2018 TEXAS UPPER GULF COAST REPLICATED AGRONOMIC COTTON EVALUATION (RACE) - TRIAL SUMMARY

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Abstract

Texas A&M AgriLife Extension Service conducts over 20 large-plot replicated cotton variety trials across the southern, eastern and central portions of Texas each year. The objective of these trials are to compare yield and lint quality of multi-gene cotton cultivars from the major seed suppliers, grown in large plot, replicated trials on producer-cooperator fields across this region. Because of the various environmental conditions and site locations that these trials are conducted annually, these trials produce a wealth of data on variety performance. These variety results are made available to local producers throughout these regions of the state. Due to limited space and adverse impact of weather on late harvested trials, a summary of 4 county cotton variety trials conducted in 2018 across the Upper Coastal Bend Region of Texas will be summarized. All the trial sites are replicated multiple times per location, with plot sizes exceeding 0.25 acres. These trials are managed by the producer/cooperator and thus represent true, on-farm management practices.

Introduction

Cultivar selection is the most important decision made by the cotton (*Gossypium hirsutum* L.) grower; however, with the proliferation of transgenic technology, new seed treatments for both early season insects and disease management, and new genetics, cultivar selection has become even more critical, and one of the most expensive inputs of the production enterprise. Unlike herbicide or insecticide decisions that can be changed during the season to address specific conditions and pests, cultivar selection is made only once and that selection dictates field management for the entire season.

Because of the ever rapid increasing rate in introduction of new cultivars/technologies into the marketplace, growers and practitioners are forced to make cultivar selection decisions with even less information than ever. In most cases, decisions are based upon single-year information from academic/public sources, and sometimes the only information available is derived from seed company reports. Due to the rapid turnover of cultivars (three to four year life-cycle), multiple-year testing has virtually become a “thing-of-the-past.”

Consequently, these on-farm, large-plot cultivar testing program have been developed by Texas A&M AgriLife Extension cotton agronomists with the goal of providing growers and practitioners with information necessary in making cultivar decisions. Agronomic management of weed, insect and plant growth regulator use and harvest operations will not be reflective of the commercial.

Texas producers planted 7.4 million acres in 2018 which is the 4 year of increase in cotton acres. In the Lower Rio Grande Valley, Coastal Bend and Blackland Regions of Texas, 1.2 million acres of cotton was planted in 2018, which has been steadily increasing onto new cotton acres. Transgenic varieties accounted for over 99.75% of the state acreage in 2018. According to the USDA-Agricultural Marketing Service “Cotton Varieties Planted 2018 Crop” survey for Texas, the percent market of each of these varieties were as follows: DP 1646 B2XF – 10.7%, PHY 330 W3FE – 2.4 %, DP 1845 B3XF – 2.0%, NG 5711 B3XF – 0.9%, ST 4848 GLT – 0.4% and FM 2498

GLT, PHY 480W3FE, NG 4777 B2XF and ST 5471 GLTP each accounted for no more than 0.3% share of the Texas market.

The objective of this project is to compare yield and lint quality of stacked-gene cotton cultivars grown in large plot replicated trials on producer-cooperator fields in the Upper Coastal Bend region of Texas.

Materials and Methods

Up to twelve cultivars were planted at each location and cultivar selections were determined with input from grower cooperators/committees, Extension faculty, and seed industry representatives. Only the ten varieties, that were common in each of the five locations, were used for the analysis of this poster. Variety entries consisted of Bollgard 2 & 3 XtendFlex, WideStrike 3/Enlist, or Glytol TwinLink/TwinLink Plus varieties the Matagorda-Reed and Wharton-2 locations were irrigated.
Plot size was as big as 1.3 acres in size, depending upon the location. Studies were arranged in a randomized complete block design with three replications (Table 1). All trials were machine harvested with commercial pickers. Plot weights were determined using a weighing boll buggy equipped with electronic scales or platform scale, depending on type of picker. Sub-samples from each plot were ginned on a Continental 20 saw gin with no lint cleaner (which produces a higher lint turnout percent than a commercial gin). Consequently, higher turnouts equate to lint yields which were generally higher than area-wide commercial yields. Lint quality was quantified by a high volume instrument (HVI) at the Fiber and Biopolymer Research Institute at Lubbock, Texas. Additionally, all data were standardized to a color grade and leaf of 41 – 4. Lint value per pound was calculated using Cotton Incorporated's 2018 Cotton Loan Calculator. Statistical analysis of data were conducted using ARM, using LSD (P=0.10).

Table 1. Trial location, cooperator, planting date, harvest date, row spacing, plot dimensions and area of 2018 Texas A&M AgriLife Extension Service RACE Trials.

County	Cooperator	Planting Date	Harvest Date	Row Spacing (inches)	Plot Dimensions	Irrigated or Dryland	Per plot Area harvested
Calhoun	Danny May	Apr 11	Aug 27	38	2 rows x 32 ft	Dryland	0.002
Matagorda-Hansen	Hansen Farms	Apr 5	Aug 25	40	6 rows x 1378 ft	Dryland	0.7
Matagorda-Reed	Robbie Reed	Mar 23	Aug 20	38	12 rows x 1500 ft	Irrigated	1.3
Wharton-1	Michael Beard	Mar 22	Aug 21	40	6 rows x 1100 ft	Dryland	0.5
Wharton-2	Michael Beard	Apr 3	Sep 2	40	6 rows x 1930 ft	Irrigated	0.9

Results and Discussion

Mean variety yield across all locations ranged from 1578 to 1281 lbs/ac for PHY 480 W3FE and NG 4777 B2XF, respectively (Table 2). Overall mean yield of all varieties across all five locations was 1449 lbs/ac. Mean turnout for each variety across all locations ranged from 41.0 to 45.7 for NG 4777 B2XF and PHY 330 W3FE, respectively. Loan value ranged from 51.66 to 54.64 cents/lb for FM 2498 GLT and DP 1845 B3XF, respectively. Mean lint value for each variety across all locations ranged from $861 to $692 per ac for PHY 480 W3FE and NG 4777 B2XF, respectively. Mean location yields ranged from 1591 to 1228 lbs/ac for the Wharton-2 and Calhoun Co RACE trials, respectively (Tables 3-7).

Table 2. Multi-county summary of mean yields, percent lint turnout, loan value and lint value of RACE Trials, for Calhoun, Jackson, Matagorda- Hansen, Matagorda-Reed, Wharton-1 and Wharton-2, 2018.

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
PHY 480 W3FE	1578	44.4	54.55	861
DP 1646 B2XF	1571	45.5	54.39	854
PHY 330 W3FE	1496	45.7	54.42	814
ST 5471GLTP	1438	42.8	54.27	780
ST 4848 GLT	1444	45.1	53.86	777
NG 5711 B3XF	1417	44.1	54.47	772
DG 3385 B2XF	1466	44.1	52.52	769
DP 1845 B3XF	1366	44.6	54.64	746
FM 2498 GLT	1437	44.2	51.66	741
NG 4777 B2XF	1281	41.0	54.04	692
Mean	1449	44.1	53.88	781

Table 3. Mean lint yields, percent lint turnout, loan value and lint value from Calhoun County RACE Trial, 2018.

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
PHY 480 W3FE	1465	44.5	54.53	799
DP 1646 B2XF	1420	45.7	54.35	772
DG 3385 B2XF	1285	43.8	53.55	687
ST 5471 GLTP	1259	42.8	54.37	685
FM 2498 GLT	1278	45.5	52.78	673
NG 5711 B3XF	1206	44.1	54.43	656
PHY 330 W3FE	1163	44.5	54.08	628
NG 4777 B2XF	1140	41.2	54.07	616
ST 4848 GLT	1039	45.4	53.88	560
DP 1845 B3XF	1026	44.6	54.53	559
Mean	1228	44.2	54.06	664

Table 4. Mean lint yields, percent lint turnout, loan value and lint value from Matagorda-Hansen County RACE Trial, 2018

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
DP 1646 B2XF	1562	46.0	54.53	852
PHY 330 W3FE	1478	46.7	54.57	806
ST 4848 GLT	1478	46.4	54.25	802
PHY 480 W3FE	1445	45.5	54.45	787
NG 5711 B3XF	1443	45.6	54.50	786
DG 3385 B2XF	1430	44.8	53.73	769
DP 1845 B3XF	1396	46.0	54.72	764
ST 5471 GLTP	1361	43.4	54.25	739
NG 4777 B2XF	1309	41.7	54.55	714
FM 2498 GLT	1341	45.0	51.72	694
Mean	1424	45.1	54.13	771

Table 5. Mean lint yields, percent lint turnout, loan value and lint value from Matagorda-Hansen County RACE Trial, 2018

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
PHY 480 W3FE	1576	43.8	54.68	862
DP 1646 B2XF	1541	45.2	54.62	842
ST 5471 GLTP	1539	42.1	53.78	828
ST 4848 GLT	1494	44.5	54.30	811
DP 1845 B3XF	1469	44.3	54.75	804
PHY 330 W3FE	1466	46.5	54.62	800
NG 5711 B3XF	1465	43.6	54.52	798
FM 2498 GLT	1512	44.1	50.97	770
DG 3385 B2XF	1461	44.7	52.27	764
NG 4777 B2XF	1178	41.6	54.35	640
Mean	1470	44.0	53.89	792

Table 6. Mean lint yields, percent lint turnout, loan value and lint value from Wharton-1 County RACE Trial, 2018.

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
PHY 480 W3FE	1785	45.5	54.48	973
DP 1646 B2XF	1706	46.0	54.27	926
PHY 330 W3FE	1669	46.1	54.28	906
ST 5471 GLTP	1567	43.4	54.53	855
ST 4848 GLT	1622	45.6	52.35	849
FM 2498 GLT	1579	44.0	51.77	818
NG 5711 B3XF	1496	44.8	54.43	814
DG 3385 B2XF	1592	44.6	50.93	811
DP 1845 B3XF	1483	44.9	54.55	809
NG 4777 B2XF	1407	41.5	52.78	743
Mean	1591	44.6	53.44	850

Table 7. Mean lint yields, percent lint turnout, loan value and lint value from Wharton-2 County RACE Trial, 2018.

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
PHY 330 W3FE	1706	44.6	54.53	931
PHY 480 W3FE	1616	42.7	54.60	883
DP 1646 B2XF	1628	44.9	54.17	881
ST 4848 GLT	1585	43.4	54.52	864
DG 3385 B2XF	1561	42.4	52.10	813
NG 5711 B3XF	1476	42.4	54.47	804
ST 5471 GLTP	1464	42.3	54.43	797
DP 1845 B3XF	1456	43.2	54.65	796
FM 2498 GLT	1474	42.6	51.08	753
NG 4777 B2XF	1371	38.8	54.47	747
Mean	1534	42.7	53.90	827

Summary

The information in this poster represents only 5 of the over 25 different Replicated Agronomic Cotton Evaluations (RACE) trials that were planted in South and East-Central Texas in 2018 by Texas A&M AgriLife Extension Service.

In general, mean yields of these five trials were good in 2018 when compared to the previous year in the Upper Gulf Coast. Rainfall varied considerably across the region in 2018 and some areas received excessive and extended periods of wet/cloudy conditions during the fruiting period which caused various amounts of fruit shed between locations and thus has considerable and variable effects on overall yield and per acre lint value. The data generated from these RACE trials and other similar trials throughout the state, provide growers with updated information on many of the most marketed cotton varieties and technologies commercially available to them for 2019 and beyond.

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