2016 TEXAS UPPER GULF COAST REPLICATED AGRONOMIC COTTON EVALUATION (RACE) - TRIAL SUMMARY

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Abstract

Texas AgriLife Extension Service conducts over 15 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 stacked-gene Bollgard II and Widestrike, Roundup Ready Flex and Extend Flex cultivars 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, a summary of 4-5 county cotton variety trials conducted in 2016 across the Upper Coastal Bend Region of Texas will be summarized. All the trial sites have three replicates 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.) producer; 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 5.7 million acres of cotton in 2016, which was about 0.5 million acres more than 2015. In the Lower Rio Grande Valley, Coastal Bend and Blackland Regions of Texas, 723,000 acres of cotton was planted in 2016, which was over 0.3 million acres less than 2015. Transgenic varieties accounted for over 99.75% of the state acreage in 2016. According to the USDA-Agricultural Marketing Service “Cotton Varieties Planted 2016 Crop” survey, the estimated percentage of upland cotton planted to specific Brands in Texas are as follows: Alltex/DynaGro had 8.1%, Americot/NexGen had 33.1%, Bayer CropScience – FiberMax had 26.1%, Bayer CropScience – Stoneville had 6.7%, Croplan Genetics had 0.2%, Delta Pine had 16.8%, and Phytogen had 8.4%.

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

Ten cultivars were planted at each of the trial locations. Cultivar selection was determined with input from grower cooperators/committees, Extension faculty, and seed industry representatives. Variety entries consisted of Bollgard II, WideStrike, or TwinLink varieties with tolerance to glyphosate, glufosinate and/or dicamba herbicides. The Fort Bend county location was irrigated.

Plot dimensions ranged from 0.65 to 2.05 acres in size, depending upon the location. Studies were arranged in a randomized complete block design with three replications (Table 1). Yield data from all trials consisted of 3 reps, except Fort Bend County which ended up with only two replications. All trials were machine harvested with commercial pickers. Plot weights were determined using either a weighing boll buggy in Wharton Co for basket style picker harvest or a flat weigh trailer for the round-bale style pickers, each equipped with integral electronic scales. Sub-samples from each plot were ginned on a Continental 10 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 Texas Tech University in 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 2016 Cotton Loan Calculator. Statistical analysis of data was conducted using Agricultural Research Manager 8, using LSD (P=0.05).

Table 1. Trial location, cooperator, planting date, harvest date, row spacing, plot dimensions and area of 2016 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
Jackson	Sappington Farms	Mar 29	Sept 16	38	12 rows x 2350 ft	Dryland	2.05
Matagorda	Hansen Farms	Mar 31	Oct 11	40	6 rows x 2150 ft	Dryland	0.98
Wharton	Kresta Farms	Apr 2	Sept 27	40	6 rows x 1378 ft	Dryland	0.65
Fort Bend	Alan and Lisa Stasney	Apr 5	Oct 5	36	12 rows x 1330 ft	Irrigated	1.1
Colorado	Mahalitc Farms	Apr 7	Sept 16	36	12 rows x 1600 ft	Irrigated	1.3

Results and Discussion

All data in Tables 2-7 were sorted on Yield (lint) (lbs/ac). The Jackson Co trial was the earliest planted, March 29 and the Matagorda Co trial was the last to be harvested, Oct 11. Mean variety yield across all locations ranged from 954 to 857 lbs/ac for DP 1646 B2XF and FM 2007 GLT, respectively (Table 2). Overall mean yield of all varieties across all five locations was 915 lbs/ac. Mean turnout for each variety across all locations ranged from 47.3 to 43.3 for ST 6182 GLT and both FM 2007 GLT, respectively. Loan value ranged from 53.97 to 51.72 cents/lb for FM 2007GLT and CL 3885 B2XF, respectively. Mean lint value for each variety across all locations ranged from $554 to $470 per ac for DP 1646 B2XF and NG 5007 B2XF, respectively.

For individual trials, mean location yields ranged from 1040 to 691 lbs/ac for the Colorado and Wharton Co RACE trials, respectively (Tables 3-7). Mean turnout per location ranged from 48.2 to 43.5 for Fort Bend and Colorado counties, respectively. Mean loan value per location ranged from 54.32 to 51.77 cents per lb for Jackson and Fort Bend counties, respectively. Mean dollars per acre lint value ranged from $564 to $360 for Colorado and Wharton counties, respectively.

Table 2. Multi-county summary of mean yields, percent lint turnout, loan value and lint value of RACE Trials, for Jackson, Matagorda, Wharton, Fort Bend and Colorado Counties, 2016.

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
DP 1646 B2XF	954	46.2	52.71	505
PHY 312 WRF	945	45.6	52.57	498
ST 6182 GLT	933	47.3	52.56	493
PHY 333 WRF	932	45.7	53.35	497
ST 4848 GLT	923	46.8	52.04	479
NG 5007 B2XF	919	44.4	52.38	484
DG 3526 B2XF	908	45.9	52.02	473
CL 3885 B2XF	894	45.5	51.72	463
DP 1553 B2XF	887	45.4	52.92	472
FM 2007 GLT	857	43.3	53.97	464
Mean	915	45.6	52.62	483

Table 3. Mean lint yields, percent lint turnout, loan value and lint value from Jackson County RACE Trial, 2016.

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
ST 6182 GLT	1012	44.1	54.68	554
DG 3526 B2XF	986	43.5	55.00	540
PHY 333 WRF	973	43.7	53.58	516
FM 2007 GLT	967	43.8	53.43	521
DP 1553 B2XF	926	44.4	54.83	495
ST 4848 GLT	921	43.0	54.80	504
PHY 312 WRF	916	44.6	52.15	478
DP 1646 B2XF	883	43.3	55.05	474
CL 3885 B2XF	863	44.1	54.78	474
NG 5007 B2XF	857	42.9	54.93	470
Mean	930	43.7	54.32	503

Table 4. Mean lint yields, percent lint turnout, loan value and lint value from Matagorda County RACE Trial, 2016

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
PHY 312 WRF	1123	48.8	52.65	591
DP 1646 B2XF	1048	49.2	52.25	547
PHY 333 WRF	1036	48.4	52.87	547
FM 2007 GLT	959	45.1	54.20	520
NG 5007 B2XF	941	47.1	52.40	493
ST 4848 GLT	939	49.2	50.12	470
CL 3885 B2XF	928	48.6	50.17	465
DG 3526 B2XF	909	47.4	51.02	464
ST 6182 GLT	890	49.7	50.90	453
DP 1553 B2XF	854	48.0	52.68	450
Mean	963	48.1	51.93	500

Table 5. Mean lint yields, percent lint turnout, loan value and lint value from Wharton County RACE Trial, 2016

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
NG 5007 B2XF	779	43.4	48.90	390
DP 1646 B2XF	735	45.9	53.10	394
PHY 312 WRF	707	43.7	51.45	367
CL 3885 B2XF	689	43.8	51.80	352
ST 4848 GLT	687	46.1	53.88	367
DG 3526 B2XF	681	45.7	49.58	339
DP 1553 B2XF	681	44.3	50.85	350
ST 6182 GLT	676	45.4	52.10	352
PHY 333 WRF	661	44.6	53.88	355
FM 2007 GLT	614	42.5	53.28	330
Mean	691	44.5	51.88	360

Table 6. Mean lint yields, percent lint turnout, loan value and lint value from Fort Bend County RACE Trial, 2016.

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
NG 5007 B2XF	1000	46.5	51.35	514
DP 1646 B2XF	997	47.6	52.13	520
PHY 312 WRF	992	48.3	52.00	515
PHY 333 WRF	983	48.9	51.98	511
ST 6182 GLT	969	51.2	52.98	512
DP 1553 B2XF	963	47.1	53.15	512
CL 3885 B2XF	961	47.2	50.23	483
ST 4848 GLT	942	51.3	50.13	472
DG 3526 B2XF	903	48.8	50.05	451
FM 2007 GLT	814	44.8	53.73	437
Mean	968	48.2	51.77	492

Table 7. Mean lint yields, percent lint turnout, loan value and lint value from Colorado County RACE Trial, 2016.

Variety	Yield (lbs/acre)	Turnout %	Loan Value (¢/lbs)	Lint Value ($/Ac)
ST 4848 GLT	1127	44.4	51.30	584
ST 6182 GLT	1121	46.3	52.13	592
DP 1646 B2XF	1108	44.9	52.35	589
DG 3526 B2XF	1058	43.9	54.70	571
CL 3885 B2XF	1030	44.1	51.50	539
NG 5007 B2XF	1020	42.2	54.40	554
DP 1553 B2XF	1013	43.0	54.58	553
PHY 333 WRF	1008	42.9	54.93	554
PHY 312 WRF	987	42.6	54.53	538
FM 2007 GLT	931	40.5	54.73	510
Mean	1040	43.5	53.51	564

Summary

The information in this poster represents 5 of the 18 different Replicated Agronomic Cotton Evaluations (RACE) trials that were conducted in 2016 between the Lower Rio Grande Valley in South Texas and the Oklahoma Border in Northeast Texas by the Texas A&M AgriLife Extension Service. Other regions of the state also conducted similar trials and their data can be found by accessing the main AgriLife Extension website, http://cotton.tamu.edu as it becomes available.

Rainfall varied a good amount across the region in 2016. In general, the region received greater than average rainfall from prior to planting through the end of May. Some areas received some isolated showers between June and August and then more widespread rain fell across the region in early September. Overall, mean yields for this region of Texas was lower in 2016 compared to the previous year. Early projections are for planted acres of cotton

across the Upper Gulf Coast Region in 2017 to be up compared to 2016. The data generated from these RACE trials and other similar trials throughout the state, provide growers with updated information on the most marketed varieties and technology commercially available to them for 2016 and beyond.

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