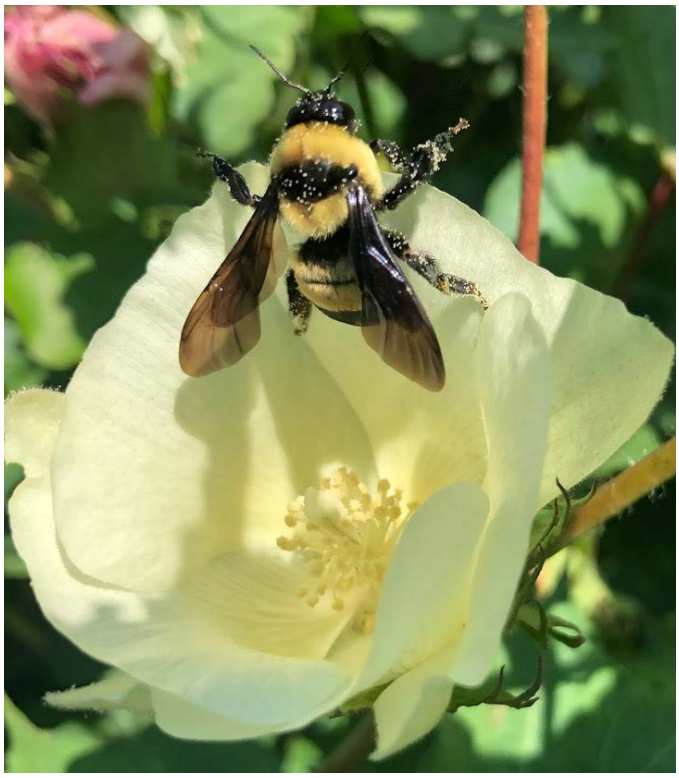
# 2019 Texas Panhandle
# Replicated Agronomic Cotton Evaluation (RACE)

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**2019 Texas Panhandle**
**Replicated Agronomic Cotton Evaluation (RACE)**

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## 2019 Texas Panhandle Highlights

The Texas Panhandle RACE trials provide regional producers a comparison of top cotton varieties marketed for Panhandle cotton production systems. Weather-related challenges from planting through harvest including poor stand establishments, hail injury, crop disease, in-season water stress, and freeze related quality discounts resulted in 2019 being one of the most challenging cotton seasons on record. Regionally, below-average spring temperatures resulted in limited growing degree day (GDD) accumulation in May (Fig. 1). Hot-dry conditions in July and early-August increased crop water demands and resulted in crop stress on dryland and limited irrigated fields.

The 2019 Texas Panhandle RACE Trials were planted at nine locations under varying crop rotations, row spacings and populations (Table 1), and an additional three locations were planned but not planted due to planting delays in May. Four locations were terminated as a result of seedling disease and poor stands (Carson, Deaf Smith, Hutchinson, and Moore/Sunray). Early to early-mid maturing double and triple herbicide stacked varieties were planted at each location as a seed company entry or cooperating producer request.

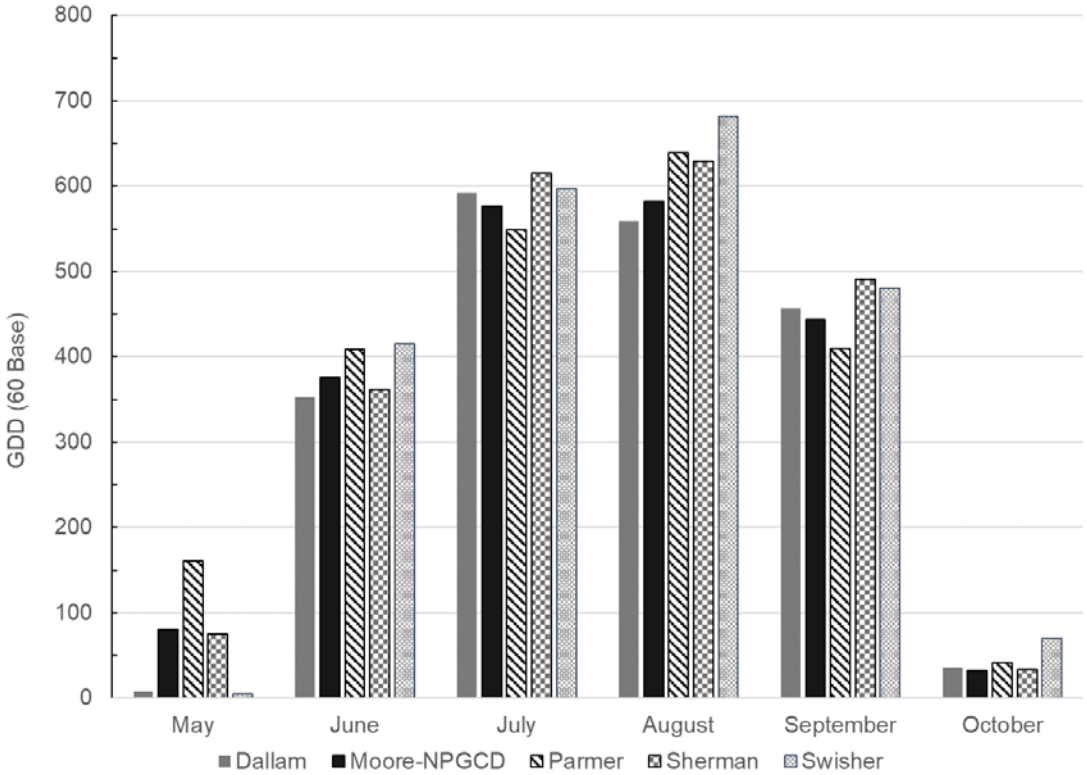

**Figure 1.** Distribution of growing degree days (GDD60) accumulated from planting for locations where a Texas A&M AgriLife weather station is located.

Although 2019 presented many cotton production challenges, cumulative GDD accumulation (2120) was comparable to the recent four-year average (2176) (Fig. 2). Evaluation of the monthly GDD distribution demonstrates the importance of May and June heat accumulation in Texas Panhandle production systems to optimize production. While GDD accumulation is often low in May, June accumulation is necessary to speed up early-season crop development. Inefficient GDD accumulation in May 2019 and below average GDD accumulation in June 2019 resulted in the crop not initiating squares until early July at most locations. This data also validates producer concerns and potential inadequacies with the use of historical GDD models in non-traditional cotton production environments where >2300 GDDs is the standard from harvest to maturity.

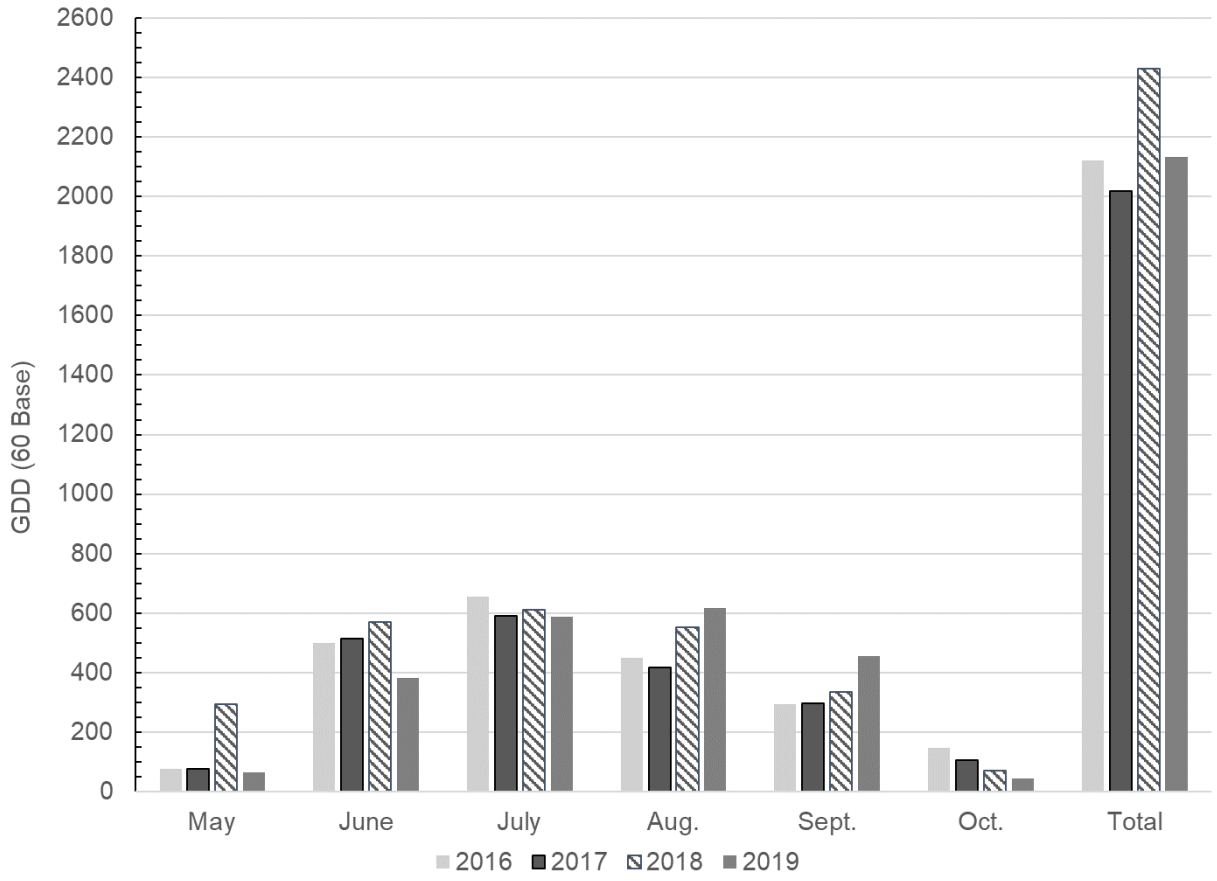


**Figure 2.** Four-year average growing degree days (GDD60) accumulated at Texas A&M AgriLife Panhandle RACE trial locations by production month and total seasonal accumulation.

**Table 1.** 2019 Agronomic information by location.

| County | Carson | Dallam | Deaf Smith | Hansford - Sherman | Hutchinson | Moore | Parmer | Moore | Swisher |
|---|---|---|---|---|---|---|---|---|---|
| **Location (Nearest Town)** | Groom | Conlen | Hereford | Gruver | Morse | Dumas | Muleshoe | Sunray | Kress |
| **Elevation (ft.)** | 3,255 | 3,819 | 3,816 | 3,176 | 3,205 | 3,661 | 4,068 | 3,507 | 3,471 |
| **Cooperator** | Denny Babcock | Jay Willard | Frankie Bezner | Greg Slough | Craig McCloy | NPGCD - Stan Spain | Tony Beauchamp | Tommy Cartrite | Jeremy Reed |
| **County Agent(s)** | Jody Bradford | Mike Bragg | Rick Auckerman | Kristy Slough & Matt Whitely | Kristy Slough & Matt Whitely | Marcel Fischbacher | Curtis Preston, Sergio Garza, & J.D. Gonzales | Marcel Fischbacher | John Villabla |
| **Irrigation** | Dryland | Irrigated | Irrigated | Irrigated | Irrigated | Early and Late | Irrigated | Dryland | Irrigated |
| **Irrigation inches** | ---- | 3.5 | ---- | ---- | ---- | 7 and 4 | ---- | ---- | ---- |
| **Precipitation inches** | ---- | 6.9 | 13.73 | 11.5 | ---- | 11.7 | 14.8 | ---- | 8.7 |
| **Previous crop** | Wheat | Corn | Corn | Cotton w/ wheat cover | Corn | Corn | Corn | Fallow | Sorghum |
| **Herbicide Technologies** | GL and XF | Only XF | GL and XF | GL and XF | GL and XF | Only XF | Only XF | GL and XF | GL and XF |
| **Planting Date** | 5/18/2019 | 5/29/2019 | 5/3/2019 | 5/15/2019 | 5/16/2019 | 5/14/2019 | 5/6/2019 | 5/6/2019 | 5/31/2019 |
| **Planting Pop. (Seeds/ac)** | 35,000 | 45,000 | 50,000 | 55,000 | 80,000 | 66,000 | 40,000 | 54,000 | 50,000 |
| **Harvest Date** | Terminated due to disease and poor vigor | 11/11/2019 | Terminated due to disease and poor vigor | 11/15-11/16/2019 | Terminated due to crusting and poor vigor | 11/15/2019 | 11/14/2019 | Hailed out 6/22/19 | 11/13/2019 |
| **Varieties** | ---- | ---- | ---- | ---- | ---- | ---- | CP3475 B2XF‡ | ---- | ---- |
| **‡Farmer entry** | ---- | ---- | ---- | DG3385 B2XF‡ | ---- | DG3385 B2XF‡ | ---- | ---- | ---- |
| | ---- | ---- | ---- | ---- | ---- | ---- | ---- | DP1522 B2XF‡ | ---- |
| | DP1822 XF | ---- | ---- | ---- | ---- | ---- | ---- | DP1822 XF | ---- |
| | ---- | DP1820 B3XF | DP1820 B3XF | DP1820 B3XF | DP1820 B3XF | DP1820 B3XF | DP1820 B3XF | ---- | DP1820 B3XF |
| | ---- | DP1908 B3XF | DP1908 B3XF | DP1908 B3XF | DP1908 B3XF | DP1908 B3XF | DP1908 B3XF | ---- | DP1908 B3XF |
| | DP1909 XF | ---- | ---- | ---- | ---- | ---- | ---- | DP1909 XF | ---- |
| | FM1320 GL | ---- | FM1320 GL | FM1320 GL | FM1320 GL | ---- | ---- | FM1320 GL | FM1320 GL |
| | FM1621 GL | ---- | FM1621 GL | FM1621 GL | FM1621 GL | ---- | ---- | FM1621 GL | FM1621 GL |
| | FM1888 GL | ---- | FM1888 GL | FM1888 GL | FM1888 GL | ---- | ---- | FM1888 GL | FM1888 GL |
| | FM2398 GLTP | ---- | FM2398 GLTP | FM2398 GLTP | FM2398 GLTP | ---- | ---- | FM2398 GLTP | FM2398 GLTP |
| | NG2982 B3XF | NG2982 B3XF | NG2982 B3XF | NG2982 B3XF | NG2982 B3XF | NG2982 B3XF | NG2982 B3XF | NG2982 B3XF | NG2982 B3XF |
| | NG3406 B2XF‡ | ---- | ---- | ---- | ---- | ---- | NG3406 B2XF | ---- | ---- |
| | NG3640 XF | NG3640 XF | NG3640 XF | NG3640 XF | NG3640 XF | ---- | NG3640 XF | NG3640 XF | NG3640 XF |
| | NG3930 B3XF | NG3930 B3XF | NG3930 B3XF | NG3930 B3XF | NG3930 B3XF | NG3930 B3XF | ---- | NG3930 B3XF | NG3930 B3XF |
| | NG3956 B3XF | NG3956 B3XF | NG3956 B3XF | NG3956 B3XF | NG3956B3XF | NG3956 B3XF | NG3956 B3XF | NG3956 B3XF | NG3956 B3XF |
| | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | Phy250 W3FE‡ |
| | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | Phy350 W3FE‡ |

**Table 2.** Characteristics of varieties evaluated in 2019 Panhandle RACE trials. All variety characteristics are obtained from company variety descriptions. Varieties represented are either entered by seed companies or requested by cooperating producers.

| Variety | Maturity | Herbicide Package | Leaf Type | Storm Tolerance* | Plant Height | Mic | Vert. | Bacterial Blight |
|---|---|---|---|---|---|---|---|---|
| CP3475 B2XF♮ | Early | Glyphos., Glufos., and Dicamba | Semi-Smooth | 3 | Medium | 4.5-4.8 | Good | Susceptible |
| DG3385 B2XF♮ | Early | Glyphos., Glufos., and Dicamba | Semi-Smooth | 7 | Medium | 4.3-4.7 | Good | NA |
| Deltapine1522 B2XF♮ | Early-Med | Glyphos., Glufos., and Dicamba | Light Hair | 5 | Medium | 4.3 | Susceptible | Susceptible |
| Deltapine1822 XF | Early-Med | Glyphos., Glufos., and Dicamba | Semi-Smooth | 3 | Med-Tall | 4.3 | Moderate | Resistant |
| Deltapine1820 B3XF | Early-Med | Glyphos., Glufos., and Dicamba | Semi-Smooth | 3.5 | Med-Tall | 4.1 | Moderate | Resistant |
| Deltapine1908 B3XF | Very Early-Early | Glyphos., Glufos., and Dicamba | Smooth | 4 | Med-Tall | 3.4 | Mod-Susceptible | Resistant |
| Deltapine1909 XF | Very Early-Early | Glyphos., Glufos., and Dicamba | Smooth | 5 | Med-Tall | 3.6 | Mod-Susceptible | Resistant |
| FiberMax 1320 GL | Very Early | Glyphosate and Glufosinate | Semi-Smooth | 7 | Short | 3.5 | Fair | Susceptible |
| FiberMax 1621 GL | Early | Glyphosate and Glufosinate | Semi-Hairy | 6 | Medium | 4.2 | Fair | Resistant |
| FiberMax 1888 GL | Early-Med | Glyphosate and Glufosinate | Semi-Smooth | 6 | Medium | 3.6 | Fair | Resistant |
| FiberMax 2398 GLTP | Medium | Glyphosate and Glufosinate | Semi-Smooth | 5 | Med-Tall | 4.4 | Very Good | Resistant |
| NexGen 2982 B3XF | Early | Glyphos., Glufos., and Dicamba | Semi-Smooth | 9 | Medium | 4.0-4.2 | Very Good | Resistant |
| NexGen 3406 B2XF♮ | Early-Med | Glyphos., Glufos., and Dicamba | Semi-Smooth | 6 | Medium | 4.4-4.6 | Good | Susceptible |
| NexGen 3640 XF | Early-Med | Glyphos., Glufos., and Dicamba | Smooth | 6 | Med-Tall | 4.4-4.8 | Very Good | Resistant |
| NexGen 3930 B3XF | Early-Med | Glyphos., Glufos., and Dicamba | Semi-Smooth | 7 | Med-Tall | 4.1-4.5 | Very Good | Resistant |
| NexGen 3956 B3XF | Early-Med | Glyphos., Glufos., and Dicamba | Semi-Smooth | 8 | Med-Tall | 4.3-4.7 | Very Good | Resistant |
| Phy250 W3FE♮ | Early | Glyphos., Glufos., and 2-4D | Smooth | 9 | Short | 4.1 | Excelent | Resistant |
| Phy350 W3FE♮ | Early-Med | Glyphos., Glufos., and 2-4D | Semi-Smooth | 8 | Med-Tall | 4.2 | Excelent | Resistant |

*Storm Tolerance (1-9): 1=Loose Boll, 9=Tight Boll from Company Variety Descriptions.

♮Variety included at the producer's request.

All variety descriptions, rankings and characteristics obtained from on-line seed company details.

**Table 3.** Four-week post planting stand counts by location.

| | Carson | Dallam | NPGCD (Early Irr.) | NPGCD (Late Irr.) | Sherman | Moore | Swisher |
|---|---|---|---|---|---|---|---|
| **Planted Seeds/Acre** | **35,000** | **45,000** | **66,000** | **66,000** | **55,000** | **54,000** | **50,000** |
| | **---- Measured plants/acre----** | | | | | | |
| CP3475 B2XF‡ | ----* | ---- | ---- | ---- | ---- | ---- | ---- |
| DG3385 B2XF‡ | ---- | ---- | 33,541 | 41,164 | 40,220 | ---- | ---- |
| DP1522 B2XF‡ | ---- | ---- | ---- | ---- | ---- | 15,754 | ---- |
| DP1822 XF | 17,860 | ---- | ---- | ---- | ---- | 17,134 | ---- |
| DP1820 B3XF | ---- | 35,864 | 25,483 | 31,363 | 36,155 | ---- | 38,228 |
| DP1908 B3XF | ---- | 34,848 | 40,075 | 38,551 | 36,300 | ---- | 38,555 |
| DP1909 XF | 16,698 | ---- | ---- | ---- | ---- | 11,761 | ---- |
| FM1320 GL | 20,038 | ---- | ---- | ---- | 42,108 | 13,213 | 38,990 |
| FM1621 GL | 18,150 | ---- | ---- | ---- | 40,075 | 10,600 | 34,307 |
| FM1888 GL | 23,522 | ---- | ---- | ---- | 43,705 | 21,344 | 40,515 |
| FM2398 GLTP | 19,021 | ---- | ---- | ---- | 37,897 | 12,778 | 39,535 |
| NG2982 B3XF | 23,377 | 38,768 | 38,986 | 40,075 | 47,045 | 22,361 | 40,951 |
| NG3406 B2XF‡ | 18,803 | ---- | ---- | ---- | ---- | ---- | ---- |
| NG3640 XF | 17,424 | 34,412 | ---- | ---- | 40,511 | 14,230 | 36,485 |
| NG3930 B3XF | 21,344 | 35,138 | 35,066 | 28,967 | 38,478 | 23,958 | 36,485 |
| NG3956 B3XF | 18,731 | 31,073 | 34,630 | 39,857 | 34,848 | 16,408 | 37,030 |
| Phy250 W3FE‡ | ---- | ---- | ---- | ---- | ---- | ---- | 38,663 |
| Phy350 W3FE‡ | ---- | ---- | ---- | ---- | ---- | ---- | 41,822 |
| **Trial Average** | **19,543** | **35,017** | **34,630** | **36,663** | **39,758** | **16,322** | **38,464** |
| CV, % | 28 | 11 | 18 | 20 | 41 | 41 | 13 |
| p-value | <0.0001 | 0.0004 | 0.0023 | 0.0042 | 0.0308 | <0.0001 | 0.2840 |
| LSD | 4,200 | 3,042 | 6,458 | 7,467 | NS | 9,427 | NS |

*Varieties not planted at the respective location.

‡Farmer entry

Carson and Moore County trials failed, but stand counds measured prior to crop termination.

**Table 4.** Four-week post planting stand counts as a fraction of the planted population.

| | Carson | Dallam | NPGCD (Early Irr.) | NPGCD (Late Irr.) | Sherman | Moore | Swisher | Average |
|---|---|---|---|---|---|---|---|---|
| **Planted Seeds/Acre** | **35,000** | **45,000** | **66,000** | **66,000** | **55,000** | **54,000** | **50,000** | **53,000** |
| | **---- plants/acre as a % of planted seed ----** | | | | | | | |
| CP3475 B2XF‡ | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| DG3385 B2XF‡ | ---- | ---- | 0.51 | 0.62 | 0.73 | ---- | ---- | 0.62 |
| DP1522 B2XF‡ | ---- | ---- | ---- | ---- | ---- | 0.29 | ---- | 0.29 |
| DP1822 XF | 0.51 | ---- | ---- | ---- | ---- | 0.32 | ---- | 0.41 |
| DP1820 B3XF | ---- | 0.80 | 0.39 | 0.48 | 0.66 | ---- | 0.76 | 0.62 |
| DP1908 B3XF | ---- | 0.77 | 0.61 | 0.58 | 0.66 | ---- | 0.77 | 0.68 |
| DP1909 XF | 0.48 | ---- | ---- | ---- | ---- | 0.22 | ---- | 0.35 |
| FM1320 GL | 0.57 | ---- | ---- | ---- | 0.77 | 0.24 | 0.78 | 0.59 |
| FM1621 GL | 0.52 | ---- | ---- | ---- | 0.73 | 0.20 | 0.69 | 0.53 |
| FM1888 GL | 0.67 | ---- | ---- | ---- | 0.79 | 0.40 | 0.81 | 0.67 |
| FM2398 GLTP | 0.54 | ---- | ---- | ---- | 0.69 | 0.24 | 0.79 | 0.56 |
| NG2982 B3XF | 0.67 | 0.86 | 0.59 | 0.61 | 0.86 | 0.41 | 0.82 | 0.69 |
| NG3406 B2XF‡ | 0.54 | ---- | ---- | ---- | ---- | ---- | ---- | 0.54 |
| NG3640 XF | 0.50 | 0.76 | ---- | ---- | 0.74 | 0.26 | 0.73 | 0.60 |
| NG3930 B3XF | 0.61 | 0.78 | 0.53 | 0.44 | 0.70 | 0.44 | 0.73 | 0.60 |
| NG3956 B3XF | 0.54 | 0.69 | 0.52 | 0.60 | 0.63 | 0.30 | 0.74 | 0.58 |
| Phy250 W3FE‡ | ---- | ---- | ---- | ---- | ---- | ---- | 0.77 | 0.77 |
| Phy350 W3FE‡ | ---- | ---- | ---- | ---- | ---- | ---- | 0.84 | 0.84 |
| **Trial Average** | **0.56** | **0.78** | **0.52** | **0.56** | **0.72** | **0.30** | **0.77** | **0.60** |

**Table 5.** 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots in Dallam County; Jay Willard Cooperator. Reported by maximum lint yield. Values significant at p<0.05.

| Variety | Seed Cotton Yield --- lb/acre --- | | Turnout --%-- | Lint Yield --- lb/acre --- | Seed Yield --- lb/acre --- | Micro-naire | Fiber Length (in.) | Unif. --%-- | Strength (g/tex) | CGRD | Leaf | Lint loan Value cents/lb | Lint Value --- $/acre --- | Seed Value --- $/acre --- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NG2982B3XF | 3860 | a | 0.27 | 1036 | 1788 | 2.9 | 1.15 | 82.5 | 35.0 | 41 | 2 | 48.83 | 505.83 | 122.71 |
| NG3930B3XF | 3424 | ab | 0.29 | 984 | 1604 | 2.7 | 1.17 | 81.6 | 31.2 | 41 | 2 | 45.33 | 447.29 | 116.63 |
| DP1908B3XF | 3508 | c | 0.28 | 964 | 1672 | 2.9 | 1.23 | 82.6 | 33.7 | 41 | 3 | 46.65 | 449.12 | 114.19 |
| NG3956B3XF | 3296 | ab | 0.29 | 946 | 1625 | 2.8 | 1.15 | 81.1 | 33.1 | 41 | 1 | 47.75 | 452.85 | 112.14 |
| DP1820B3XF | 2959 | bc | 0.31 | 911 | 1289 | 3.0 | 1.23 | 81.3 | 33.7 | 41 | 1 | 49.55 | 452.37 | 107.92 |
| NG3640XF | 2650 | b | 0.28 | 743 | 1240 | 3.2 | 1.13 | 81.6 | 34.0 | 41 | 1 | 50.95 | 379.16 | 88.03 |
| **Test Average** | **3283** | | **0.28** | **931** | **1536** | **2.9** | **1.2** | **81.8** | **33.5** | **41** | **1.8** | **48.18** | **447.77** | **110.27** |
| CV, % | 6.2 | | 3.9 | 7.3 | 5.8 | 9.2 | 1.9 | 1.0 | 2.5 | 5.9 | 38.7 | 6.9 | 11.7 | 7.3 |
| p-value | 0.0002 | | 0.0166 | 0.0035 | <0.0001 | 0.3915 | 0.0003 | 0.1653 | 0.0034 | NS | 0.0082 | 0.4102 | 0.1930 | <0.0001 |
| LSD | 360 | | 0.02 | 121 | 159 | NS | 0.04 | NS | 1.5 | NS | 1.5 | NS | NS | 14.30 |

**MeaNS within a column with the same letter are not significantly different at the 0.05 probability level.**

**CV - coefficient of variation.**

**Value for lint based on CCC loan value from grab samples and FBRI HVI results.**

**Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a $0.52/pound base.**

**Seed value calculated using $185/ton.**

**Table 6.** 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots on the Hansford-Sherman County line; Greg Slough Cooperator. Reported by maximum lint yield. Values significant at p<0.05.

| Variety | Seed Cotton Yield --- lb/acre --- | Turnout --%-- | Lint Yield --- lb/acre --- | Seed Yield --- lb/acre --- | Micro-naire | Fiber Length (in.) | Unif. --%-- | Strength (g/tex) | CGRD | Leaf | Lint loan Value cents/lb | Lint Value --- $/acre --- | Seed Value --- $/acre --- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FM1621 GL | 2343 a | 0.43 | 1000 | 1065 | 4.8 | 1.02 | 79.6 | 28.1 | 32 | 3 | 47.65 | 477.71 | 103.98 |
| DG3385 B2XF* | 2724 a | 0.35 | 964 | 1131 | 4.5 | 1.06 | 81.6 | 28.8 | 31 | 2 | 48.78 | 469.87 | 113.07 |
| NG3956 B3XF | 2842 a | 0.33 | 948 | 1279 | 4.6 | 1.06 | 81.1 | 29.8 | 26 | 1 | 49.05 | 465.17 | 116.65 |
| FM2398 GLTP | 2417 a | 0.39 | 941 | 1005 | 4.9 | 1.08 | 80.7 | 29.4 | 23 | 1 | 50.07 | 471.44 | 107.21 |
| NG2982 B3XF | 2730 a | 0.34 | 937 | 1178 | 4.4 | 1.06 | 81.3 | 30.4 | 39 | 4 | 49.98 | 471.02 | 100.49 |
| NG3930 B3XF | 2697 a | 0.34 | 922 | 1167 | 4.4 | 1.10 | 82.1 | 29.0 | 26 | 2 | 49.57 | 457.21 | 116.27 |
| DP1820 B3XF | 2493 a | 0.36 | 907 | 1005 | 4.6 | 1.13 | 81.1 | 32.7 | 26 | 1 | 50.57 | 458.65 | 113.07 |
| FM1888 GL | 2510 a | 0.35 | 882 | 1072 | 4.7 | 1.04 | 79.1 | 27.2 | 25 | 2 | 50.08 | 441.91 | 106.54 |
| NG3640 XF | 2622 a | 0.34 | 881 | 1163 | 4.7 | 1.05 | 81.6 | 30.7 | 30 | 2 | 47.78 | 419.75 | 117.83 |
| DP1908 B3XF | 2459 a | 0.33 | 813 | 1147 | 4.5 | 1.12 | 81.1 | 30.1 | 22 | 1 | 54.90 | 446.28 | 100.52 |
| FM1320 GL | 2336 a | 0.34 | 793 | 1040 | 4.7 | 1.02 | 79.6 | 28.9 | 29 | 2 | 49.83 | 395.35 | 114.72 |
| **Test Average** | **2561** | **0.36** | **908** | **1114** | **4.6** | **1.07** | **80.81** | **29.55** | **28.15** | **1.92** | **49.84** | **452.22** | **110.03** |
| CV, % | 9.4 | 9.8 | 10.9 | 10.3 | 3.2 | 1.5 | 0.9 | 3.6 | 6.6 | 9.1 | 2.5 | 3.3 | 10.3 |
| p-value | 0.1548 | 0.0586 | 0.4927 | 0.1587 | 0.0095 | <0.0001 | 0.0001 | 0.0002 | 0.0097 | 0.0419 | <0.0001 | 0.8400 | 0.1587 |
| LSD | NS | NS | NS | NS | 0.3 | 0.04 | 2.3 | 2.2 | 9.7 | 1.9 | 2.58 | NS | NS |

**MeaNS within a column with the same letter are not significantly different at the 0.05 probability level.**

**CV - coefficient of variation.**

**Value for lint based on CCC loan value from grab samples and FBRI HVI results.**

**Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a $0.52/pound base.**

**Seed value calculated using $185/ton.**

***Producer Entry**

**Table 7.** 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots located at the North Plains Groundwater Conservation District's Water Conservation Center where irrigation was initiated at pinhead square; Stan Spain cooperator. Reported by maximum lint yield. Values significant at p<0.05.

| Variety | Seed Cotton Yield --- lb/acre --- | | Turnout --%-- | Lint Yield --- lb/acre --- | Seed Yield --- lb/acre --- | Micro-naire | Fiber Length (in.) | Unif. --%-- | Strength (g/tex) | CGRD | Leaf | Lint loan Value cents/lb | Lint Value --- $/acre --- | Seed Value --- $/acre --- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NG2982 B3XF | 4191 | a | 0.34 | 1430 | 1778 | 4.1 | 1.14 | 82.2 | 33.5 | 42 | 6 | 48.00 | 687.93 | 177.78 |
| DG3385 B2XF* | 3991 | a | 0.36 | 1424 | 1761 | 4.0 | 1.19 | 83.8 | 32.1 | 23 | 1 | 51.15 | 728.35 | 176.14 |
| DP1908 B3XF | 3860 | a | 0.35 | 1333 | 1675 | 4.4 | 1.24 | 84.4 | 33.5 | 32 | 3 | 54.18 | 720.90 | 167.52 |
| NG3930 B3XF | 3879 | a | 0.33 | 1284 | 1681 | 4.0 | 1.19 | 84.2 | 31.3 | 23 | 2 | 51.13 | 656.47 | 168.06 |
| DP1820 B3XF | 3641 | a | 0.34 | 1256 | 1438 | 4.1 | 1.24 | 83.5 | 34.6 | 28 | 3 | 50.63 | 636.04 | 143.75 |
| NG3956 B3XF | 3843 | a | 0.30 | 1171 | 1712 | 4.0 | 1.19 | 82.6 | 32.5 | 28 | 3 | 50.50 | 591.12 | 171.18 |
| **Test Average** | **3901** | | **0.34** | **1316** | **1674** | **4.1** | **1.19** | **83.4** | **32.9** | **29** | **3** | **50.93** | **670.13** | **167.41** |
| CV, % | 5.3 | | 5.7 | 6.9 | 4.7 | 3.6 | 3.2 | 0.9 | 1.9 | 23.0 | 62.8 | 2.6 | 7.4 | 4.7 |
| p-value | 0.3076 | | 0.2412 | 0.1540 | 0.0396 | 0.4297 | 0.0305 | 0.1249 | 0.0015 | 0.1922 | 0.2450 | 0.0485 | 0.1755 | 0.0396 |
| LSD | NS | | NS | NS | 193 | NS | 0.05 | NS | 1.5 | NS | NS | NS | NS | NS |

**MeaNS within a column with the same letter are not significantly different at the 0.05 probability level.**

**CV - coefficient of variation.**

**Value for lint based on CCC loan value from grab samples and FBRI HVI results.**

**Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a $0.52/pound base.**

**Seed value calculated using $185/ton.**

***Producer Entry**

**Table 8.** 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots located at the North Plains Groundwater Conservation District's Water Conservation Center where irrigation was initiated at peak bloom; Stan Spain cooperator. Reported by maximum lint yield. Values significant at p<0.05.

| Variety | Seed Cotton Yield --- lb/acre --- | Turnout --%-- | Lint Yield --- lb/acre --- | Seed Yield --- lb/acre --- | Micro-naire | Fiber Length (in.) | Unif. --%-- | Strength (g/tex) | CGRD | Leaf | Lint loan Value cents/lb | Lint Value --- $/acre --- | Seed Value --- $/acre --- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP1908 B3XF | 3550 a | 0.37 | 1319 | 1504 | 4.6 | 1.20 | 82.7 | 32.1 | 27 | 3 | 54.90 | 727.25 | 150.44 |
| DP1820 B3XF | 3616 a | 0.34 | 1240 | 1446 | 4.2 | 1.25 | 83.4 | 34.7 | 34 | 1 | 49.55 | 614.68 | 144.60 |
| DG3385 B2XF* | 3408 a | 0.35 | 1192 | 1485 | 4.3 | 1.17 | 83.8 | 32.1 | 33 | 2 | 50.30 | 599.81 | 148.48 |
| NG3956 B3XF | 3550 a | 0.31 | 1115 | 1590 | 4.3 | 1.17 | 83.1 | 34.5 | 28 | 3 | 50.53 | 563.42 | 159.01 |
| NG3930 B3XF | 3323 a | 0.32 | 1077 | 1441 | 4.0 | 1.20 | 84.0 | 32.1 | 23 | 3 | 50.80 | 546.87 | 144.05 |
| NG2982 B3XF | 3235 a | 0.31 | 1007 | 1385 | 4.3 | 1.15 | 83.6 | 33.0 | 42 | 6 | 49.53 | 500.49 | 138.51 |
| **Test Average** | **3447** | **0.34** | **1158** | **1475** | **4.3** | **1.19** | **83.4** | **33.1** | **31** | **3** | **50.93** | **592.09** | **147.52** |
| CV, % | 4.5 | 8.5 | 10.1 | 5.1 | 2.5 | 1.5 | 0.6 | 2.0 | 13.9 | 45.4 | 4.1 | 29.1 | 4.7 |
| p-value | 0.2359 | 0.3580 | 0.2247 | 0.2672 | 0.0195 | 0.0132 | 0.2531 | 0.0162 | 0.0452 | 0.0920 | 0.2408 | 0.2745 | 0.0396 |
| LSD | NS | NS | NS | NS | 0.3 | 0.04 | NS | 1.6 | 11 | NS | NS | NS | 10.68 |

**MeaNS within a column with the same letter are not significantly different at the 0.05 probability level.**

**CV - coefficient of variation.**

**Value for lint based on CCC loan value from grab samples and FBRI HVI results.**

**Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a $0.52/pound base.**

**Seed value calculated using $185/ton.**

***Producer Entry**

The RACE trials at the North Plains Groundwater Conservation District's (NPGCD) Water Conservation Center (WCC) were duplicated to evaluate the timing of irrigation initiation on variety performance. Irrigation timing simulated two common irrigation scenarios: 1) early irrigation initated at pinhead square simulating where irrigation water is dedicated to a cotton crop, and 2) late irrigation initiated at full bloom simulating where irrigation would be shared with a corn crop. Initiating irrigation at full bloom allows the producer to concentrate irrigation resources on the corn crop during tasseling then move irrigation to the cotton crop. In 2019, all plots received 0.65 inches on June 27 when cotton was approximately 2-4 nodes. The irrigation treatment at pinhead square was initiated on July 9, and the irrigation treatment at peak bloom was initiated on August 6. Seasonal irrigation totals were 8 and 4.7 inches for irrigation the pinhead and peak bloom treatments, respectivitely. Soil moisture was monitored with gypsum blocks. Soil moisture remained greater then 90% of field capacity in June during early vegetative development. Although the trial lint yield average was 158 lbs/acre less when initiating irrigation later in the season at peak bloom, yield data reveals significant variety responses responses by maturity (Fig. 3). First year data suggests that the evaluated early maturing varieties are more susceptible to yield losses from water stress at early season reproductive stages than the evaluated early-med varieties. Because earlier varieties are often more determinant, they may not have the ability to flex with favorable growing conditions later in the growing season like the early-med maturity varieites. Micronaire values were greater for all varieties except NG3930 B3XF when irrigation was initiated at peak bloom due to a concentration of resources with the reduced boll load; however, micronaire values were still within premium quality standards.

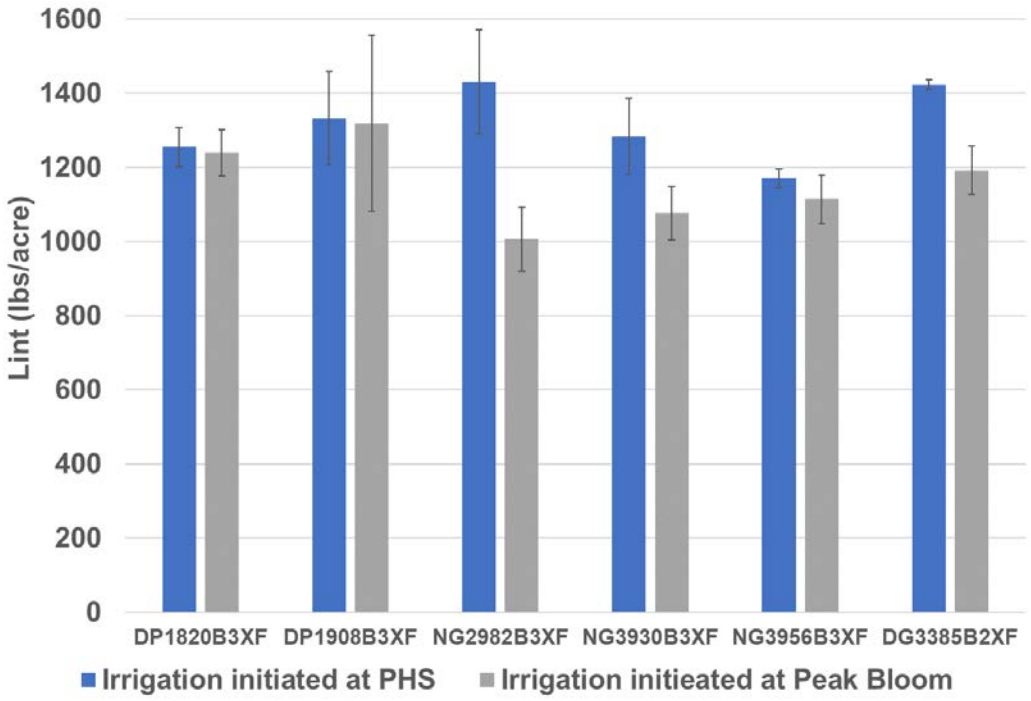


**Figure 3.** Comparison of lint yield between irrigation initiated two different development periods (pinhead square (PHS) and peak bloom) in the Texas A&M AgriLife RACE trials at the North Plains Ground Water Conservation District's Water Conservation Center.

**Table 9.** 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots in Parmer County; Tony Beauchamp cooperator. Reported by maximum lint yield. Values significant at p<0.05.

| Variety | Seed Cotton Yield --- lb/acre --- | Turnout --%-- | Lint Yield --- lb/acre --- | Seed Yield --- lb/acre --- | Micro-naire | Fiber Length (in.) | Unif. --%-- | Strength (g/tex) | CGRD | Leaf | Lint loan Value cents/lb | Lint Value --- $/acre --- | Seed Value --- $/acre --- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NG3956 B3XF | 4145 a | 0.32 | 1313 | 1909 | 4.8 | 1.17 | 83.0 | 32.2 | 35 | 4 | 51.80 | 679.83 | 190.91 |
| CP3475 B2XF* | 4175 a | 0.31 | 1310 | 1876 | 4.7 | 1.17 | 82.8 | 32.7 | 32 | 4 | 52.30 | 684.91 | 187.57 |
| DP1820 B3XF | 4055 a | 0.31 | 1279 | 1719 | 4.8 | 1.23 | 82.5 | 34.7 | 32 | 3 | 54.47 | 696.44 | 171.93 |
| DP1908 B3XF | 4199 a | 0.30 | 1255 | 1913 | 4.8 | 1.19 | 82.0 | 32.4 | 31 | 4 | 54.42 | 680.05 | 191.26 |
| NG3406 B2XF | 3993 a | 0.31 | 1251 | 1786 | 4.8 | 1.16 | 82.5 | 32.5 | 32 | 3 | 52.97 | 662.53 | 178.63 |
| NG2982 B3XF | 3827 a | 0.32 | 1209 | 1734 | 4.8 | 1.19 | 82.6 | 32.5 | 32 | 3 | 54.75 | 659.39 | 173.42 |
| NG3640 XF | 3929 a | 0.29 | 1141 | 1728 | 4.8 | 1.17 | 82.7 | 35.2 | 32 | 3 | 52.37 | 598.91 | 172.77 |
| **Test Average** | **4046** | **0.31** | **1251** | **1809** | **4.79** | **1.18** | **82.6** | **33.2** | **32** | **3** | **53.30** | **666.01** | **180.93** |
| CV, % | 12.4 | 5.2 | 15.9 | 5.6 | 2.3 | 2.6 | 10.9 | 3.9 | 6.4 | 8.7 | 8.6 | 4.5 | 5.6 |
| p-value | 0.5621 | 0.2943 | 0.6508 | 0.5888 | 0.7850 | 0.1156 | 0.7712 | 0.0781 | 0.6612 | 0.4581 | 0.6127 | 0.5708 | 0.5880 |
| LSD | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |

**MeaNS within a column with the same letter are not significantly different at the 0.05 probability level.**

**CV - coefficient of variation.**

**Value for lint based on CCC loan value from grab samples and FBRI HVI results.**

**Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a $0.52/pound base.**

**Seed value calculated using $185/ton.**

***Producer Entry**

**Table 10.** 2019 Lint yield, quality, and value results from the Texas A&M AgriLife RACE Plots in Swisher County; Jeremy Reed cooperator. Swisher County trial planted on 40-inch rows. Reported by maximum lint yield. Values significant at p<0.05.

| Variety | Seed Cotton Yield --- lb/acre --- | Turnout --%-- | Lint Yield --- lb/acre --- | Seed Yield --- lb/acre --- | Micro-naire | Fiber Length (in.) | Unif. --%-- | Strength (g/tex) | CGRD | Leaf | Lint loan Value cents/lb | Lint Value --- $/acre --- | Seed Value --- $/acre --- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FM1621 GL | 3223 a | 0.34 | 1082 | 1206 | 5.1 | 1.06 | 80.9 | 31.2 | 38 | 4 | 50.38 | 545.46 | 128.21 |
| Phy350 W3FE | 3476 a | 0.30 | 1051 | 1400 | 4.9 | 1.10 | 81.9 | 30.5 | 25 | 2 | 51.60 | 542.48 | 124.48 |
| DP1820B3XF | 3201 ab | 0.32 | 1026 | 1213 | 4.9 | 1.12 | 81.0 | 31.9 | 22 | 1 | 55.22 | 565.67 | 121.55 |
| FM1888GL | 3090 ab | 0.31 | 962 | 1216 | 5.0 | 1.08 | 81.5 | 30.3 | 31 | 3 | 52.82 | 508.10 | 114.01 |
| FM2398GLTP | 2678 b | 0.35 | 940 | 1026 | 5.4 | 1.09 | 82.1 | 30.3 | 21 | 2 | 49.88 | 469.10 | 111.40 |
| NG3930B3XF | 2934 ab | 0.32 | 937 | 1242 | 4.6 | 1.11 | 83.1 | 30.4 | 25 | 3 | 53.90 | 505.14 | 111.08 |
| FM1320GL | 3004 ab | 0.31 | 921 | 1230 | 5.0 | 1.05 | 80.7 | 30.0 | 28 | 2 | 51.78 | 477.00 | 109.08 |
| NG3956B3XF | 2982 ab | 0.30 | 908 | 1278 | 4.9 | 1.08 | 81.4 | 29.2 | 29 | 3 | 50.87 | 462.14 | 107.57 |
| NG3640XF | 2894 ab | 0.30 | 873 | 1203 | 5.2 | 1.05 | 81.6 | 33.2 | 29 | 2 | 49.27 | 431.65 | 103.47 |
| NG2982B3XF | 3148 ab | 0.28 | 871 | 1240 | 4.5 | 1.06 | 81.4 | 31.9 | 48 | 6 | 46.67 | 407.32 | 103.17 |
| DP1908B3XF | 2874 ab | 0.30 | 851 | 1213 | 4.6 | 1.15 | 81.9 | 32.0 | 28 | 3 | 56.28 | 478.84 | 100.83 |
| Phy250W3FE | 2798 ab | 0.31 | 787 | 1014 | 4.9 | 1.10 | 81.4 | 30.1 | 31 | 3 | 53.20 | 419.44 | 93.29 |
| **Test Average** | **3025** | **0.31** | **934** | **1207** | **4.9** | **1.09** | **81.6** | **30.9** | **30** | **3** | **51.82** | **484.36** | **110.68** |
| CV, % | 10.6 | 2.7 | 9.4 | 9.0 | 3.8 | 1.7 | 0.9 | 2.7 | 5.6 | 2.1 | 2.5 | 10.4 | 9.9 |
| p-value | 0.0420 | <0.0001 | 0.0136 | 0.0454 | 0.0002 | <0.0001 | 0.0353 | 0.0003 | <0.0001 | 0.0004 | <0.0001 | 0.0151 | 0.0284 |
| LSD | 540 | 0.04 | 147 | 211 | 0.3 | 0.04 | 1.5 | 1.7 | 9.5 | 1.9 | 2.70 | 74.06 | 6.70 |

**MeaNS within a column with the same letter are not significantly different at the 0.05 probability level.**

**CV - coefficient of variation.**

**Value for lint based on CCC loan value from grab samples and FBRI HVI results.**

**Lint loan value calculated from the 2019 Upland Cotton Loan Valuation Model from Cotton Incorporated using a $0.52/pound base.**

**Seed value calculated using $185/ton.**

***Producer Entry**

**Bloom Tagging**
Jourdan Bell and Mike Bragg

In response to producer questions about bloom drop and the percent of blooms being retained as harvestable bolls, Bell and Bragg tagged first day/white blooms in NG2982 B3XF at the Dallam and Moore-NPGCD WCC locations. At the WCC, bloom tagging occurred in the early irrigation treatment (irrigation initiated at PHS). The Dallam county location was a deficit irrigated location where 3.5" of irrigation was applied throughout the growing season. At both locations, blooms and candles were tagged every two days from August 8 through August 20 with candles representing the next days bloom. August 20 was chosen as the last tagging date as this date is commonly believed to be the last effective bloom date for the Texas Panhandle cotton production region. By mid-August, bloom shed at both locations exceeded 60%. At the Dallam County trial, it is likely mid-August fluctuations were in response to mid-August precipitation events, but a similar recovery was not observed at the NPGCD WCC even though precipitation and temperatures were similar during this period. Insect pressure and/or injury that would enhance bloom drop was not observed at either location. Overall, there was a steady decline in boll retention over the 13 day evaluation period. It was observed that primary bloom loss was from second and third positions. Bloom tagging evaluations will be continued in 2020 (with tagging being initiated earler) to capture variations in bloom retention in response to environmental conditions.

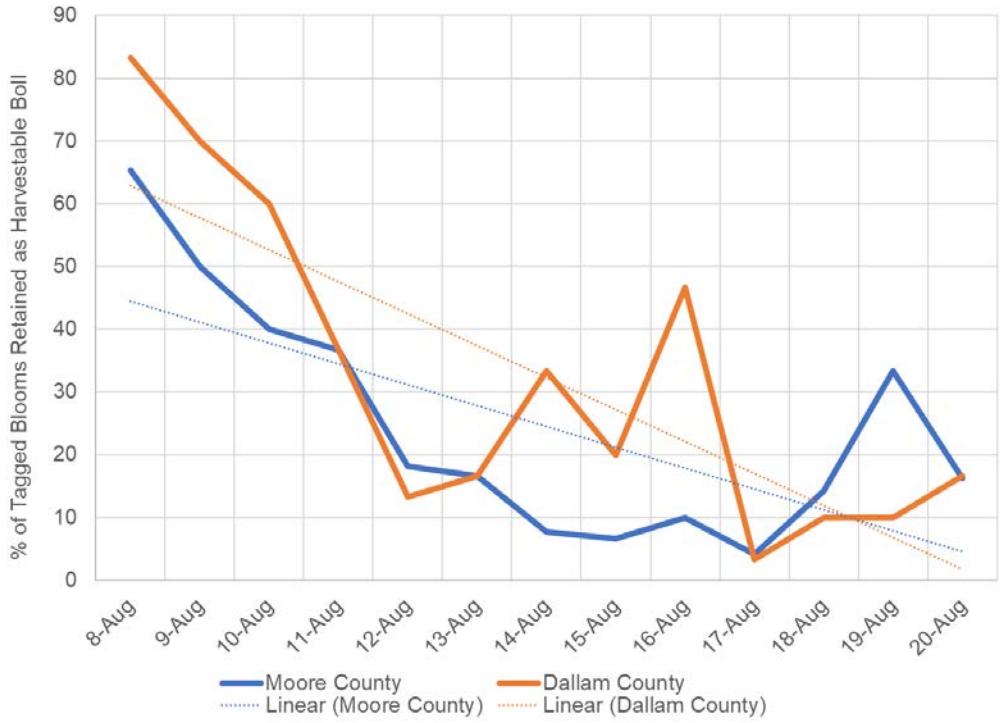


**Figure 4.** Bloom retention in NG2982 B3XF at Texas A&M AgriLife RACE trials located at Dallam County and NPGCD WCC.

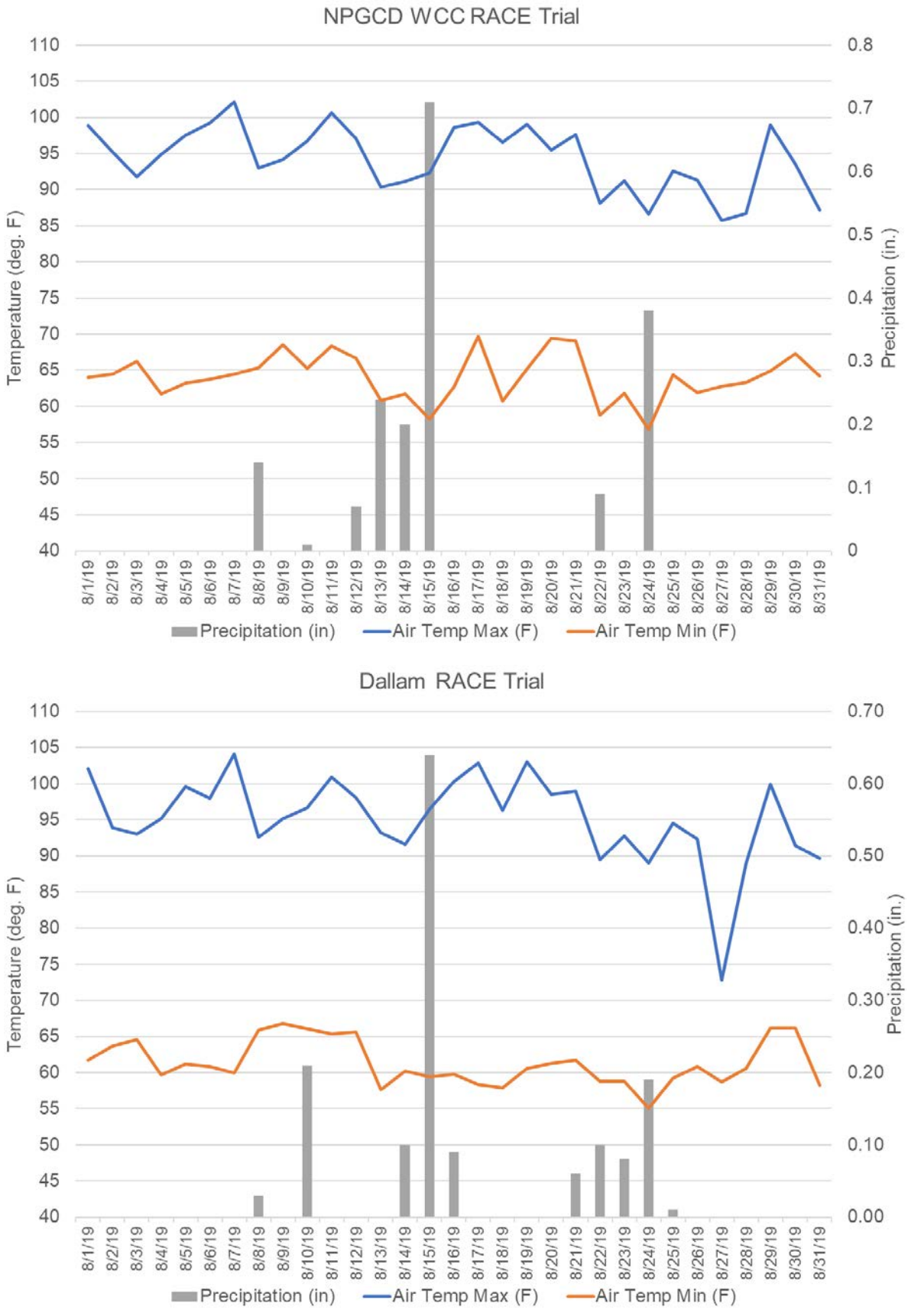


**Figure 5.** Daily maximum and minimum temperatures and precipitation at Texas A&M AgriLife RACE trials located at Dallam County and NPGCD WCC in August 2019 during the bloom evaluation period.

Texas A&M AgriLife collaborated with North Plains Groundwater Conservation District to provide weekly video updates rotating between RACE trials within District boundaries. The weekly video series, Cotton and Conservation, provided NPGCD cotton producers real-time agronomic updates under the respective environmental and management systems. Videos are available at: http://northplainsgcd.org/conservationprograms/agricultural-conservation/cotton/

**Acknowledgements**

We wish to express our appreciation to the cooperators for making the RACE trials possible. They generously provide use of land, assistance and equipment for planting and harvesting. We thank Dr. Jane Dever and Ms. Valerie Morgan (Texas A&M AgriLife Research) for the use of the ginning facilities and the Texas Tech University Fiber and Biopolymer Research Institute for HVI fiber quality analyses. We sincerely thank seed companies (Americot, Bayer, and BASF) for entering top cotton varieties positioned for the Texas Panhandle. We appreciate Plains Cotton Grower's Plains Cotton Improvement Programs for supporting Texas Panhandle cotton activities. We appreciate the assistance of Texas A&M AgriLife student employees; Layney Miller, Shelby Lain and Mattie Brooks.


http://cotton.tamu.edu