2021 Enlist Technology Cotton Variety Trial – Edcot Gin

George Brothers Farm
Edmonson, TX

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

Phillip Kidd, Edcot Gin Manager

Landon Kidd, Assistant 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 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, eight PhytoGen varieties 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, but considerable within-individual-plot variability was noted by early bloom. This variability was across all entries and all replicates. Some dicamba drift symptomology was noted by pre-square and this may have contributed to the variable plant growth that was noted through the end of the season. In-season soil samples were taken to evaluate nematode pressure, but no significant populations of either Root-knot, or Reniform were found. Substantial Verticillium wilt disease pressure was observed and this may have affected the trial outcome. The trial escaped various localized hail events that occurred in the surrounding area. The field's plant growth regulator management was targeted to the remainder of the field, which was planted to PHY 250 W3FE. Therefore, varieties with greater growth potential were able to express that, and taller plant heights were noted for those entries. Plant height data are presented in Table 2.*

Harvest results indicated that statistically significant differences were observed. Lint yields ranged from a high of 1164 lb/acre (PHY 205 W3FE) to a low of 837 lb/acre (PHY 250 W3FE),

and averaged 963 lb/acre (Table 1). Cash bids were obtained for commercially ginned and classed bale quality for each variety. This was performed on January 10 (at 115.25 cent/lb March 2022 futures) using the USDA-AMS classing results. These values ranged from a high of about $1.03/lb (PHY 443 W3FE) to a low of about $0.99/lb (PHY 394 W3FE) and averaged just under $1.02/lb. Net value/acre (defined as gross lint cash value plus net gin credit) ranged from a high of $1226/acre (PHY 205 W3FE) to a low of $863/acre (PHY 250 W3FE), a difference of $363/acre. These differences were statistically significant.

Table 2 provides similar information for the trial, but net value/acre is based on lint CCC Loan value. Average Loan value for varieties from commercially ginned and classed bales varied from a high of $0.4563/lb (PHY 443 W3FE) to a low of $0.3738/lb (PHY 394 W3FE). Overall Loan value for the trial across all entries was 0.4193/lb. Net value/acre (defined as gross Loan value plus net gin credit) ranged from a high of $519/acre (PHY 205 W3FE) to a low of $334/acre (PHY 250 W3FE and PHY 394 W3FE), a difference of $185/acre. These differences were statistically significant.

Table 3 presents in-season data including stand establishment percentage, vigor, nodes above white flower (NAWF) and plant height on three observation dates, nodes above cracked boll on October 12 and a visual estimate of storm resistance at harvest. Final plant heights ranged from a high of 36.2 inches for PHY 443 W3FE to a low of 24.5 inches for PHY 210 W3FE.

Table 4 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 or 31 and varied somewhat by entry. Leaf grades ranged from 3 to 5, with PHY 394 W3FE exhibiting the highest leaf grade average across bales at 4.2. Staple ranged from a high of 35.0 (PHY 394 W3FE) to a low of 33.6 32nds inch (PHY 205 W3FE). Average micronaire for varieties ranged from a low of 2.6 (PHY 250 W3FE and PHY 34 W3FE) to a high of 3.0 (PHY 443 W3FE). Loan chart micronaire discounts are triggered at values of 3.4 and lower. Therefore, varieties with lower micronaire values incurred steeper Loan rate discounts. No bark contamination was noted in any commercial bales. Fiber strength was 26.9 to 30.9 g/tex, and uniformity ranged from 76.6 to 80.1%.

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: 3500 ft

Previous crop: failed cotton in 2020

Tillage system: conventional

Planted: May 21

Replicates: 3 replicates in a randomized complete block design

Plot width: 8-row plots

Plot length: trial was planted in a circle with ~3,900 ft for long rows and ~1700 ft for short rows

Seeding rate: 55,000 seed/acre

Days from planting to first bloom: 67 (July 26)

30-inch rows under center pivot irrigation

Total rainfall April through September: 18.2 inches

April 0.4, May 7.2, June 4.2, July 3.4, August 2.4, September 0.6

Total irrigation April through September: 8.1 inches

April: 1.0, May 0.5, June 0.8, July 1.8, August 3.0, September 1.0

Fertility management:

15 tons/acre dairy manure in February, 10 gal/acre 32-0-0 (35 lb N/acre) (July 5)

Chemical Applications:

Preplant burndown – 22 oz/acre 2,4-D LV6 + 2 oz/acre Panther (flumioxazin) (April 2)

Preemergence – 1 qt/acre diuron (Direx 4L) (May 21)

Post emergence – 1 qt/acre Enlist One + 1 qt/acre Roundup PowerMax (June 12)

Post emergence – 43 oz/acre Liberty + 1 pt/acre Outlook (July 15)

Plant growth regulators: 16 oz/acre mepiquat chloride (August 15)

Insecticides: 3.5 oz/acre acephate (June 12)

Harvest aid application: 3 pt/acre ethephon (October 12)

Harvesting: November 22 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: Two methods were used for lint value. Table 1 is based on cash bids for each variety obtained on January 10, 2022 bids (115.25 cent/lb March 2022 futures) using commercial ginning and USDA-AMS classing results. Table 2 is based on CCC Loan value from commercial ginning and USDA-AMS classing results.

List of Tables

Acknowledgements

Edcot Gin would like to thank Brennan 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 Edcot “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.

WINDSTAR GINS

2021 Enlist Variety Trial – Edcot Gin

George Brothers Farm
Edmonson, TX

Dr. Randy Boman
Cotton Agronomics Manager

Variety Descriptions from Company Literature and Websites

PHY 205 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. Very early maturity. Short growth habit. Semi-smooth leaf, storm tolerance - excellent. Bacterial blight - resistant. Verticillium wilt - excellent. Root knot nematode –resistant. Reniform nematode – resistant.~35 staple, ~30 g/tex strength.

PHY 210 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. ~36.8 staple, ~31.3 g/tex strength.

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, ~31.1 g/tex strength.

PHY 332 W3FE Enlist Technology: Widestrike 3 Bt technology stacked with triple herbicide technologies including Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and Enlist herbicide (2,4-D choline) tolerance. Early-mid maturity. Medium-tall plant height, Semi-smooth leaf, storm tolerance – very good. Bacterial blight - resistant. Verticillium wilt - good. Root knot nematode –resistant. Reniform nematode – resistant. ~37 staple, ~30.5 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-mid maturity. Medium-tall plant height. Semi-smooth leaf, storm tolerance – very good. Bacterial blight - resistant. Verticillium wilt - excellent. Root knot nematode – highly resistant. ~36.8 staple, ~30.0 g/tex strength.

PHY 394 W3FE Enlist Technology: Widestrike 3 Bt technology stacked with triple herbicide technologies including Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and Enlist herbicide (2,4-D choline) tolerance. Early-mid maturity. Short growth habit. Semi-smooth leaf, storm tolerance - excellent. Bacterial blight - resistant. Verticillium wilt - excellent. ~37.8 staple, ~30.1 g/tex strength.

PHY 443 W3FE Enlist Technology: Widestrike 3 Bt technology stacked with triple herbicide technologies including Roundup Ready Flex (glyphosate), Liberty Link (glufosinate), and Enlist herbicide (2,4-D choline) tolerance. Mid maturity. Tall plant height, Semi-smooth leaf, storm tolerance – good. Bacterial blight - resistant. Verticillium wilt – n/a. Root knot nematode – resistant. Reniform nematode – resistant. ~36.2 staple, ~31.0 g/tex strength.

PX3E33 W3FE Enlist Technology Experimental Entry. 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-mid maturity. Storm tolerance – excellent. Bacterial blight - resistant. Verticillium wilt - good. Root knot nematode – 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, Root Knot nematode, and reniform nematode disease variety reaction information:
https://lubbock.tamu.edu/files/2021/12/Cotton-Disease-Report-2021.pdf

WINDSTAR GINS

Table 1. Harvest results with lint cash value for the center pivot irrigated Enlist technology cotton variety trial, George Farm, Edmonson, TX, 2021.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint cash value	Lint cash value	Net gin credit	Net value	
	---------- % ----------		---------- lb/acre ----------			$/lb	---------- $/acre ----------			
PHY 205 W3FE	28.1	33.4	4151	1164	1386	1.0279	1197	29	1226	a
PHY 210 W3FE	28.7	39.4	3779	1083	1488	1.0200	1104	54	1158	b
PHY 350 W3FE	26.3	32.0	3836	1009	1227	1.0230	1033	20	1054	c
PHY 443 W3FE	28.3	34.0	3519	979	1177	1.0345	1013	27	1040	c
PHY 332 W3FE	26.4	31.1	3386	894	1053	1.0155	907	15	922	d
PHY 394 W3FE	24.6	28.7	3578	880	1027	0.9948	876	5	881	d
PX 3E33 W3FE	27.4	30.2	3138	859	946	1.0009	860	10	870	d
PHY 250 W3FE	26.2	32.7	3198	837	1046	1.0073	843	20	863	d
Test average	27.0	32.7	3573	963	1169	1.0155	979	23	1002	
CV, %	--	--	4.6	4.6	4.5	--	4.5	4.7	4.5	
OSL	--	--	0.0001	0.0001	0.0001	--	0.0001	0.0001	0.0001	
LSD	--	--	237	63	75	--	64	2	65	

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.
$240/ton for seed.
Net gin credit is defined as seed credit minus ginning expense.
Lint value based on cash bids for each variety on January 10th at 115.25 cent March 2022 futures using commercial ginning and USDA-AMS classing results.

WINDSTAR GINS

Table 2. Harvest results with lint loan value for the center pivot irrigated Enlist technology cotton variety trial, George Farm, Edmonson, TX, 2021.

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 205 W3FE	28.1	33.4	4151	1164	1386	0.4210	490	29	519	a
PHY 210 W3FE	28.7	39.4	3779	1083	1488	0.4230	458	54	512	a
PHY 443 W3FE	28.3	34.0	3519	979	1177	0.4563	447	27	474	b
PHY 350 W3FE	26.3	32.0	3836	1009	1227	0.4430	447	20	468	b
PHY 332 W3FE	26.4	31.1	3386	894	1053	0.4423	395	15	410	c
PX 3E33 W3FE	27.4	30.2	3138	859	946	0.4194	360	10	370	d
PHY 250 W3FE	26.2	32.7	3198	837	1046	0.3753	314	20	334	e
PHY 394 W3FE	24.6	28.7	3578	880	1027	0.3738	329	5	334	e
Test average	27.0	32.7	3573	963	1169	0.4193	405	23	428	
CV, %	--	--	4.6	4.6	4.5	--	4.5	4.7	4.5	
OSL	--	--	0.0001	0.0001	0.0001	--	0.0001	0.0001	0.0001	
LSD	--	--	237	63	75	--	26	2	28	

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.
$240/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.

WINDSTAR GINS

Table 3. Plant observation results from the center pivot irrigated Enlist technology cotton variety trial, George Farm, Edmonson, TX, 2021.

Entry	Final population	Stand establishment	Vigor	Nodes above white flower			Plant height			Nodes above cracked boll	Storm resistance
				Early bloom	Mid bloom	Late bloom	Prebloom	Early bloom	Final		
	plants/acre	%	1-5 visual scale, 5 best	count			inches			count	1-9 visual scale, 9 tight
	14-Jun	14-Jun	14-Jun	29-Jul	11-Aug	24-Aug	8-Jul	29-Jul	12-Oct	12-Oct	22-Nov
PHY 205 W3FE	49,368	89.8	3.3	9.9	7.1	5.8	8.5	20.6	26.8	0.4	8.5
PHY 210 W3FE	47,916	87.1	3.0	9.8	7.0	5.7	8.1	19.9	24.5	0.5	8.5
PHY 250 W3FE	40,947	74.4	3.0	9.9	8.1	6.4	6.3	19.7	26.9	1.0	7.5
PHY 332 W3FE	50,530	91.9	3.3	10.2	8.5	6.6	8.1	22.9	34.6	3.0	6.3
PHY 350 W3FE	48,787	88.7	3.7	10.2	7.3	5.7	8.8	23.8	33.7	1.5	5.7
PHY 394 W3FE	50,530	91.9	4.0	9.3	8.1	6.4	8.7	22.0	29.5	2.0	7.8
PHY 443 W3FE	49,368	89.8	3.0	10.3	8.4	5.7	9.4	24.4	36.2	2.8	5.8
PX 3E33 W3FE	42,689	77.6	3.0	10.3	8.5	6.7	8.7	23.4	33.7	2.6	7.3
Test average	47,517	86.4	3.3	10.0	7.9	6.1	8.3	22.1	30.7	1.7	7.2
CV, %	8.7	8.7	10.5	3.7	4.7	6.7	7.2	4.7	5.0	36.6	3.0
OSL	0.0819	0.0814	0.0208	0.0705	0.0003	0.0199	0.0011	0.0002	0.0001	0.0005	0.0001
LSD	5,926	10.8	0.5	0.5	0.5	0.6	0.9	1.5	2.2	0.9	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.

WINDSTAR GINS

Table 4. Commercial classing data for the center pivot irrigated Enlist technology cotton variety trial, George Farm, Edmonson, 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
PHY 205 W3FE															
4117499	31-1	3	1	4	33	2.6	.	.	29.1	78.7	7.5	4	78.7	104	34.95
4117500	31-1	3	1	4	34	2.9	.	.	31.6	79.6	8.0	4	80.1	105	43.80
4117501	31-2	3	1	4	34	2.8	.	.	32.4	78.6	7.4	4	80.9	107	43.80
4117502	31-2	3	1	4	34	3.0	.	.	32.8	78.4	7.6	5	81.0	107	46.35
4117503	31-1	3	1	4	33	2.9	.	.	30.2	79.3	7.6	4	79.0	102	40.15
4117504	31-1	3	1	5	33	3.1	.	.	29.2	78.9	7.5	7	80.7	104	41.85
4117505	31-1	3	1	4	34	2.9	.	.	31.1	79.9	7.4	5	80.6	107	43.80
Average	--	3.0	1.0	4.1	33.6	2.9	none	none	30.9	79.1	7.6	4.7	80.1	105.1	42.10
PHY 210 W3FE															
4117506	31-1	3	1	3	35	2.7	.	.	27.7	79.9	7.4	3	77.3	108	44.25
4117507	31-1	3	1	3	35	2.7	.	.	29.1	80.2	7.4	4	80.3	108	45.35
4117508	31-1	3	1	3	34	2.8	.	.	29.1	80.6	7.3	3	78.0	107	43.15
4117509	31-1	3	1	4	33	2.9	.	.	28.3	80.8	7.3	4	78.9	104	39.85
4117510	31-1	3	1	3	34	2.8	.	.	29.5	80.4	7.6	3	78.5	107	43.15
4117511	21-2	2	1	3	36	2.4	.	.	29.6	81.5	7.4	3	79.7	113	36.80
4117512	21-1	2	1	2	33	3.1	.	.	27.4	82.8	7.5	2	77.1	102	43.55
Average	--	2.7	1.0	3.0	34.3	2.8	none	none	28.7	80.9	7.4	3.1	78.5	107.0	42.30
PHY 250 W3FE															
4117513	31-1	3	1	3	35	2.2	.	.	28.6	80.8	7.2	4	78.1	108	34.80
4117514	31-1	3	1	4	33	2.6	.	.	26.7	79.4	7.5	5	76.8	104	34.50
4117515	31-1	3	1	4	34	2.9	.	.	27.6	80.1	7.6	4	77.2	106	42.35
4117516	31-1	3	1	4	35	2.6	.	.	28.5	79.7	7.6	5	77.4	109	38.20
4117517	31-1	3	1	3	34	2.6	.	.	27.2	81.1	7.4	4	77.3	106	37.75
4117518	21-1	2	1	4	34	2.6	.	.	28.0	81.8	7.6	4	77.4	105	37.55
Average	--	2.8	1.0	3.7	34.2	2.6	none	none	27.8	80.5	7.5	4.3	77.4	106.3	37.53

Table 4 (continued). Commercial classing data for the center pivot irrigated Enlist technology cotton variety trial, George Farm, Edmonson, 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
PHY 332 W3FE															
4117519	21-2	2	1	4	35	2.8	.	.	28.0	79.6	8.2	4	78.6	110	43.85
4117520	21-2	2	1	3	35	2.7	.	.	29.3	79.7	8.3	4	77.4	109	44.65
4117521	21-1	2	1	3	34	2.7	.	.	26.7	79.8	8.7	3	76.5	107	43.10
4117522	21-1	2	1	3	35	2.7	.	.	28.1	80.4	8.6	2	77.7	109	44.60
4117523	21-1	2	1	3	35	2.8	.	.	28.5	81.1	8.5	4	76.6	110	44.60
4117524	21-1	2	1	3	35	2.7	.	.	27.6	81.4	8.5	3	76.1	110	44.60
Average	--	2.0	1.0	3.2	34.8	2.7	none	none	28.0	80.3	8.5	3.3	77.2	109.2	44.23
PHY 350 W3FE															
4117525	21-2	2	1	3	36	2.6	.	.	28.2	81.3	7.7	3	78.0	112	41.55
4117526	31-1	3	1	3	35	2.7	.	.	27.7	80.2	7.7	4	78.9	108	44.65
4117527	31-1	3	1	4	34	2.8	.	.	28.0	79.9	8.0	5	78.5	107	42.75
4117528	31-1	3	1	4	35	3.0	.	.	27.5	79.6	7.8	4	79.2	108	46.20
4117529	21-2	2	1	3	34	2.8	.	.	26.4	81.4	7.9	3	76.9	107	43.10
4117530	21-1	2	1	3	35	3.0	.	.	27.6	81.1	8.0	3	78.7	110	47.55
Average	--	2.5	1.0	3.3	34.8	2.8	none	none	27.6	80.6	7.9	3.7	78.4	108.7	44.30
PHY 394 W3FE															
4117531	31-1	3	1	4	36	2.5	.	.	28.9	78.6	8.0	5	76.0	112	39.35
4117532	31-2	3	1	4	35	2.6	.	.	26.7	77.7	7.7	5	76.6	109	38.20
4117533	31-1	3	1	4	35	2.6	.	.	25.8	78.6	7.9	5	76.4	108	34.10
4117534	31-1	3	1	5	35	2.6	.	.	26.3	78.5	7.8	5	77.0	110	36.55
4117535	21-2	2	1	4	35	2.6	.	.	26.4	80.7	7.7	5	76.3	108	38.50
4117536	21-2	2	1	4	34	2.6	.	.	28.1	80.5	7.6	4	77.0	107	37.55
Average	--	2.7	1.0	4.2	35.0	2.6	none	none	27.0	79.1	7.8	4.8	76.6	109.0	37.38

WINDSTAR GINS

Table 4 (continued). Commercial classing data for the center pivot irrigated Enlist technology cotton variety trial, George Farm, Edmonson, TX, 2021.

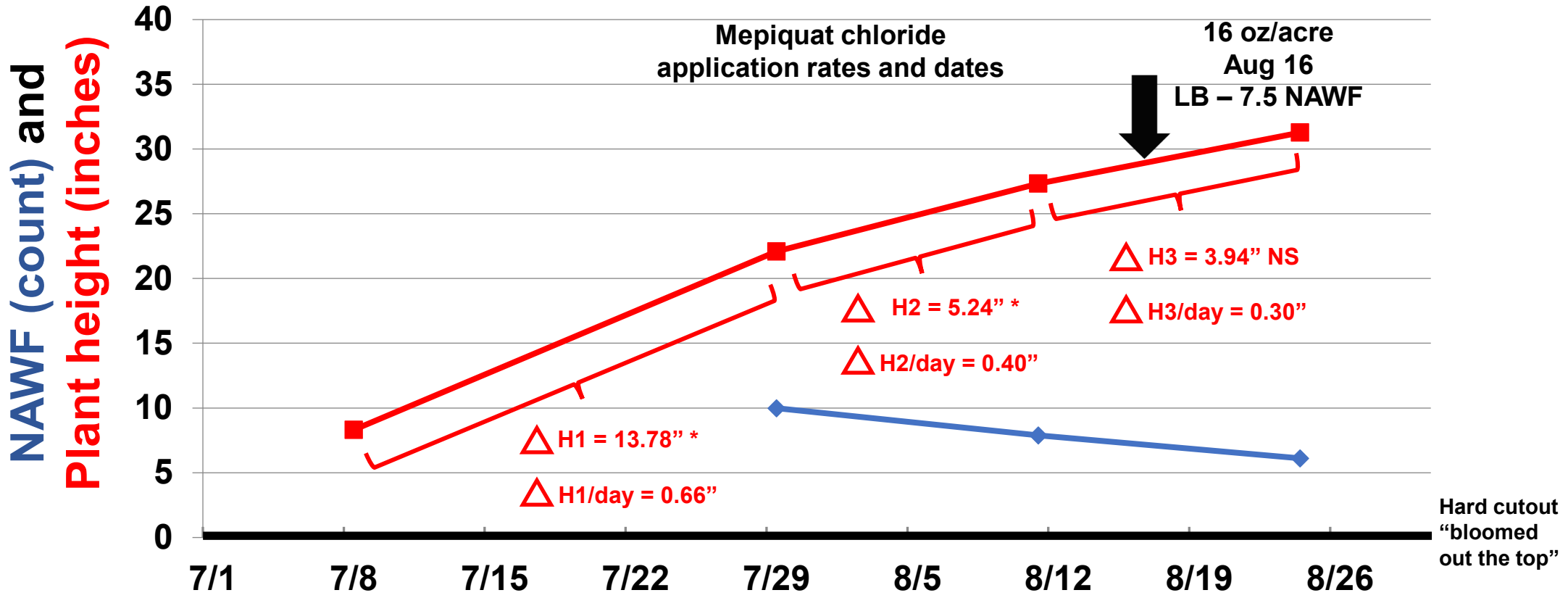
Variety and Bale Number	Color Grade-Quadrant grade-quadrant	Color digit 1	Color digit 2	Leaf grade	Staple 32nds inch	Micronaire units	Extraneous matter	Remarks --	Strength g/tex	Rd %	+b %	Trash %	Uniformity %	Length 100ths inch	Loan rate cents/lb
PHY 443 W3FE															
4117537	21-2	2	1	3	36	3.0	.	.	29.2	80.3	8.3	3	79.9	112	49.20
4117538	21-2	2	1	3	34	3.0	.	.	27.6	79.9	8.4	2	78.1	105	46.05
4117539	31-1	3	1	3	34	3.1	.	.	29.6	79.2	8.3	3	78.3	107	45.70
4117540	21-1	2	1	3	34	2.9	.	.	27.5	79.9	8.6	4	77.6	105	43.10
4117541	21-1	2	1	3	34	3.0	.	.	29.3	79.6	8.6	3	77.9	107	45.70
4117542	21-1	2	1	3	34	2.8	.	.	28.3	79.6	8.5	2	79.3	105	43.60
4117543	21-1	2	1	3	34	3.0	.	.	27.6	80.2	8.6	2	78.3	105	46.05
Average	--	2.1	1.0	3.0	34.3	3.0	none	none	28.4	79.8	8.5	2.7	78.5	106.6	45.63
PX 3E33 W3FE															
4117544	21-2	2	1	4	35	2.8	.	.	26.9	79.6	8.2	4	79.1	110	43.95
4117545	21-2	2	1	4	34	2.8	.	.	27.0	80.0	8.4	5	77.6	107	42.50
4117546	21-2	2	1	4	34	2.8	.	.	25.9	80.3	8.2	4	75.6	105	38.40
4117547	21-2	2	1	4	34	2.7	.	.	28.0	80.0	8.4	5	78.5	106	42.90
4117548	21-1	2	1	3	34	2.8	.	.	26.7	80.6	8.4	4	76.6	105	43.10
4117549	21-1	2	1	3	33	2.8	.	.	26.9	81.1	8.6	3	75.8	104	40.80
Average	--	2.0	1.0	3.7	34.0	2.8	none	none	26.9	80.3	8.4	4.2	77.2	106.2	41.94

WINDSTAR GINS

Appendix

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

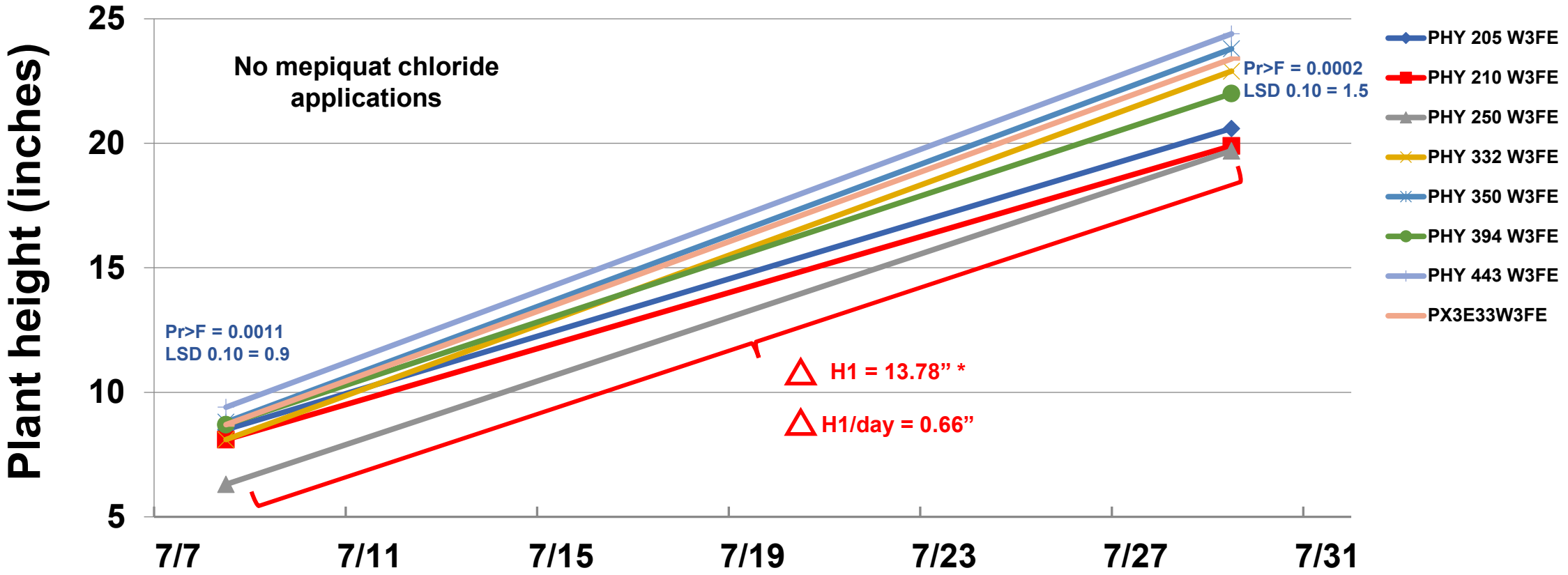
George Enlist Variety Trial (Across All Entries) Edmonson – 2021



Rainfall (inches): Apr 0.4, May 7.2, Jun 4.2, Jul 3.4, Aug 2.4, Sep 0.6 = 18.2
Irrigation (inches): Apr 1.0, May 0.5, Jun 0.8, Jul 1.8, Aug 3.0, Sep 1.0 = 8.1

Planted: May 21
Days to bloom: 67
First bloom date: Jul 26

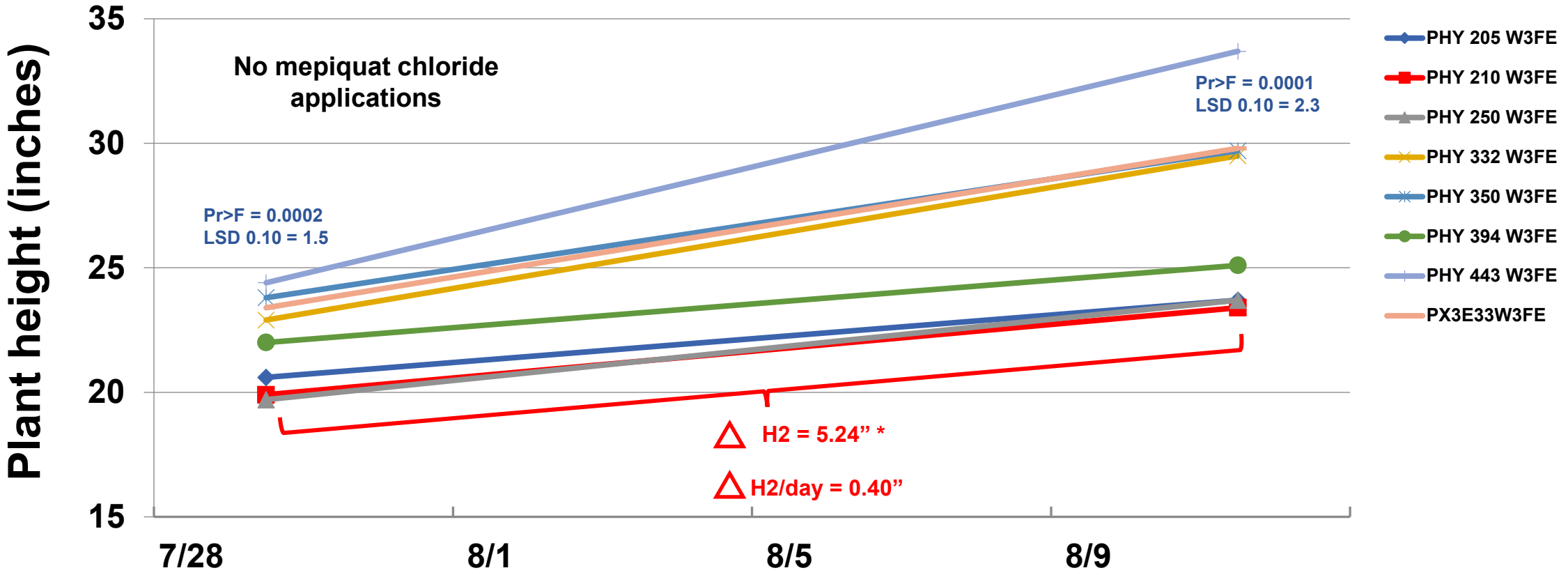
George Enlist Variety Trial
Edmonson – 2021



Rainfall (inches): Apr 0.4, May 7.2, Jun 4.2, Jul 3.4, Aug 2.4, Sep 0.6 = 18.2
Irrigation (inches): Apr 1.0, May 0.5, Jun 0.8, Jul 1.8, Aug 3.0, Sep 1.0 = 8.1

Planted: May 21
Days to bloom: 67
First bloom date: Jul 26

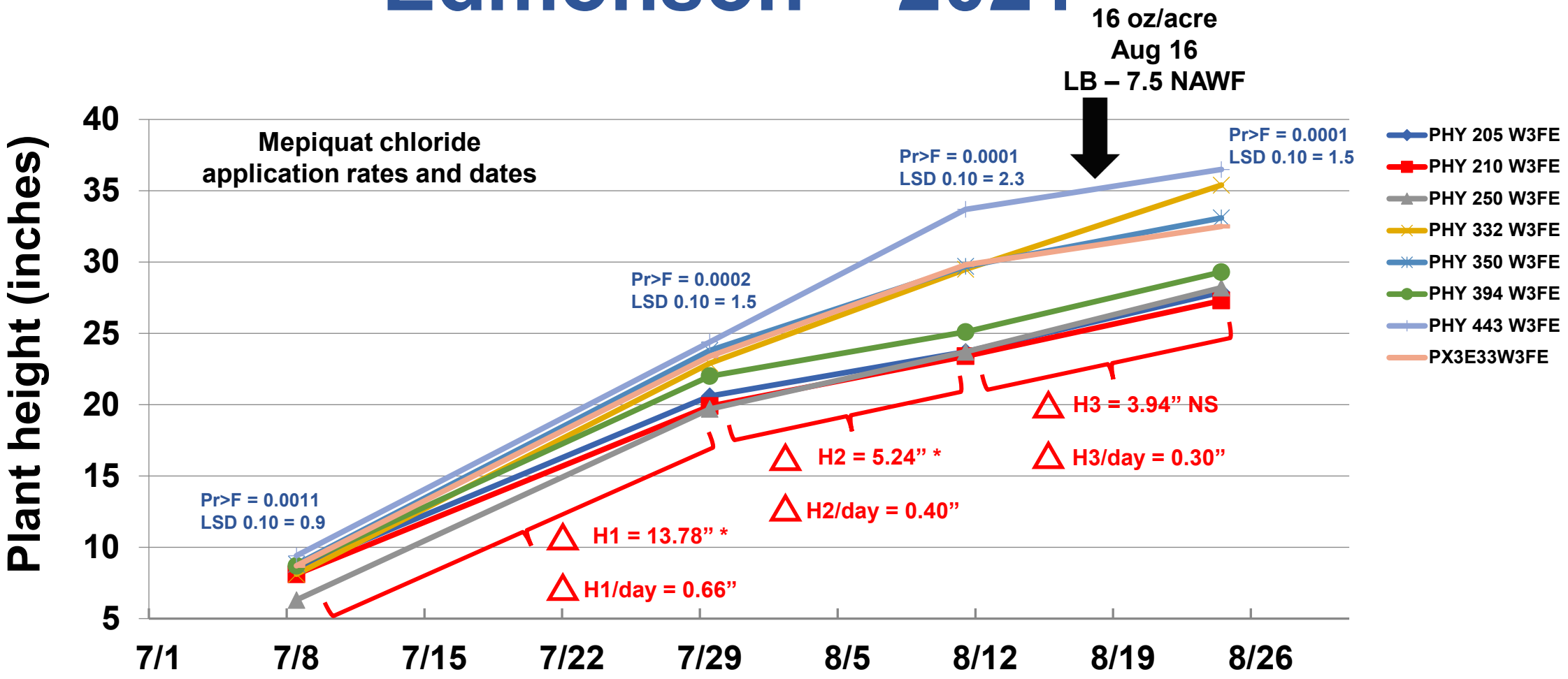
George Enlist Variety Trial
Edmonson – 2021



Rainfall (inches): Apr 0.4, May 7.2, Jun 4.2, Jul 3.4, Aug 2.4, Sep 0.6 = 18.2
Irrigation (inches): Apr 1.0, May 0.5, Jun 0.8, Jul 1.8, Aug 3.0, Sep 1.0 = 8.1

Planted: May 21
Days to bloom: 67
First bloom date: Jul 26

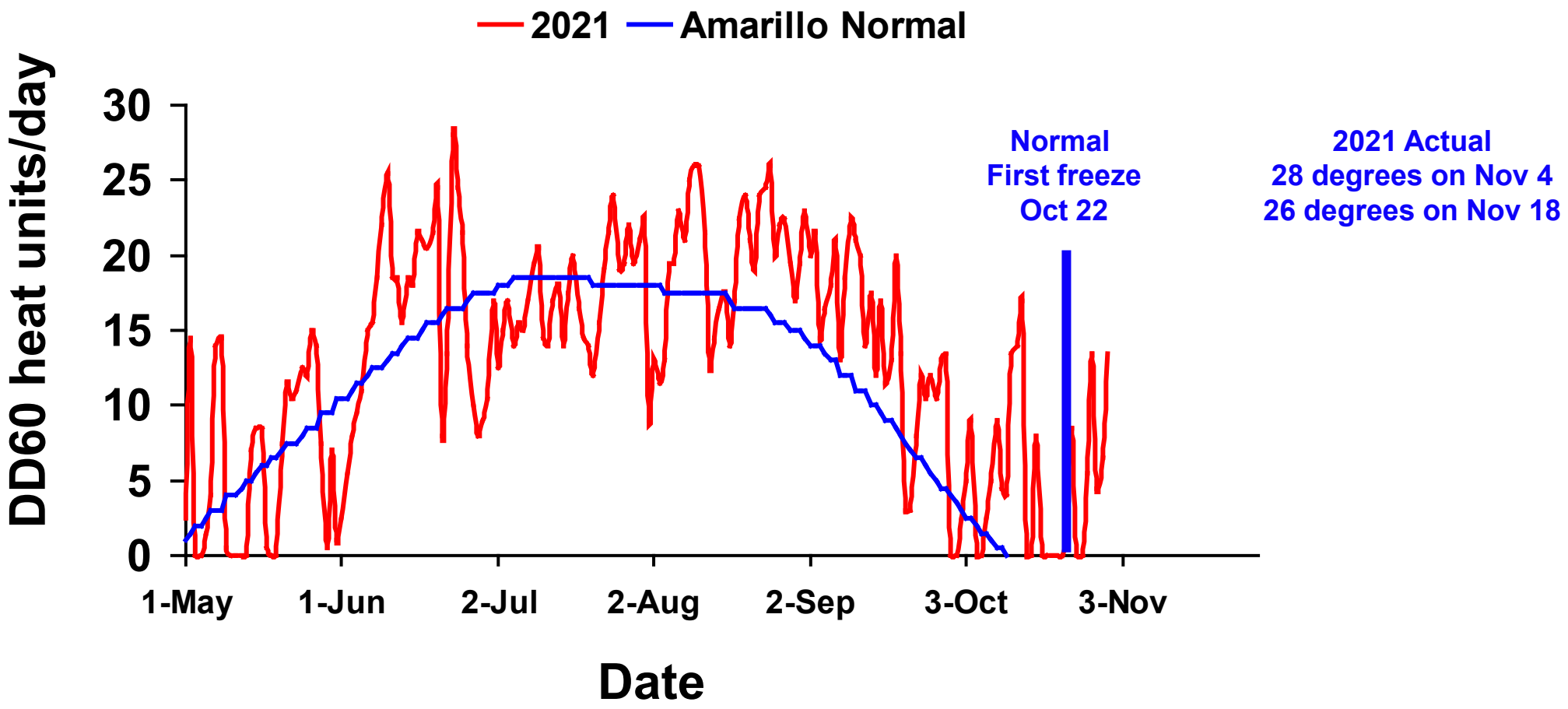
George Enlist Variety Trial
Edmonson – 2021



Rainfall (inches): Apr 0.4, May 7.2, Jun 4.2, Jul 3.4, Aug 2.4, Sep 0.6 = 18.2
Irrigation (inches): Apr 1.0, May 0.5, Jun 0.8, Jul 1.8, Aug 3.0, Sep 1.0 = 8.1

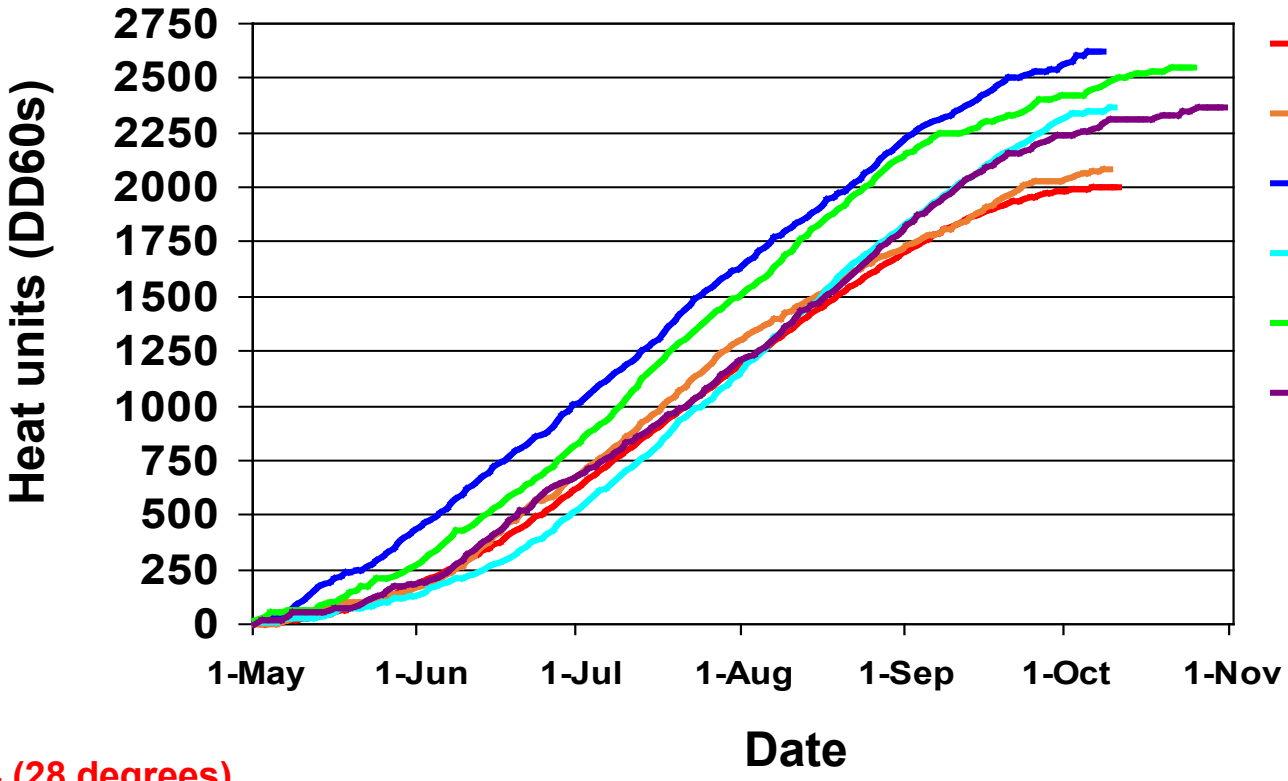
Planted: May 21
Days to bloom: 67
First bloom date: Jul 26

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

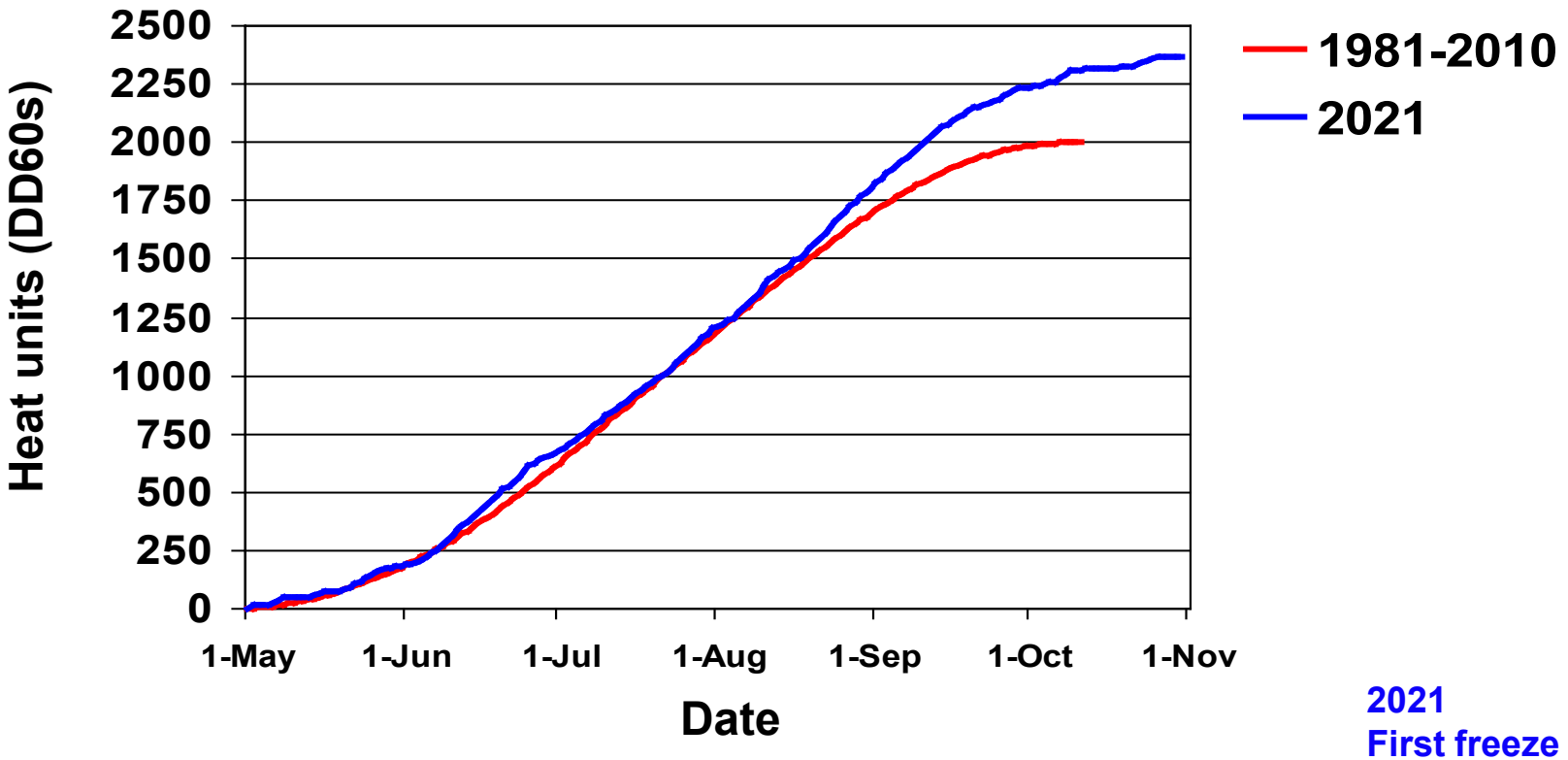
From May 1 through Sep 30
Normal: 1983
2021: 2238
% of Normal: +13

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

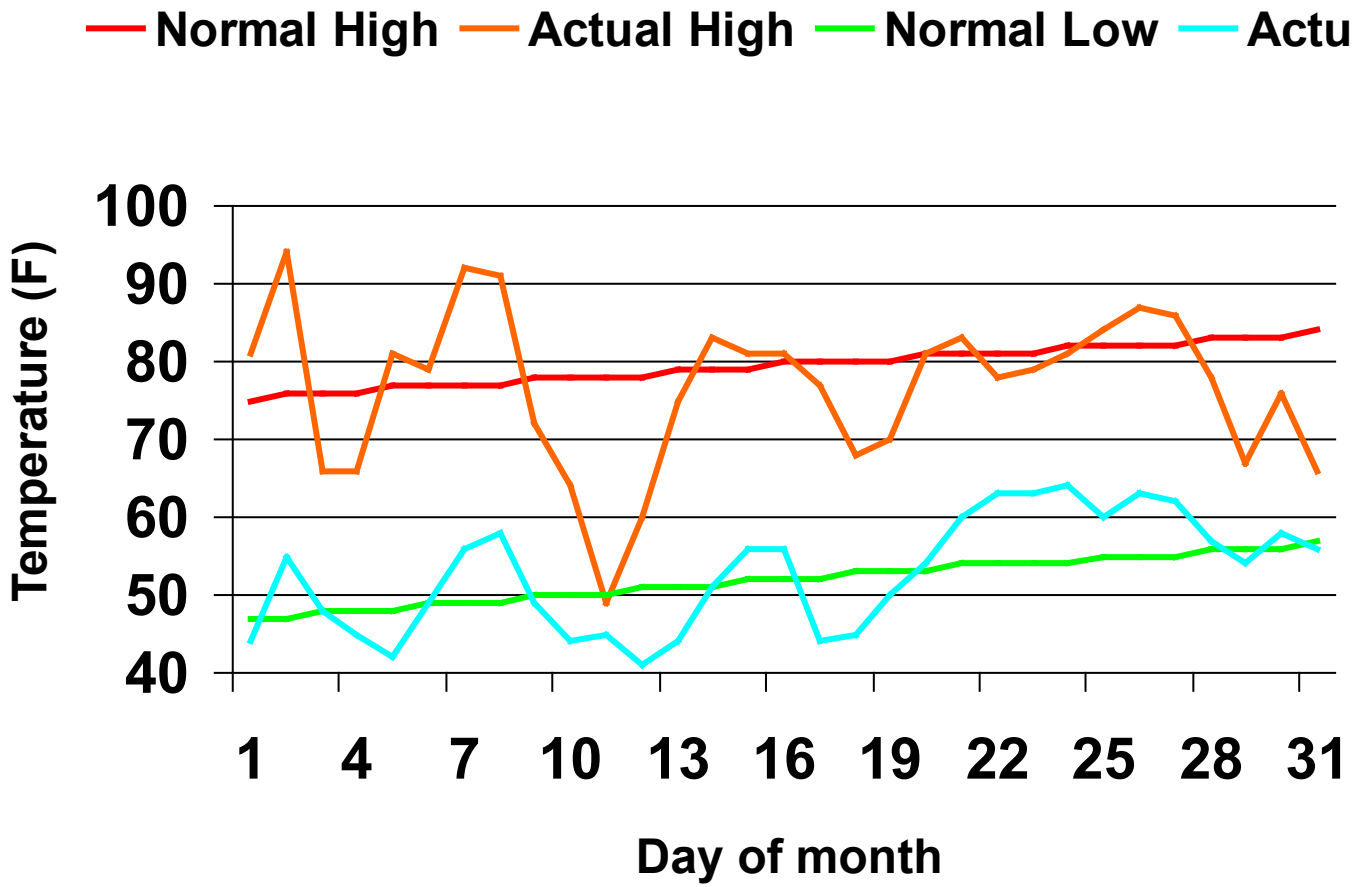
2021
First freeze on Nov 4 (28 degrees)
Hard freeze on Nov 18 (26 degrees)

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)

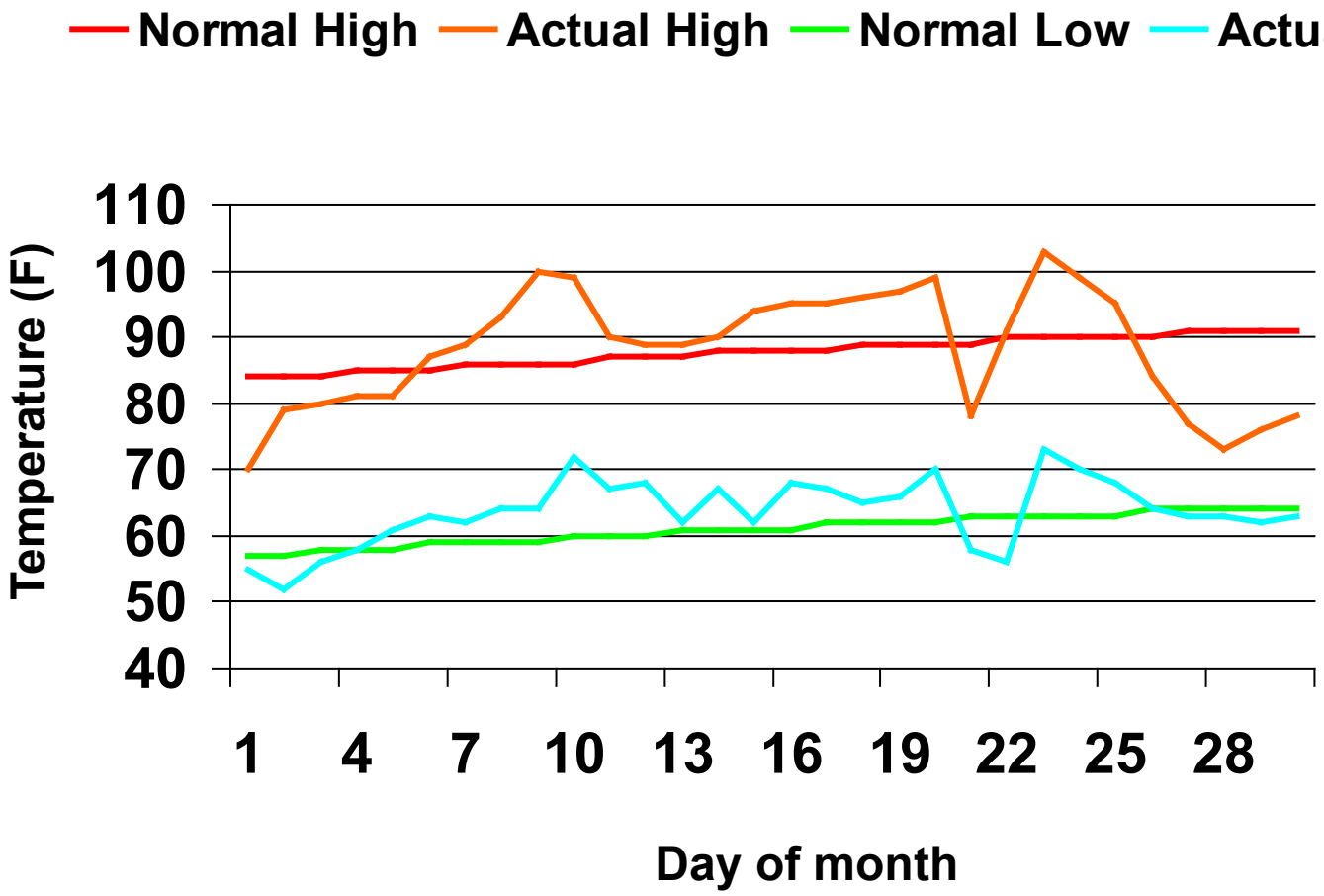
Amarillo
30-Yr Normal (1981-2010) and May 2021 Air Temperatures



Heat Units

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

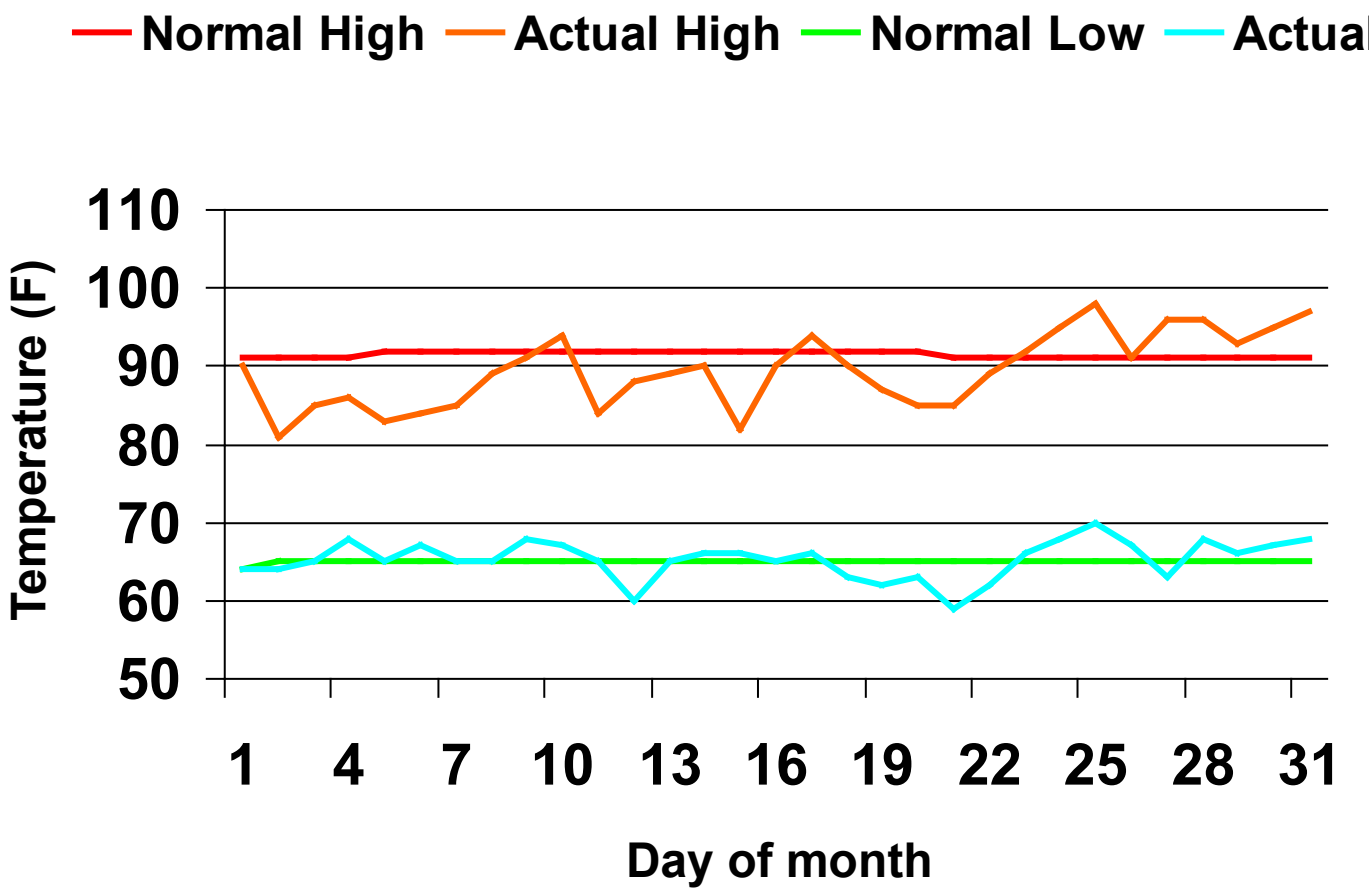
Amarillo
30-Yr Normal (1981-2010) and June 2021 Air Temperatures



Heat Units

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

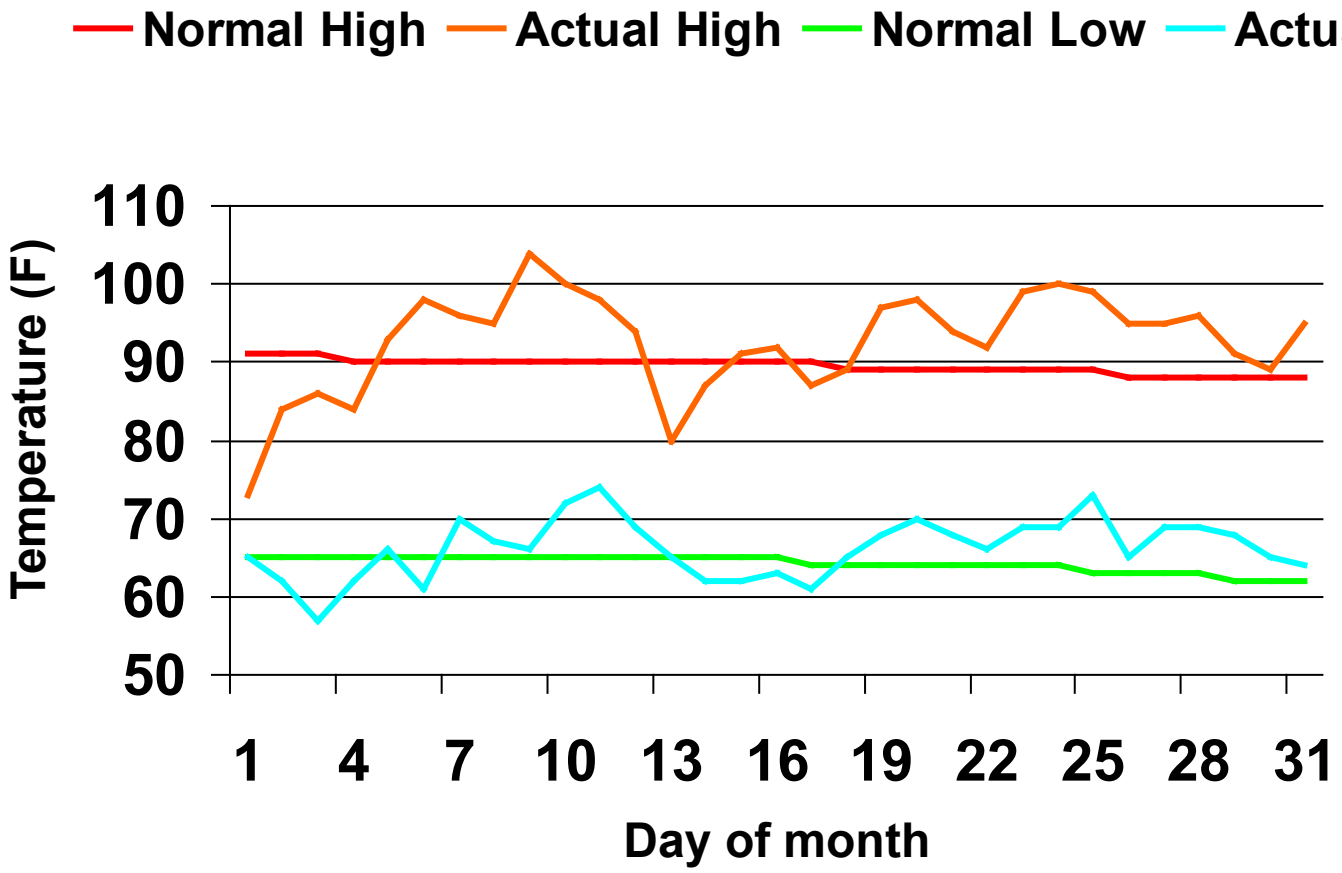
Amarillo
30-Yr Normal (1981-2010) and July 2021 Air Temperatures



Heat Units

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

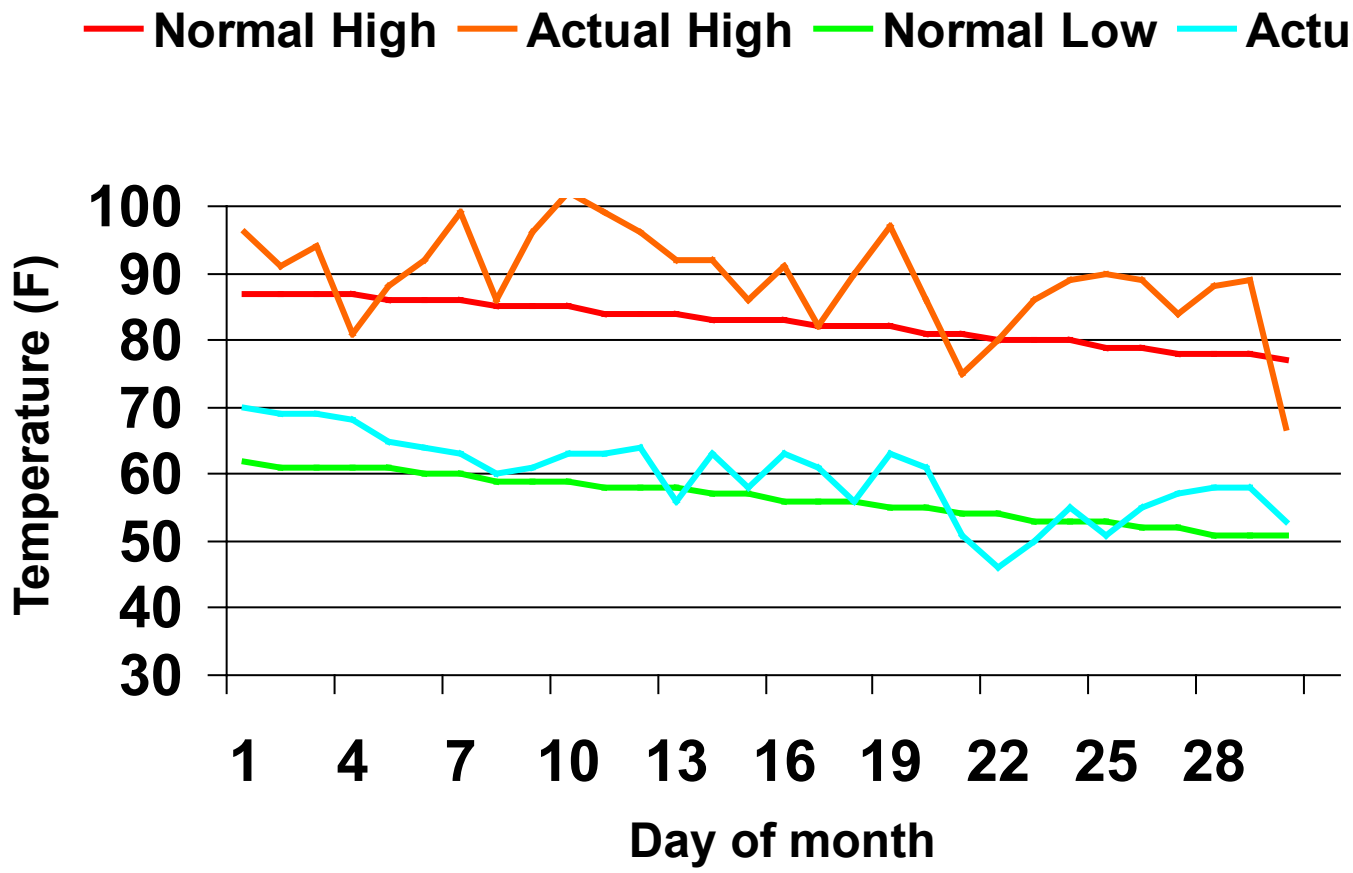
Amarillo
30-Yr Normal (1981-2010) and August 2021 Air Temperatures



Heat Units

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

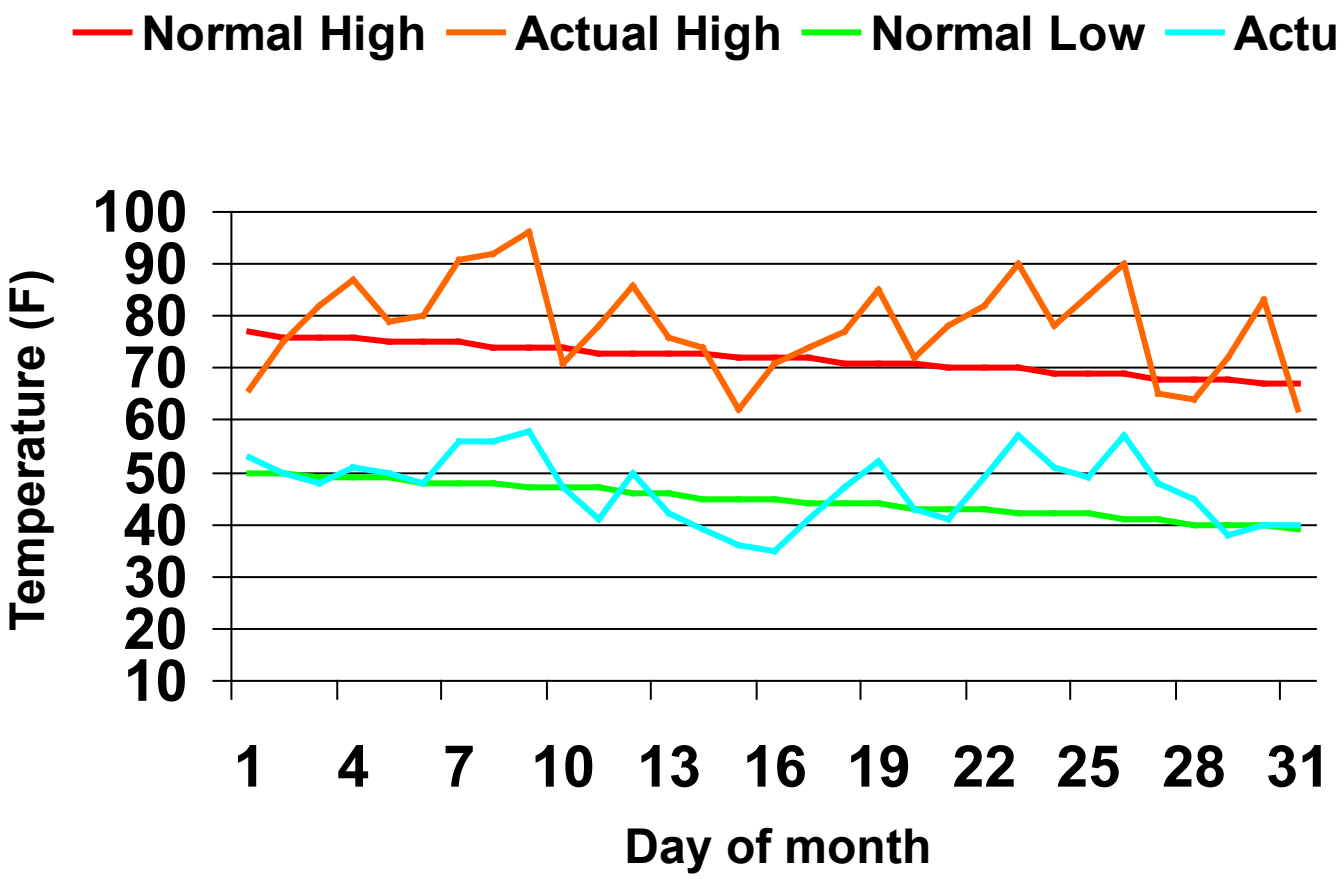
Amarillo
30-Yr Normal (1981-2010) and September 2021 Air Temperatures



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)