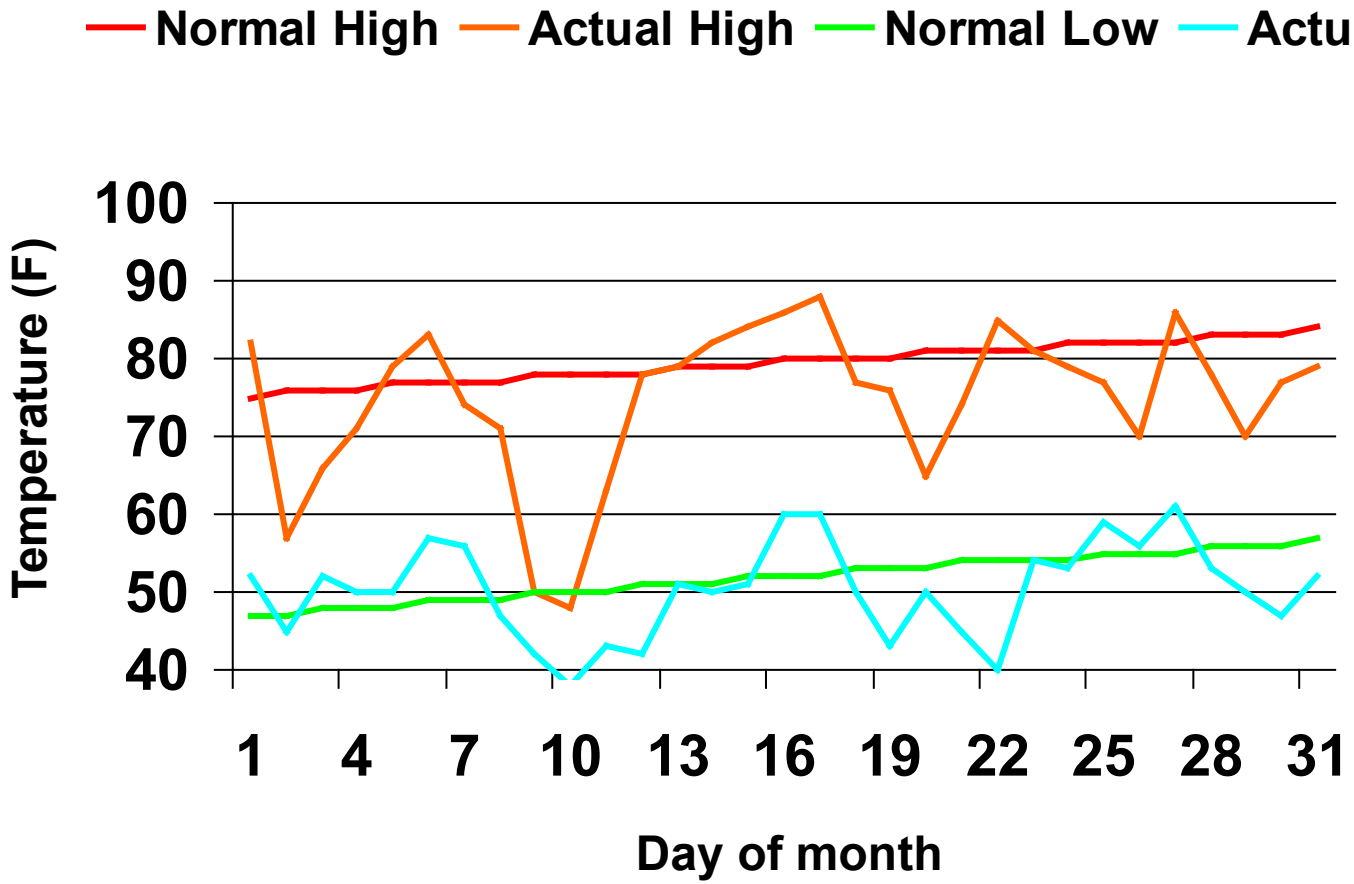
Amarillo
30-Yr Normal (1981-2010) and May 2019 Air Temperatures

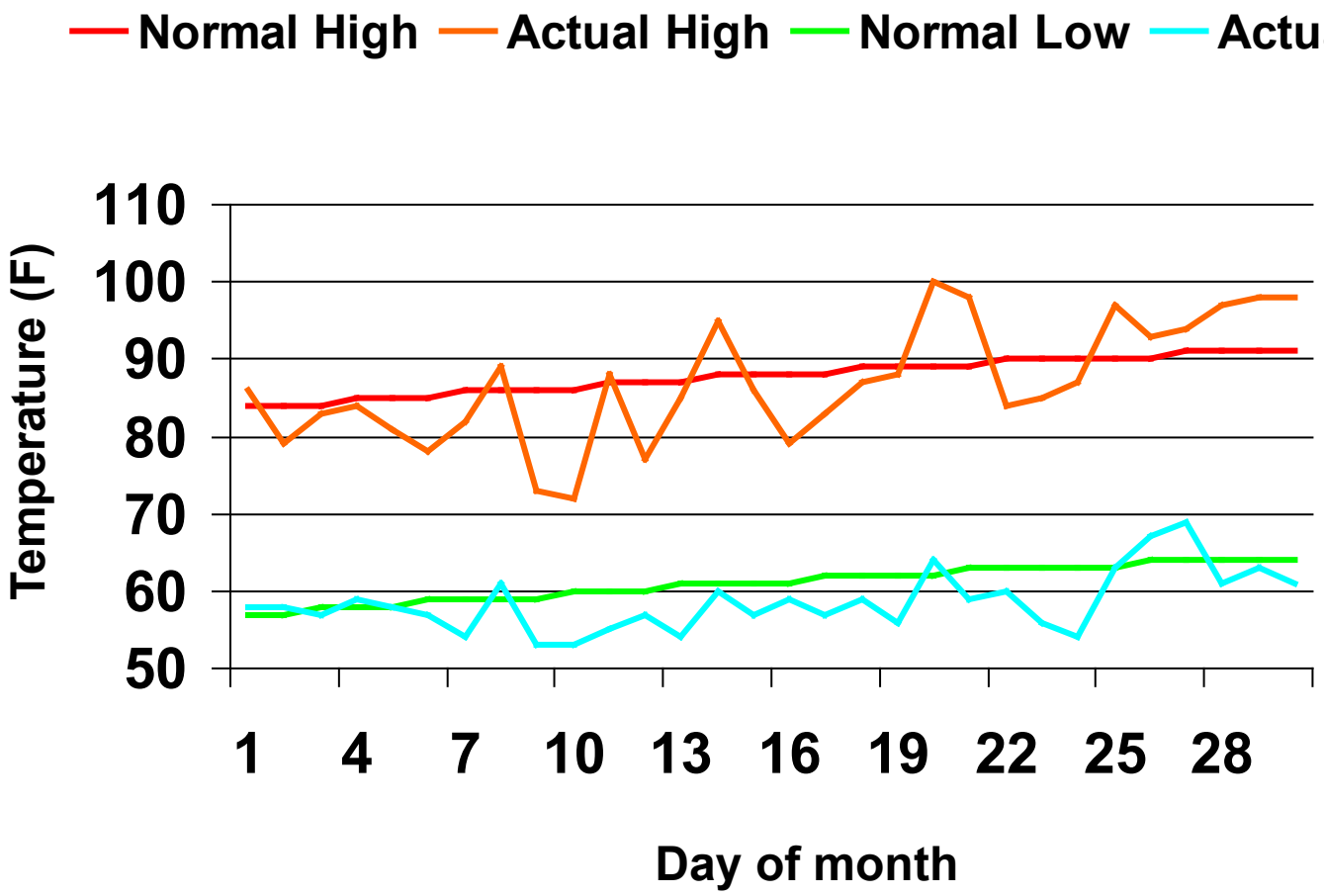


Heat Units

Normal: 177
2019: 130
% of normal: -27%

WINDSTAR GINS

Amarillo
30-Yr Normal (1981-2010) and June 2019 Air Temperatures

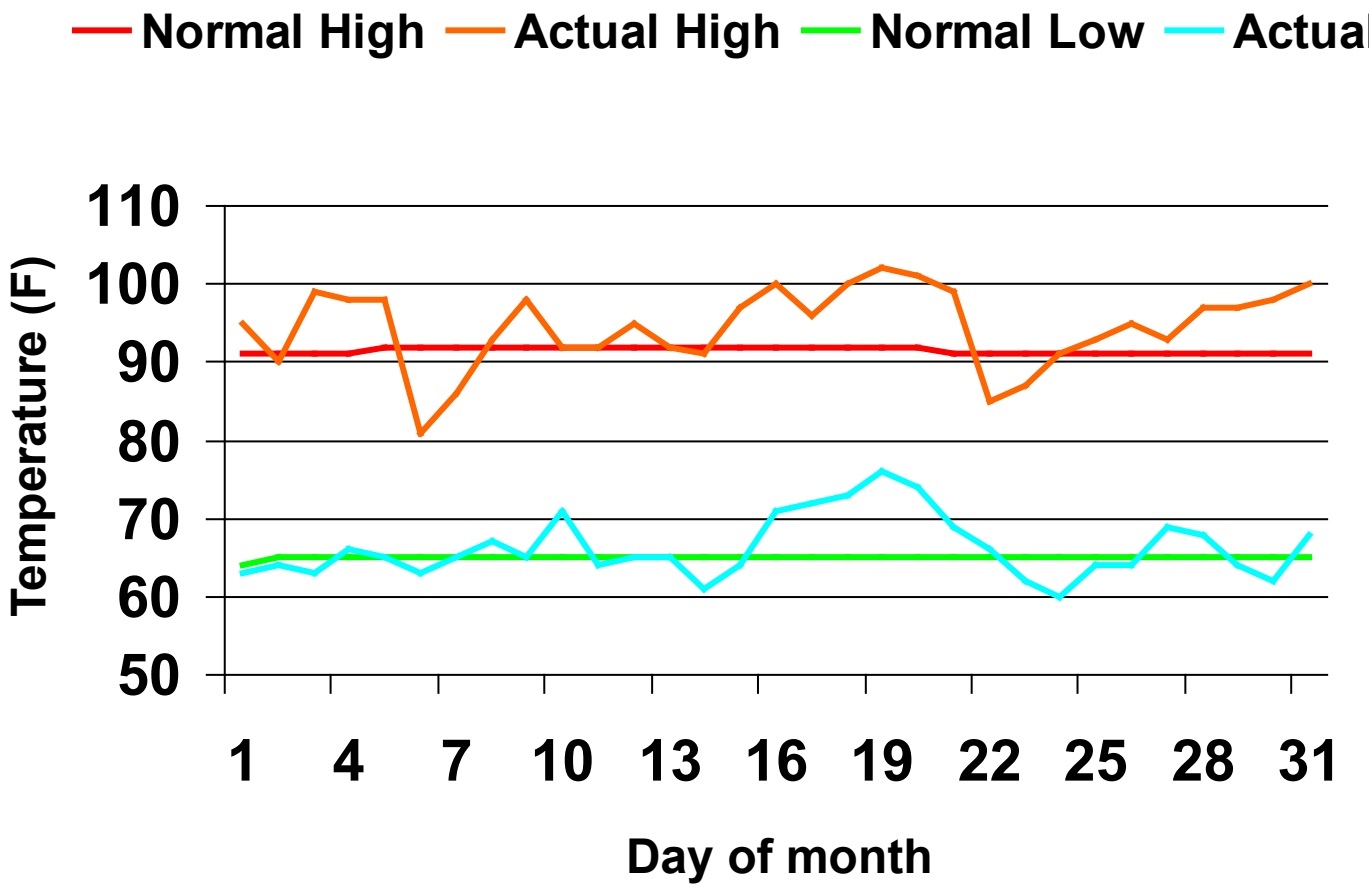


Heat Units

Normal: 433
2019: 383
% of normal: -12

WINDSTAR GINS

Amarillo
30-Yr Normal (1981-2010) and July 2019 Air Temperatures



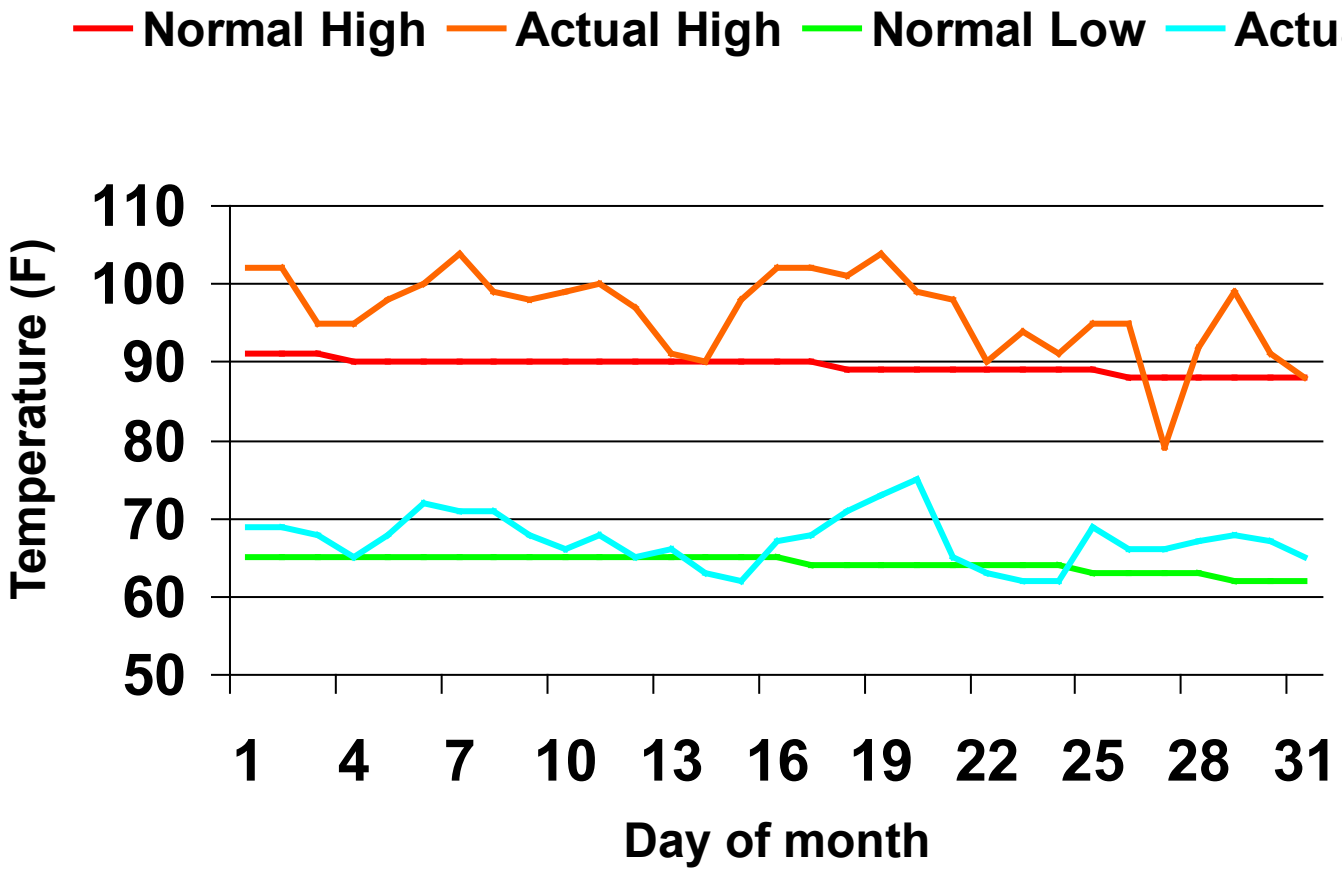
Heat Units

Normal total: 566

2019: 632
% of normal: +12%

WINDSTAR GINS

Amarillo
30-Yr Normal (1981-2010) and August 2019 Air Temperatures



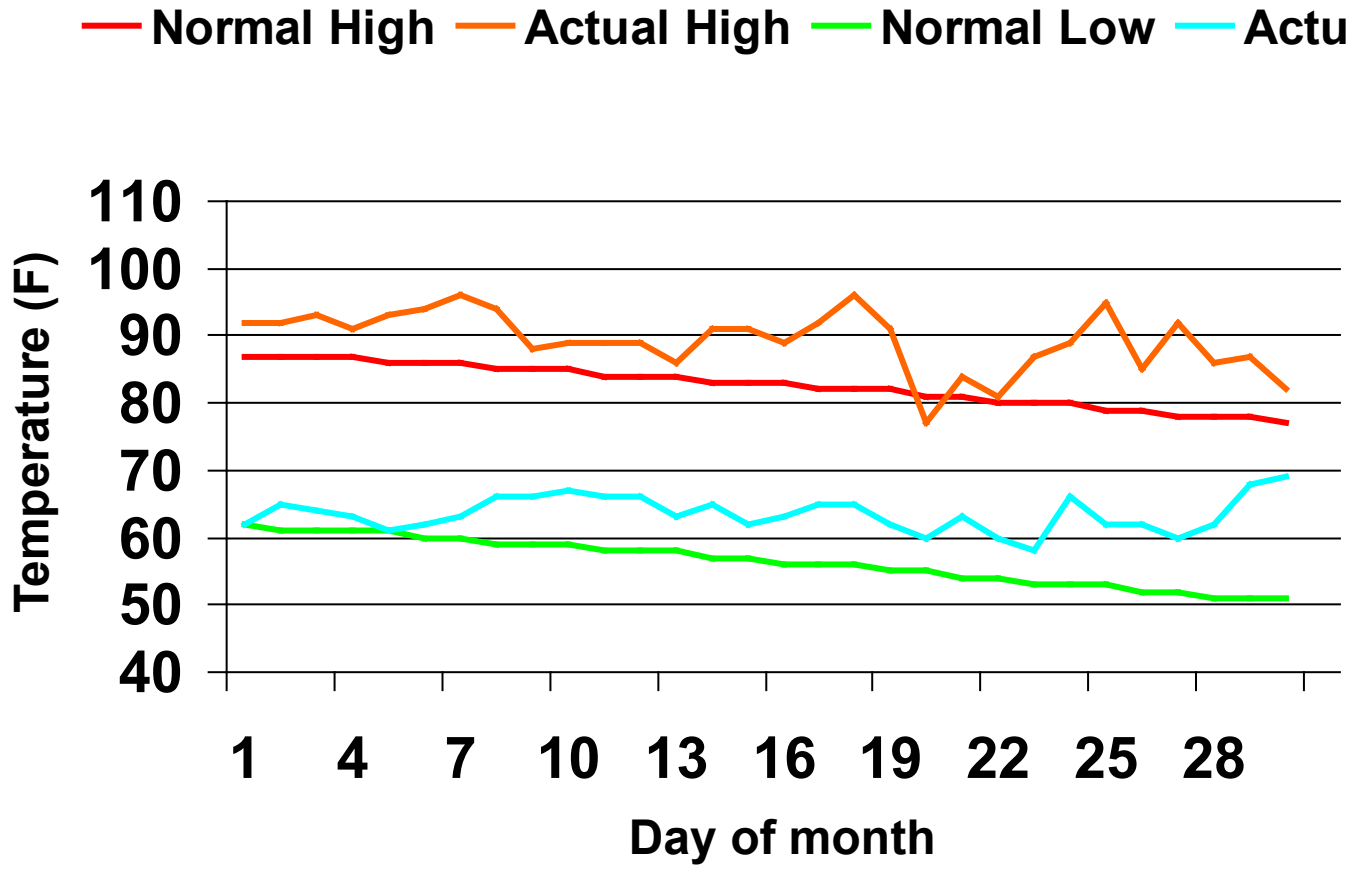
Heat Units

Normal for Month: 522

2019: 677
% of normal: +30%

WINDSTAR GINS

Amarillo
30-Yr Normal (1981-2010) and September 2019 Air Temperatures



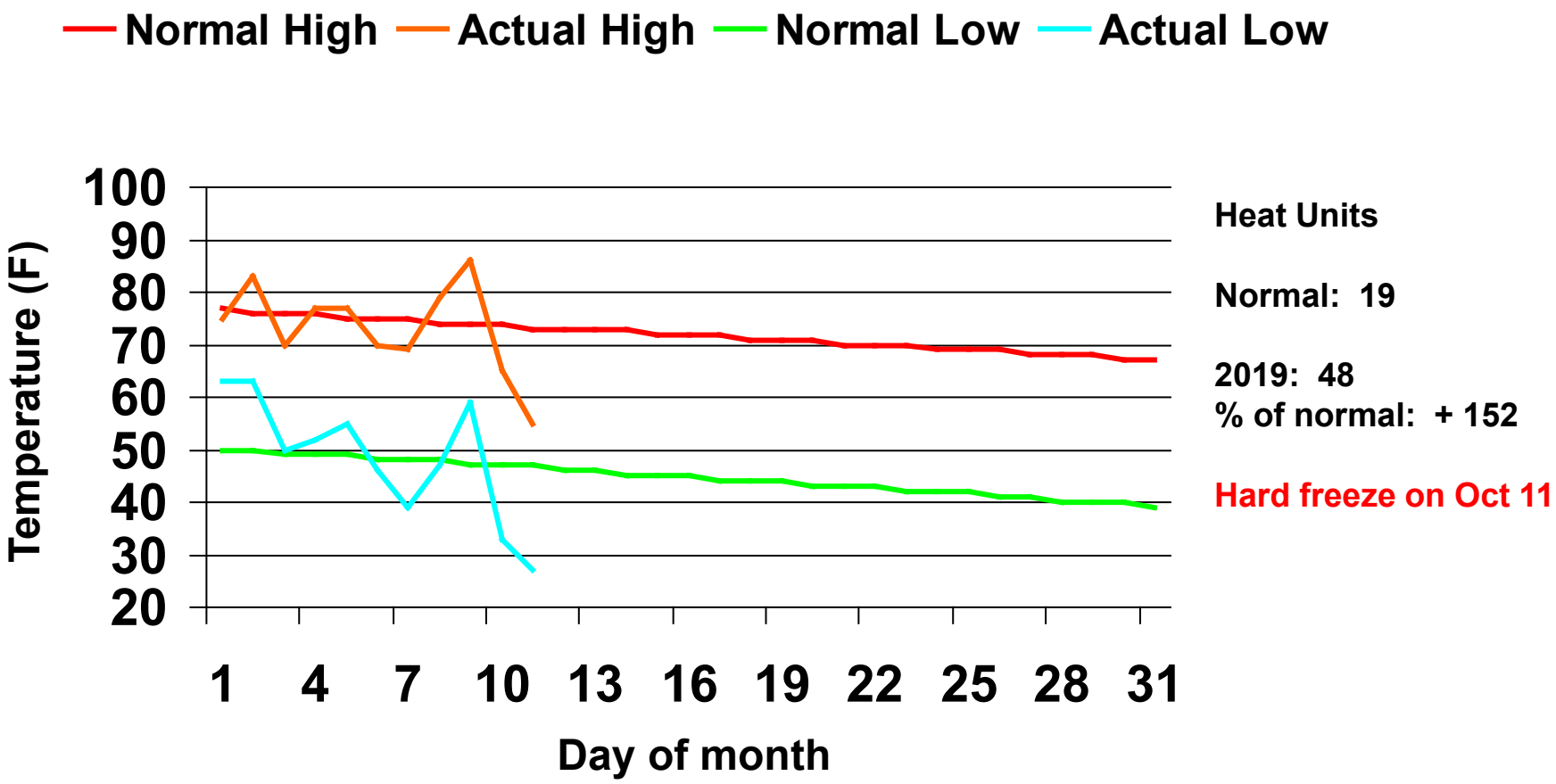
Heat Units

Normal for Month: 286

2019: 494
% of normal: +73

WINDSTAR GINS

Amarillo
30-Yr Normal (1981-2010) and October 2019 Air Temperatures



Heat Units

Normal: 19

2019: 48
% of normal: + 152

Hard freeze on Oct 11

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