



## 2022 Enlist Technology Cotton Variety Trial – Edcot Gin

**George Brothers Farm  
Kress, TX**

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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 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 2022, eight PhytoGen varieties (including four experimental entries) with Enlist technology were planted in a center-pivot irrigated field in a scientifically valid trial with three replicates. *This trial experienced minimal adverse weather events. Low Verticillium wilt disease pressure was observed in the field. The trial escaped various localized hail events that occurred in the surrounding area, and generally rainfall was low or was not obtained from planting through mid-season. Irrigation capacity was challenged, and fairly high levels of moisture stress was noted in late August and September. The field's plant growth regulator management was targeted to the remainder of the field, which was planted to PHY 250 W3FE and no mepiquat chloride applications were made. Therefore, varieties with greater growth potential were able to express that to a certain degree, and taller plant heights were noted for those entries. Plant height data are presented in Table 2, which indicates that all entries were less than 24 inches tall. Good yield and excellent quality were noted in the trial.*

Harvest results indicated that no statistically significant differences were observed with respect to lint yield or net value/acre (Table 1). Lint yields ranged from a high of 1433 lb/acre (PX22A214 W3FE) to a low of 1301 lb/acre (PHY 250 W3FE), which was a fairly small range in

yield across entries. Lint yields averaged 1360 lb/acre across all eight entries. USDA-AMS classing data indicated that fiber quality was excellent and average Loan value for entries across all commercially ginned and classed bales was \$0.5584/lb. Loan rate among entries varied from a high of \$0.5656/lb (PHY 350 W3FE) to a low of \$0.5500/lb (PXA22214 W3FE), and again, was a very small range. Net value/acre (defined as lint yield x Loan value plus net gin credit) ranged from a high of \$1016/acre (PHY 350 W3FE) to a low of \$934/acre (PX40A383 W3FE and PHY 250 W3FE), a difference of \$82/acre. These differences were not statistically significant.

Table 2 presents in-season data including stand establishment percentage, vigor, nodes above white flower (NAWF) on two observation dates, plant height on three observation dates, nodes above cracked boll on September 27 and a visual estimate of storm resistance at harvest. Final plant heights ranged from a high of 23.7 inches for PHY 350 W3FE to a low of 18.3 inches for PHY 205 W3FE.

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 31 with a few 41 values. Leaf grades ranged from 2 to 3. Staple ranged from a high of 37.6 (PX22A213 W3FE) to a low of 35.4 32nds inch (PHY 205 W3FE). Average micronaire for varieties ranged from a low of 4.1 (PHY 332 W3FE) to a high of 4.7 (PHY 205 W3FE). Loan chart low micronaire discounts are triggered at values of 3.4 and lower. Therefore, none of the entries encountered Loan rate discounts for low micronaire. No bark contamination was noted in most commercial bales, although one bark contaminated bale was observed for PHY 332 W3FE and PX22A213 W3FE. Fiber strength ranged from 31.8 to 33.9 g/tex, and uniformity ranged from 81.1 to 82.4%.

***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: 3585 ft

Previous crop: grain sorghum in 2021

Tillage system: strip-till

Planted: May 10

Replicates: 3 replicates in a randomized complete block design

Plot width: 8-row plots

Plot length: trial was planted in a circle with ~3,700 ft for long rows and ~1700 ft for short rows

Seeding rate: 45,000 seed/acre

Days from planting to first bloom: 64 (July 13)

30-inch rows under center pivot irrigation

Total rainfall April through October: 7.0 inches

April 0.0, May 0.5, June 0.5, July 0.3, August 4.3, September 0.2, October 1.2

Total irrigation May through September: 11.2 inches

May 1.0, June 3.5, July 3.7, August 3.0, September 0.0

Fertility management: 15 tons/acre manure applied fall 2020, no other fertilizers applied

Chemical Applications:

Spring burndown – 2 oz/acre Panther (March 16)

Preplant burndown – 22 oz/acre 2,4-D LV6 + 32 oz/acre Roundup (April 17)

Preemergence – 1 qt/acre diuron + 22 oz/acre 2,4-D LV6 + 32 oz/acre Dual (May 12)

Post emergence – 1 qt/acre Enlist One + (June 5)

Post emergence – 1 qt/acre Enlist One + 32 oz/acre Roundup + 1 pt/acre Outlook

(July 12)

Plant growth regulators: no mepiquat chloride applications

Insecticides: 4 oz/acre acephate (June 5)

Harvest aid application: 3 pt/acre ethephon (October 13)

Harvesting: November 20 using a John Deere CS690, with harvested area calculated by the GPS on the stripper monitor. Round modules were weighed using the CS690 scale, and all round modules from each variety were weighed at the Edcot Gin.

Commercial ginning: Round modules for all 3 reps of each variety were staged together (1 per plot, with 3 reps = 3 total per variety) 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: 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 irrigated Enlist technology cotton variety trial, George Farm, Kress, TX, 2022.

Table 3. Commercial classing data for the center pivot irrigated Enlist technology cotton variety trial, George Farm, Kress, TX, 2022.

Appendix – George Brothers 2022 PhytoGen Enlist Technology Variety Trial – Plant height and NAWF graphs, Amarillo 2021 cotton heat units and weather data.

## **Acknowledgements**

Edcot Gin would like to thank Brennen George and Gentry George for committing equipment, land, and time to conduct and manage the trial. Gratitude is expressed to PhytoGen Cotton Seed, Corteva, and Windstar Inc. Detailed ginning was performed by “Ginner Ernie” and the crew and a big thank you is extended to this hard-working group. Landon Kidd provided capable assistance with in-season data collection.



Table 1. Harvest results for the center pivot irrigated Enlist technology cotton variety trial, George Farm, Kress, TX, 2022.

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 -----			
PHY 350 W3FE	31.9	43.5	4352	1389	1892	0.5656	786	230	1016
PHY 332 W3FE	32.0	43.5	4360	1395	1898	0.5606	782	231	1014
PX22A214 W3FE	34.7	43.3	4127	1433	1786	0.5500	788	217	1005
PX22A215 W3FE	34.0	43.0	4027	1370	1733	0.5619	770	210	979
PX22A213 W3FE	32.8	43.3	4119	1352	1785	0.5619	760	217	977
PHY 205 W3FE	32.7	41.6	4085	1335	1697	0.5509	736	201	936
PHY 250 W3FE	31.8	43.2	4095	1301	1768	0.5533	720	214	934
PX40A383 W3FE	32.6	41.8	4003	1306	1673	0.5631	736	198	934
Test average	32.8	42.9	4146	1360	1779	0.5584	760	215	974
CV, %	--	--	4.7	4.7	4.7	--	4.7	4.7	4.7
OSL	--	--	0.2464	0.2358	0.0412	--	0.2153	0.0089	0.1610
LSD	--	--	NS	NS	119	--	NS	14	NS

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:

\$3.40/cwt commercial ginning cost.

\$400/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 2. Plant observation results from the center pivot irrigated Enlist technology cotton variety trial, George Farm, Kress, TX, 2022.

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
	6-Jun	6-Jun	6-Jun		19-Jul	9-Aug	6-Jul	19-Jul	27-Sep	20-Nov
PHY 205 W3FE	41,527	92.3	4.5	5.7	1.2	12.3	15.5	18.3	0.3	8.5
PHY 250 W3FE	40,075	89.0	3.8	5.9	1.5	13.3	17.1	20.1	0.7	7.2
PHY 332 W3FE	42,979	95.5	4.2	6.5	2.1	14.8	20.7	23.3	2.1	6.0
PHY 350 W3FE	42,689	94.9	4.3	5.9	2.1	14.7	19.1	23.7	1.9	5.5
PX22A213 W3FE	42,108	93.6	4.3	5.3	1.1	13.2	16.5	20.4	0.7	8.3
PX22A214 W3FE	42,108	93.6	4.0	5.6	0.9	13.4	18.1	19.9	0.7	7.7
PX22A215 W3FE	43,560	96.8	4.5	5.4	0.6	13.6	17.0	19.8	0.6	8.0
PX40A383 W3FE	44,431	98.7	4.0	5.9	1.8	15.4	19.4	22.5	1.4	5.7
Test average	42,435	94.3	4.2	5.8	1.4	13.8	17.9	21.0	1.1	7.1
CV, %	4.4	4.3	4.6	6.2	32.5	4.3	4.2	3.4	37.3	3.0
OSL	0.2354	0.2334	0.0053	0.0268	0.0103	0.0003	0.0001	0.0001	0.0003	0.0001
LSD	NS	NS	0.3	0.5	0.7	0.9	1.1	1.0	0.6	0.3

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 irrigated Enlist technology cotton variety trial, George Farm, Kress, TX, 2022.

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
<b>PHY 205 W3FE</b>															
4137490	31-2	3	1	3	37	4.7	.	.	33.9	76.9	7.7	4	80.7	115	56.50
4137491	31-2	3	1	2	36	4.7	.	.	33.0	78.4	7.6	2	83.0	111	56.40
4137492	31-2	3	1	3	34	4.7	.	.	32.4	77.8	7.5	4	82.4	107	53.15
4137493	31-1	3	1	3	36	4.4	.	.	30.2	78.6	7.5	2	83.5	111	55.95
4137494	31-2	3	1	3	34	4.7	.	.	31.7	78.4	7.6	3	82.2	107	53.15
4137495	31-1	3	1	2	35	4.7	.	.	32.0	78.5	7.5	2	83.4	110	54.80
4137496	31-2	3	1	3	36	4.9	.	.	34.7	77.8	7.5	3	82.1	111	56.15
4137497	31-2	3	1	3	35	4.9	.	.	33.0	78.0	7.5	3	81.7	109	54.60
Average	--	3.0	1.0	2.8	35.4	4.71	none	none	32.6	78.1	7.6	2.9	82.4	110.1	55.09
<b>PHY 250 W3FE</b>															
4137546	41-1	4	1	3	38	4.1	.	.	33.4	78.2	7.2	4	80.9	118	54.60
4137547	31-2	3	1	3	37	4.1	.	.	32.4	78.1	7.4	4	80.9	115	56.45
4137548	41-1	4	1	3	36	4.1	.	.	32.4	77.4	7.4	4	81.3	112	54.20
4137549	41-1	4	1	3	37	4.2	.	.	31.8	75.6	7.3	3	81.0	115	54.35
4137550	31-2	3	1	2	36	4.2	.	.	30.6	78.8	7.3	2	79.9	113	55.60
4137551	41-1	4	1	3	37	4.2	.	.	32.5	78.4	7.2	3	82.3	115	54.40
4137552	31-2	3	1	3	37	4.3	.	.	33.1	78.2	7.4	3	81.7	117	56.50
4137553	31-2	3	1	3	37	4.2	.	.	33.5	79.3	7.3	3	81.6	117	56.55
Average	--	3.5	1.0	2.9	36.9	4.18	none	none	32.5	78.0	7.3	3.3	81.2	115.3	55.33
<b>PHY 332 W3FE</b>															
4137522	31-2	3	1	3	38	4.1	11	level 1 bark	32.0	77.0	7.9	4	82.0	120	53.10
4137523	31-1	3	1	3	37	4.1	.	.	31.2	77.6	8.2	3	80.3	117	56.45
4137524	31-1	3	1	3	37	3.9	.	.	31.6	77.5	8.2	3	80.9	117	56.45
4137525	31-2	3	1	3	37	3.9	.	.	32.1	76.4	8.6	3	82.4	117	56.50
4137526	31-2	3	1	3	38	3.8	.	.	32.5	77.2	8.2	3	81.9	119	56.55
4137527	31-1	3	1	2	37	4.4	.	.	30.7	77.3	8.6	1	80.3	117	56.60
4137528	31-1	3	1	2	37	4.3	.	.	32.8	76.9	8.5	2	81.4	117	56.75
Average	--	3.0	1.0	2.7	37.3	4.07	1/7 bales	level 1 bark	31.8	77.1	8.3	2.7	81.3	117.7	56.06



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Table 3 (continued). Commercial classing data for the center pivot irrigated Enlist technology cotton variety trial, George Farm, Kress, TX, 2022.

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
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**PHY 350 W3FE**

4137498	31-2	3	1	3	37	4.6	.	.	33.0	78.0	7.6	3	82.1	117	56.55
4137499	31-2	3	1	3	37	4.7	.	.	31.0	78.1	7.6	3	82.2	117	56.45
4137500	31-2	3	1	3	37	4.3	.	.	32.1	77.7	7.6	4	81.8	117	56.40
4137501	31-2	3	1	3	38	4.2	.	.	32.8	77.6	7.6	3	82.7	118	56.60
4137502	31-2	3	1	3	37	4.1	.	.	30.5	78.3	7.7	3	82.4	114	56.35
4137503	31-2	3	1	3	38	4.2	.	.	31.0	78.4	7.7	3	82.2	118	56.60
4137504	31-1	3	1	2	37	4.1	.	.	31.0	78.5	7.6	2	81.4	116	56.80
4137505	31-2	3	1	3	39	3.7	.	.	34.4	78.9	7.4	3	82.0	121	56.70
Average	--	3.0	1.0	2.9	37.5	4.24	none	none	32.0	78.2	7.6	3.0	82.1	117.3	56.56

**PX22A213 W3FE**

4137529	31-2	3	1	3	38	4.1	11	level 1 bark	34.3	77.7	7.4	3	81.5	120	53.15
4137530	31-2	3	1	3	37	4.2	.	.	33.6	78.2	7.3	4	83.1	115	56.65
4137531	31-1	3	1	3	38	4.1	.	.	33.1	78.5	7.5	3	82.9	119	56.70
4137532	31-2	3	1	3	37	4.5	.	.	32.8	78.3	7.5	2	83.1	114	56.50
4137533	31-2	3	1	3	37	4.4	.	.	33.4	78.6	7.4	3	81.6	117	56.50
4137534	31-2	3	1	3	38	4.4	.	.	34.0	78.5	7.3	3	83.3	118	56.70
4137535	31-2	3	1	3	38	4.4	.	.	33.9	78.8	7.4	3	82.7	118	56.65
4137536	31-2	3	1	3	38	4.5	.	.	33.7	78.6	7.4	3	83.0	118	56.70
Average	--	3.0	1.0	3.0	37.6	4.33	1/8 bales	level 1 bark	33.6	78.4	7.4	3.0	82.7	117.4	56.19

**PX22A214 W3FE**

4137537	41-1	4	1	3	36	4.3	.	.	32.1	78.2	7.2	3	81.9	112	54.15
4137538	31-2	3	1	3	36	4.2	.	.	30.9	78.4	7.4	3	82.0	111	55.95
4137539	41-1	4	1	3	36	4.2	.	.	29.5	78.3	7.2	2	81.7	111	53.95
4137540	31-2	3	1	3	36	4.0	.	.	33.1	77.8	7.3	4	80.6	111	56.15
4137541	31-2	3	1	3	36	4.0	.	.	32.0	78.7	7.2	3	79.8	113	55.55
4137542	31-2	3	1	3	35	4.3	.	.	32.6	78.3	7.3	3	80.4	109	54.50
4137543	41-1	4	1	3	36	4.4	.	.	31.8	77.5	7.2	3	81.7	113	54.15
4137544	31-2	3	1	3	36	4.5	.	.	33.5	78.4	7.3	3	81.1	112	56.10
4137545	31-2	3	1	3	35	4.4	.	.	31.9	78.0	7.6	3	81.0	110	54.50
Average	--	3.3	1.0	3.0	35.8	4.26	none	none	31.9	78.2	7.3	3.0	81.1	111.3	55.00



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Table 3 (continued). Commercial classing data for the center pivot irrigated Enlist technology cotton variety trial, George Farm, Kress, TX, 2022.

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
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**PX22A215 W3FE**

4137506	31-2	3	1	3	37	4.2	.	.	32.2	78.3	7.5	3	82.6	116	56.50
4137507	31-2	3	1	3	37	4.1	.	.	33.0	78.7	7.3	4	81.3	117	56.55
4137508	31-2	3	1	3	38	4.3	.	.	34.1	78.3	7.4	3	84.2	118	56.75
4137509	31-2	3	1	3	35	4.4	.	.	32.9	78.5	7.4	3	79.9	110	54.00
4137510	31-2	3	1	2	36	4.6	.	.	32.7	78.7	7.3	2	81.4	113	56.20
4137511	31-2	3	1	3	37	4.8	.	.	34.5	78.5	7.3	3	82.4	114	56.55
4137512	31-2	3	1	3	37	4.3	.	.	32.5	78.8	7.2	3	81.3	116	56.40
4137513	31-2	3	1	3	37	4.2	.	.	33.1	78.7	7.3	4	80.5	116	56.55
Average	--	3.0	1.0	2.9	36.8	4.36	none	none	33.1	78.6	7.3	3.1	81.7	115.0	56.19

**PX40A383 W3FE**

4137514	31-2	3	1	3	37	4.2	.	.	32.7	77.4	7.9	4	80.2	116	56.45
4137515	31-2	3	1	3	38	4.3	.	.	34.1	75.6	8.7	4	81.6	119	56.60
4137516	31-2	3	1	4	38	4.2	.	.	33.4	75.8	8.3	4	81.7	120	55.30
4137517	31-2	3	1	3	39	4.2	.	.	34.3	75.8	8.3	4	82.1	121	56.70
4137518	31-2	3	1	4	38	4.2	.	.	35.5	76.5	8.2	4	83.2	119	55.40
4137519	31-2	3	1	3	38	4.0	.	.	32.6	76.9	8.0	4	82.7	120	56.60
4137520	31-2	3	1	3	38	4.0	.	.	34.2	77.1	8.0	3	82.6	118	56.70
4137521	31-2	3	1	3	38	3.9	.	.	34.3	76.2	8.2	2	82.6	120	56.70
Average	--	3.0	1.0	3.3	38.0	4.13	none	none	33.9	76.4	8.2	3.6	82.1	119.1	56.31



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# Appendix

**George Brothers 2022 PhytoGen Enlist Variety Trial – Plant height and NAWF graphs, Amarillo 2022 cotton heat units and weather data.**



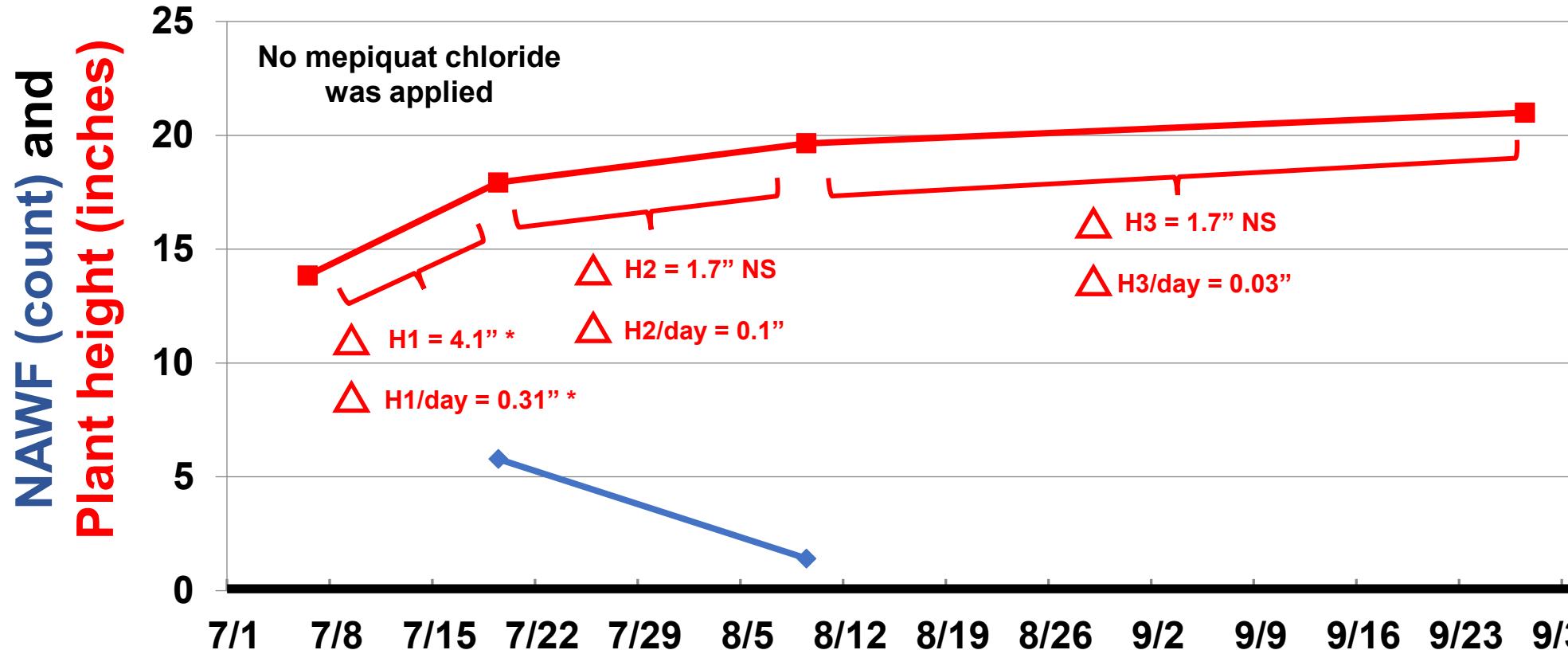
WINDSTAR GINS



WINDSTAR GINS



# George Enlist Variety Trial (Across All Entries) Kress – 2022



Rainfall (inches): April 0.0, May 0.5, June 0.5, July 0.3, August 4.3, September 0.2, October 1.2 = 7.0

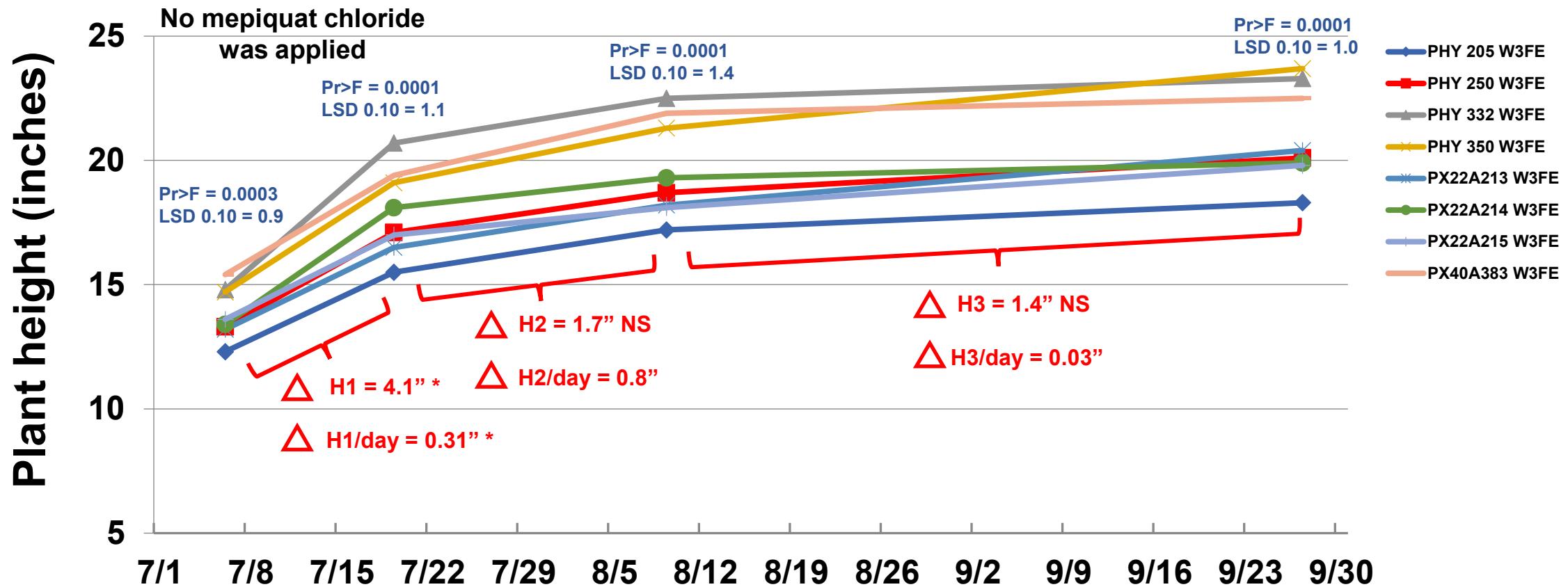
Irrigation (inches): May 1.0, June 3.5, July 3.7, August 3.0, September 0.0 = 11.2

Planted: May 10  
Days to bloom: 64  
First bloom date: Jul 13



# George Enlist Variety Trial

## Kress – 2022

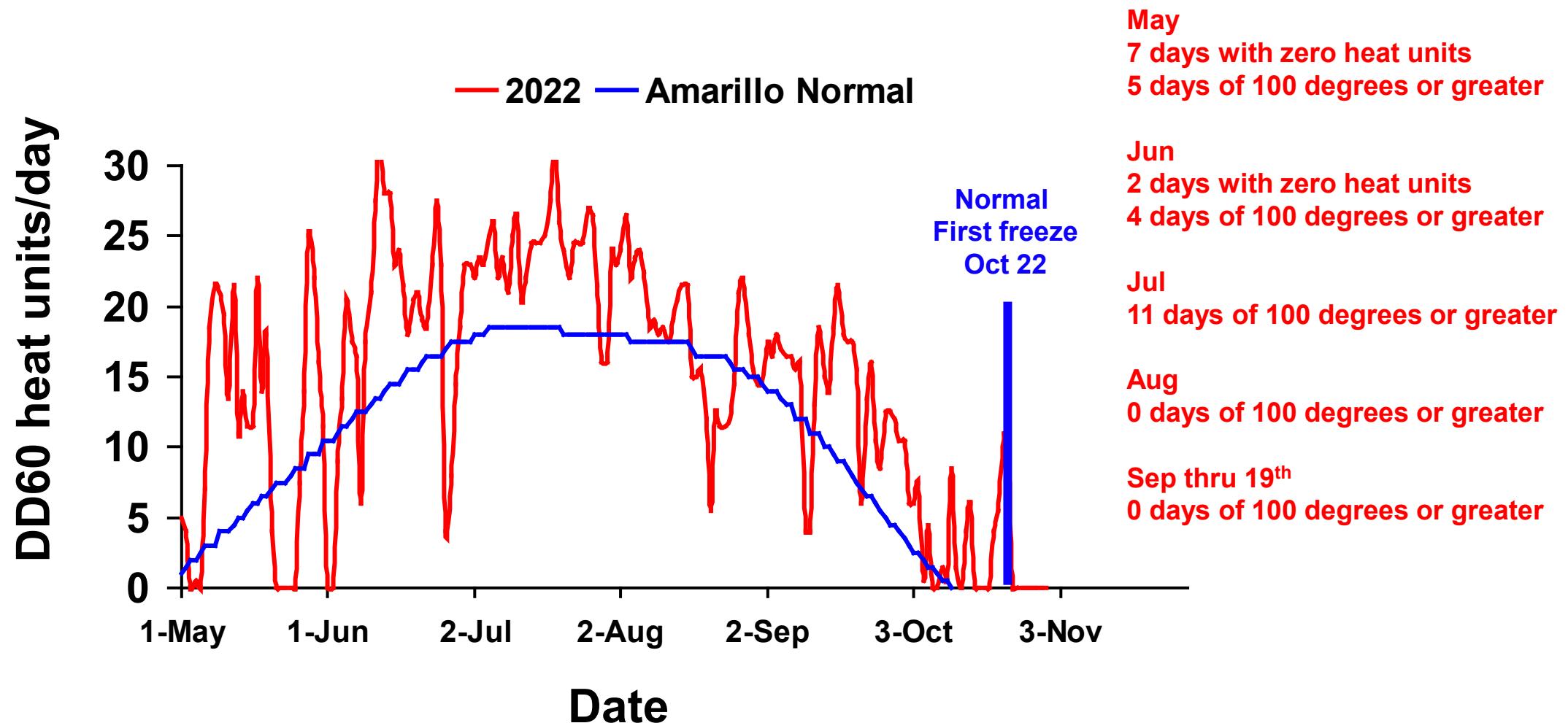


Rainfall (inches): April 0.0, May 0.5, June 0.5, July 0.3, August 4.3, September 0.2, October 1.2 = 7.0  
Irrigation (inches): May 1.0, June 3.5, July 3.7, August 3.0, September 0.0 = 11.2

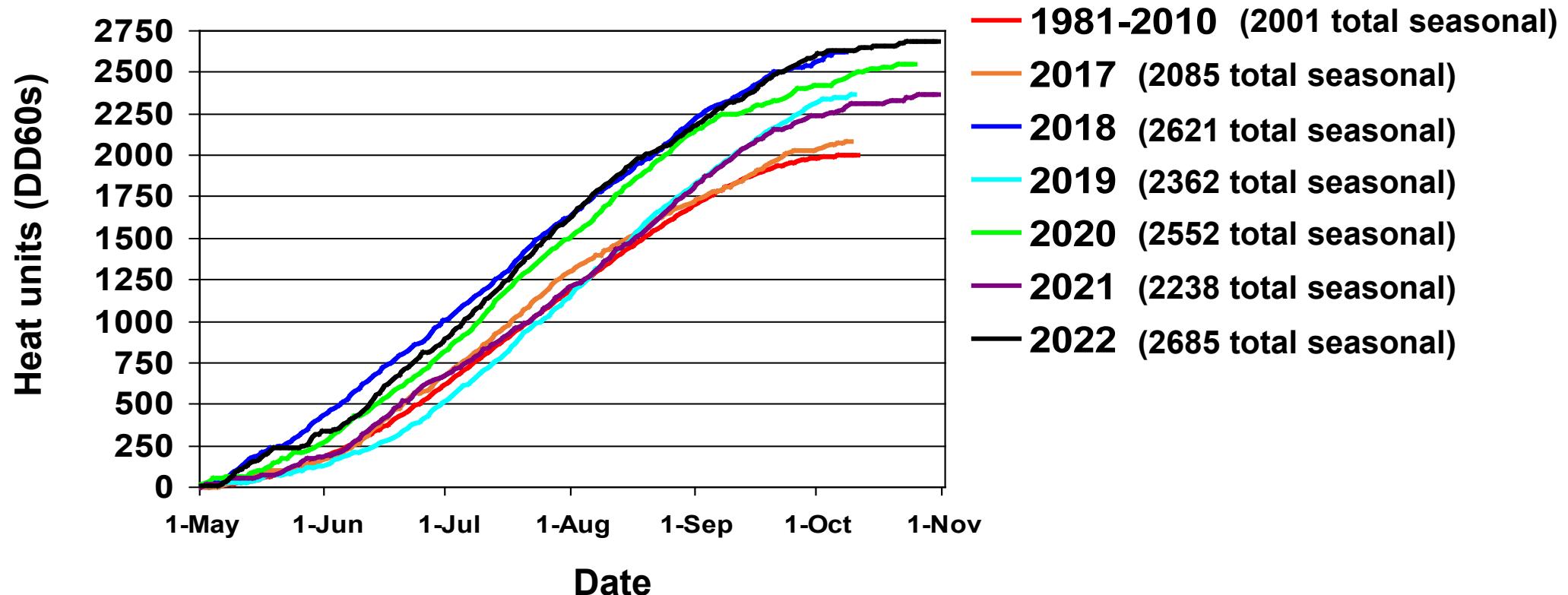
Planted: May 10  
Days to bloom: 64  
First bloom date: Jul 13

# Amarillo

## 30-Year Normal (1981-2010) and 2022 Daily Heat Units

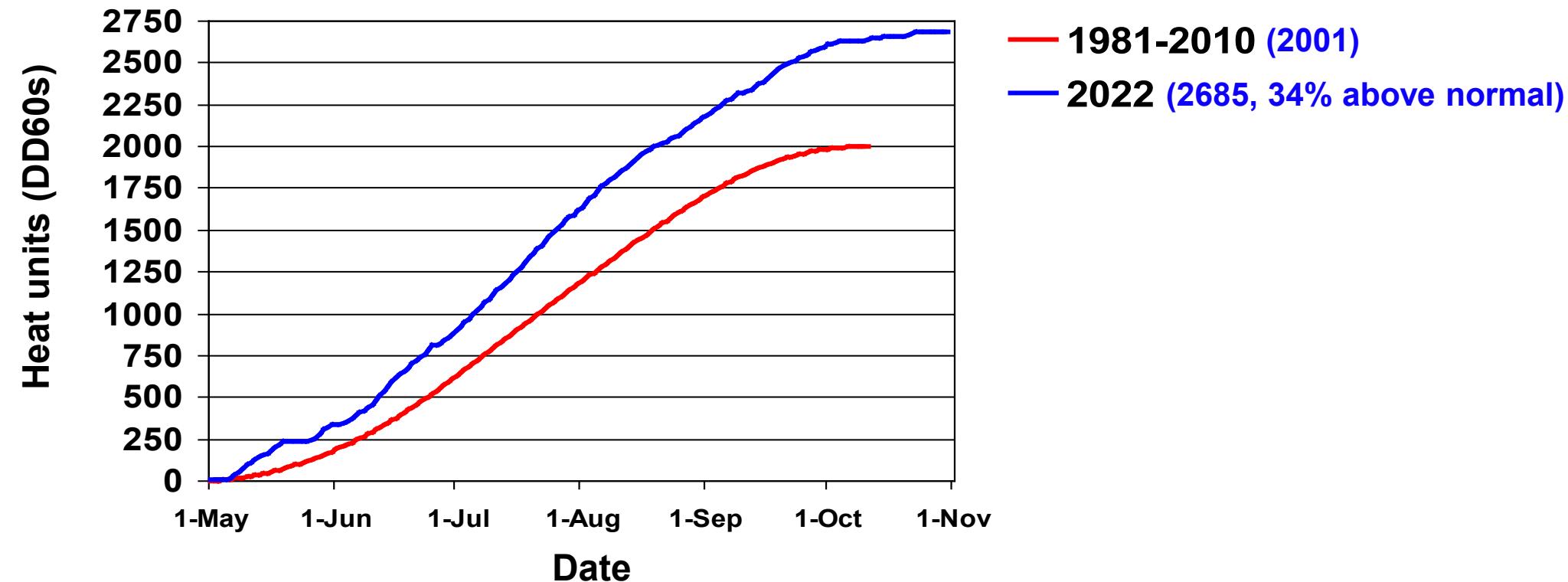


**Amarillo 30-Yr Normal (1981-2010)  
vs. 2017, 2018, 2019, 2020, 2021, and 2022  
Cotton Heat Unit Accumulation  
From May 1 Through First Hard Freeze**



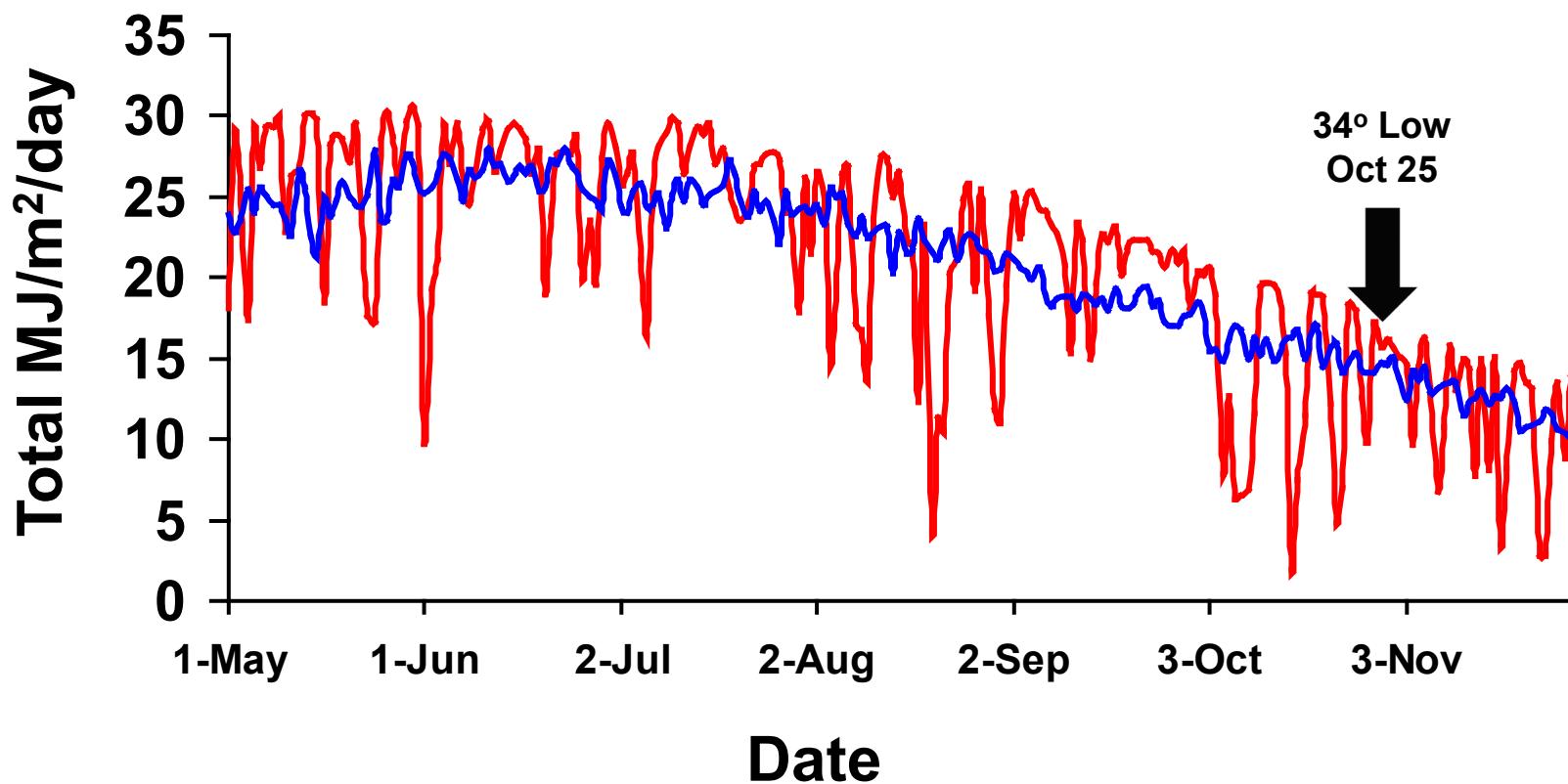
# Amarillo 30-Yr Normal (1981-2010) vs. 2022 Cotton Heat Unit Accumulation From May 1

% normal Sep 1-30	HU from May 1 thru Sep 30	% LTA from May 1 thru Sep 30	HU from May 15 thru Sep 30	% LTA from May 15 thru Sep 30	HU from May 20 thru Sep 30	% LTA from May 20 thru Sep 30
plus 49	2599	plus 31	2442	plus 26	2365	plus 24



# Muleshoe 18-Year Mean (2004-2021) and 2022 Daily Total Solar Radiation (MJ/meter<sup>2</sup>)

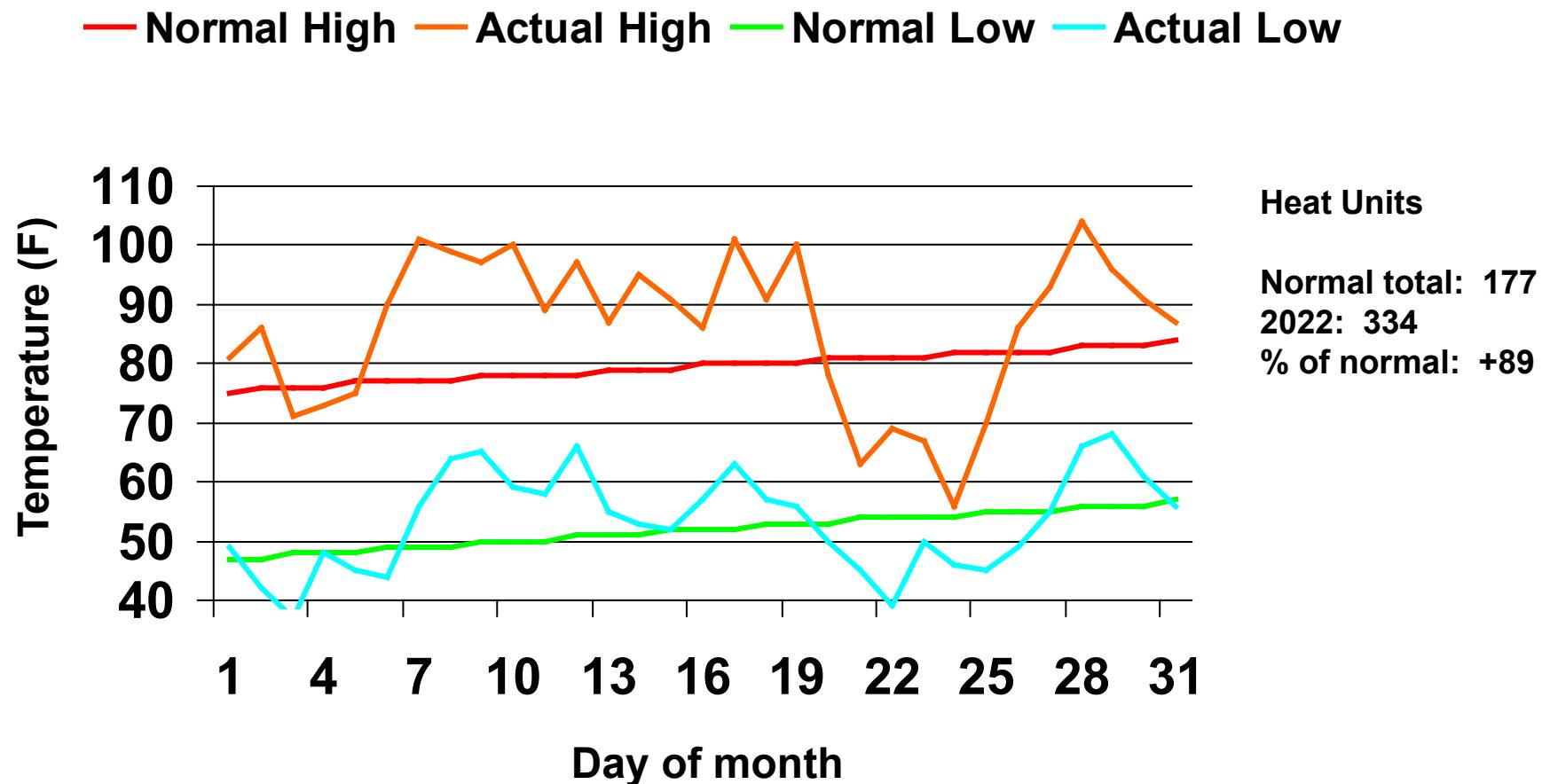
— 2022 — Muleshoe 18-Yr Mean



Total solar energy, in MJ/meter<sup>2</sup>, calculated from the hourly average global solar radiation rates and converted to energy by integrating over time.

# Amarillo

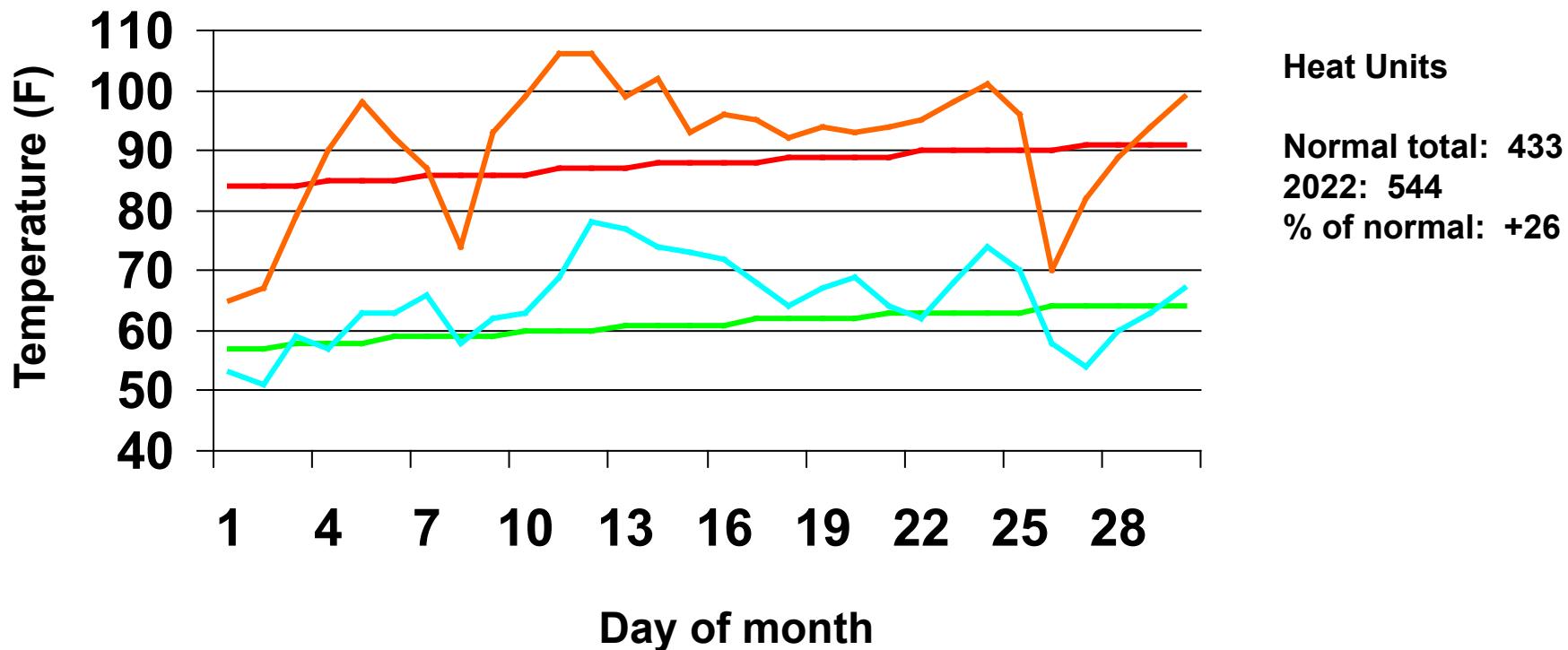
## 30-Yr Normal (1981-2010) and May 2022 Air Temperatures



# Amarillo

## 30-Yr Normal (1981-2010) and June 2022 Air Temperatures

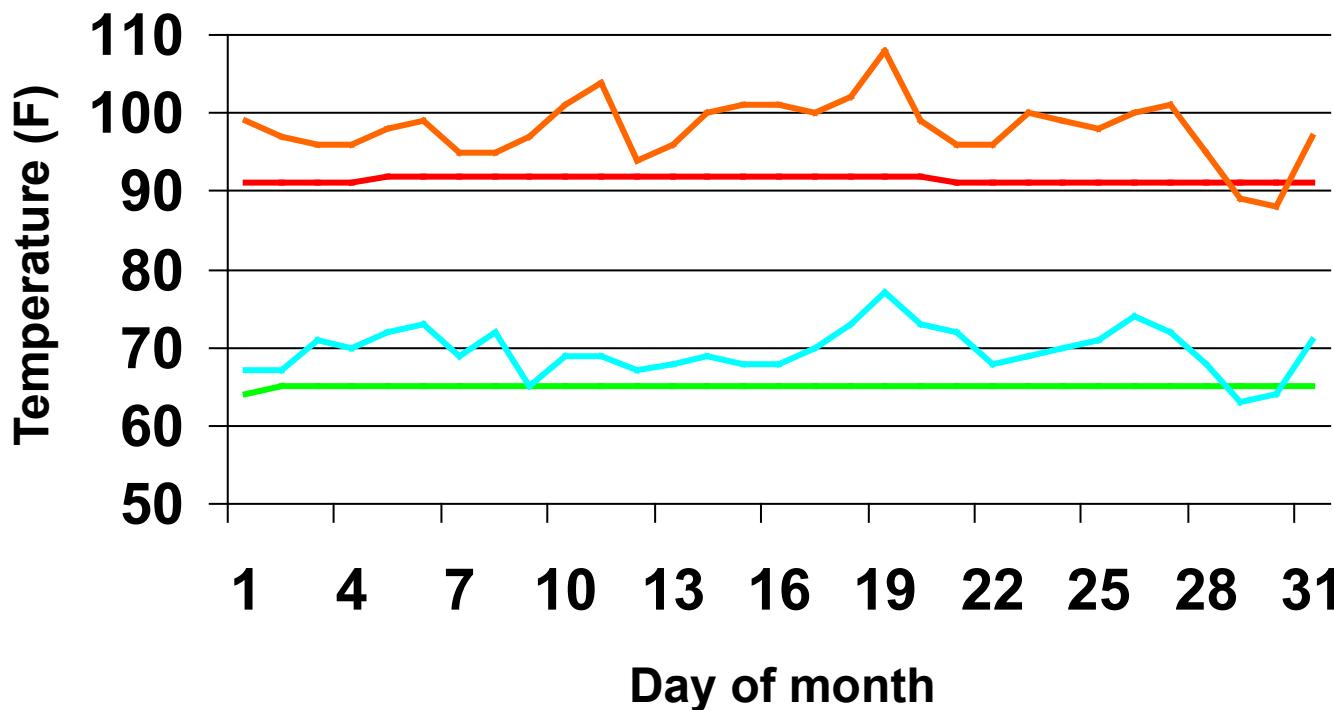
— Normal High — Actual High — Normal Low — Actual Low



# Amarillo

## 30-Yr Normal (1981-2010) and July 2022 Air Temperatures

— Normal High — Actual High — Normal Low — Actual Low

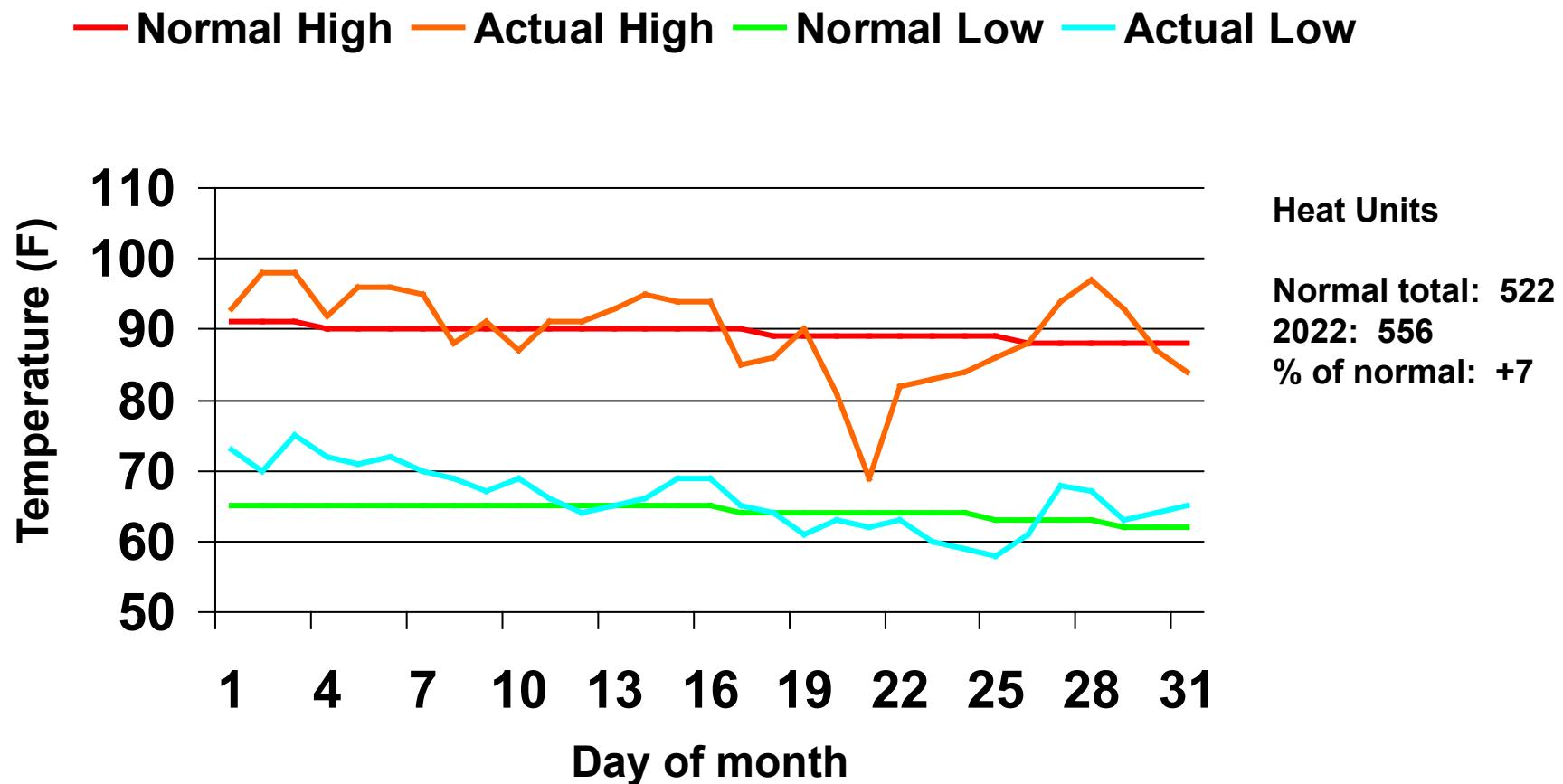


### Heat Units

Normal total: 566  
2022: 738  
% of normal: +31

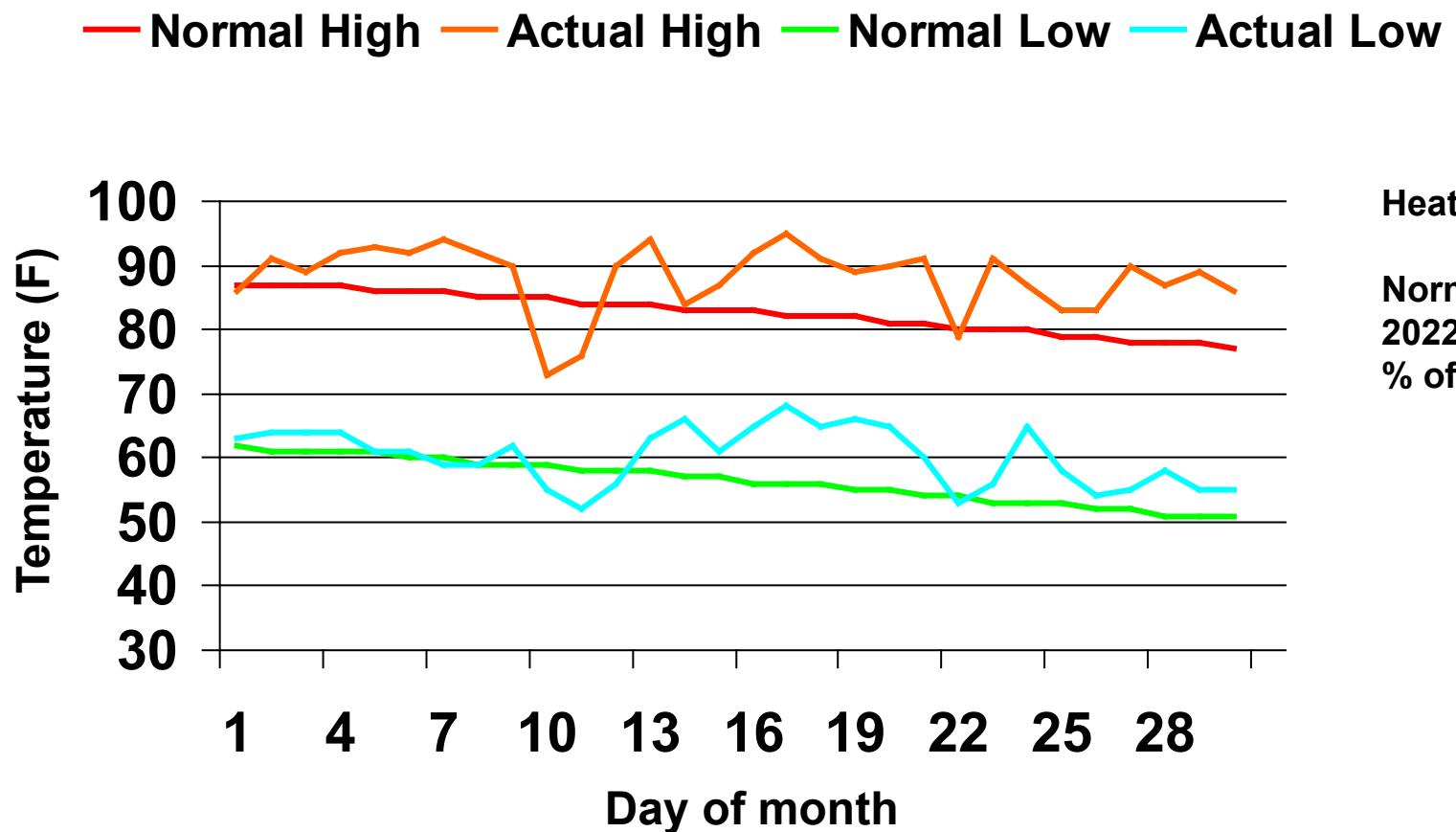
# Amarillo

## 30-Yr Normal (1981-2010) and August 2022 Air Temperatures



# Amarillo

## 30-Yr Normal (1981-2010) and September 2022 Air Temperatures



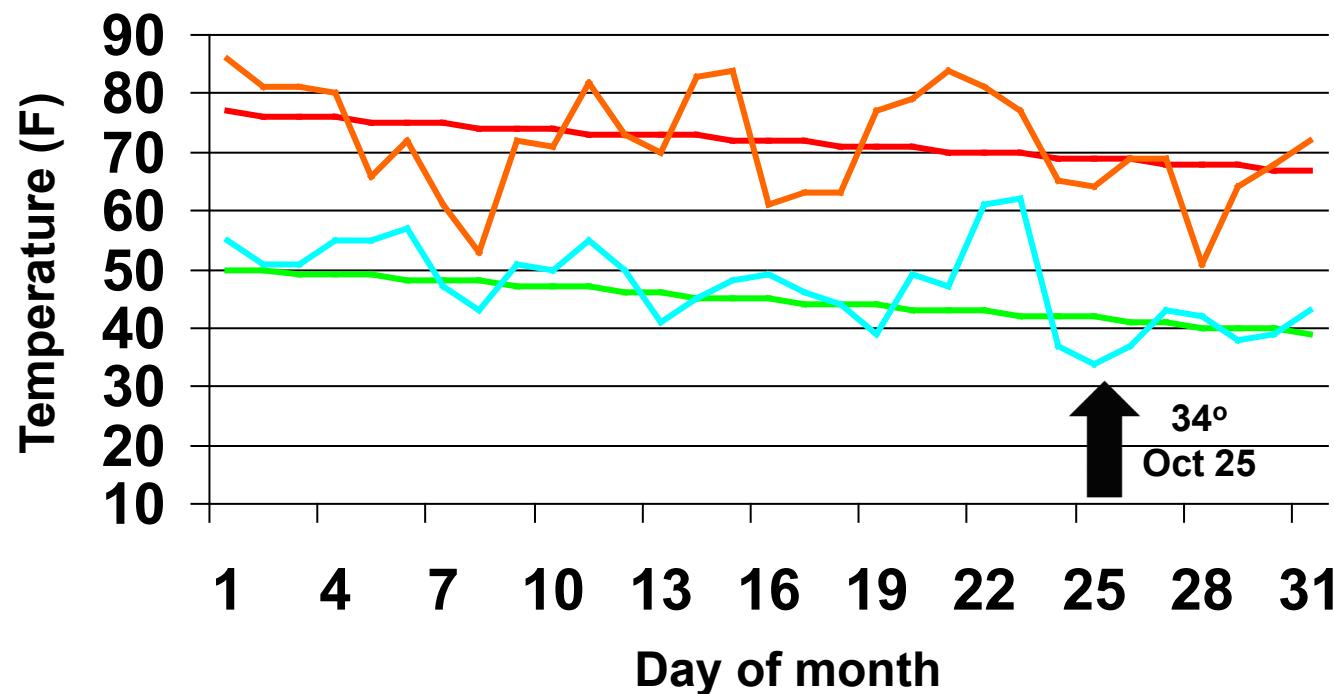
### Heat Units

Normal total: 286  
2022: 427  
% of normal: +49

# Amarillo

## 30-Yr Normal (1981-2010) and October 2022 Air Temperatures

— Normal High — Actual High — Normal Low — Actual Low



34°  
Oct 25

Heat Units  
Normal total: 19  
2022: 87  
% of normal: +358

First freeze on Nov 4 (29 degrees)  
Hard freeze on Nov 11 (22 degrees)