# 2012 TEXAS UPPER 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 stacked-gene Bollgard II and WideStrike Roundup Ready 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 4-6 county cotton variety trials conducted in 2012 across the 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.) 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 rapid introduction of new cultivars/technologies into the marketplace today, growers and practitioners are forced to make cultivar selection decisions with less information than in the past. 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, an on-farm, large-plot cultivar testing program was 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 6.6 million acres in 2012 which was about 500,000 acres less than 2119. In the Lower Rio Grand Valley, Coastal Bend and Central Blackland Regions of Texas, 1.1 million acres of cotton were planted in 2012, which was similar to 2011 acres. Transgenic varieties accounted for over 98% of the state acreage in 2012. According to the USDA-Agricultural Marketing Service "Cotton Varieties Planted 2012 Crop" survey for the Corpus Christi Classing Office, the most popular varieties included in these trials for that region that they track were: PHY 499WRF – 9.1 %, PHY 375WRF – 8.4 %, DP 1044B2F – 14.9%, DP 1048B2F – 2.8%, and ST 5458B2F – 1.4%..

## 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, where these trials were conducted were used for the analysis of this article. Variety entries consisted of Bollgard II and WideStrike varieties with glyphosate tolerance. Only the Fort Bend location was irrigated.

Plot dimensions ranged from 0.5 to 0.7 acres in size, depending upon the location (Table 1). Studies were arranged in a randomized complete block design with three replications. All trials were machine harvested with grower pickers. Plot weights were determined at harvest using a weighing boll buggy equipped with integral electronic scales. Samples from all locations were ginned on a Continental 10 saw gin with no lint cleaner (which produces a higher lint turnout percent than a commercial gin would), except for the Matagorda Co location which was ginned on a mini-research gin that included lint cleaners, thus leading to lower, more realistic, lint turnouts. Consequently, higher turnouts equate to lint yields which were generally higher than area-wide commercial yields. Lint samples were obtained from each plot for turnout and high volume instrument (HVI) fiber quality analysis. Additionally, all data were standardized to a color grade and leaf of 41 – 4. Per pound loan value was calculated using Cotton Incorporated's 2012 Cotton Loan Calculator.

For HVI analysis, fiber samples were sent to the Fiber and Biopolymer Research Institute at Texas Tech University in Lubbock, Texas. Statistical analysis for comparison among cultivars was conducted using Agricultural Research Manager 8, using LSD (P=0.05).

Table 1. County the RACE was located in, Cooperator, Planting and Harvest Date, Irrigated or not, and plot size.

| County | Cooperator | Planting Date | Harvest Date | Row Spacing (inches) | Plot Dimensions | Irrigated or Dryland | Area harvested /plot |
|---|---|---|---|---|---|---|---|
| Jackson | Sappington Farms | Apr 9 | Aug 28 | 30 | 8 rows x 1250ft | Dryland | 0.57 |
| Matagorda | Hansen Farms | Apr 14 | Sep 9 | 40 | 8 rows x 1120ft | Dryland | 0.69 |
| Wharton | Kresta Farms | Apr 28 | Aug 27 | 40 | 6 rows x 1450 ft | Dryland | 0.67 |
| Fort Bend | Alan and Lisa Stasney | Apr 27 | Sep 22 | 36 | 6 rows x 1240 ft | Irrigated | 0.51 |
| Wharton | Mahalitc Farms | Apr 8 | Sep 9 | 36 | 8 rows x 975 ft | Dryland | .054 |

## Results and Discussion

The 2012 season was characterized by a slightly drier than normal winter following relatively normal fall conditions. Most of the region receive decent rainfall in late February and early March, but as cotton planting began, rainfall events ceased through the rest of March thru April into late May. Beginning late May, isolated rainfall events began to occur, with slightly higher rainfall accumulations occurring towards the east in early July.

The Fort Bend Co site had the highest mean yield, 1875 lbs/ac, followed closely by Colorado Co with a mean yield of 1844 lbs/ac, while the Matagorda Co site had the lowest mean yield, 1212 lbs/ac and the overall mean for all five locations combined was 1596 lbs/ac.

The Colorado Co location had the highest mean loan value, 53.9 ¢/lb, while the Jackson and Matagorda locations had the lowest mean loan values, 52.56 ¢/lb. The mean loan value for all locations combined was 53.18¢/lb.

PHY 499 WRF had the highest mean yield, 1824 lbs/ac across all sites in 2012. It was first at 3 locations and second in another. FM 2989GLB2 was the lowest mean yielding variety across all locations with a mean yield of 1329 lbs/ac.

Table 2. Multi-County Average Yield, Turnout, Loan Value and Lint Value.

| Variety | Yield (lbs/acre) | Turnout % | Loan Value (¢/lbs) | Lint Value ($/Ac) |
|---|---|---|---|---|
| AM 1511B2RF | 1788 | 44.2 | 51.15 | 902 |
| CG 3787B2RF | 1748 | 44.9 | 52.37 | 889 |
| DP 1044B2F | 1793 | 42.2 | 52.47 | 934 |
| DP 1048B2F | 1687 | 43.4 | 53.32 | 866 |
| FM 1944GLB2 | 1576 | 41.2 | 52.83 | 830 |
| FM 2989GLB2 | 1397 | 37.4 | 52.20 | 698 |
| Nitro 44B2RF | 1545 | 38.8 | 53.00 | 808 |
| PHY 375WRF | 1689 | 42.1 | 53.50 | 882 |
| PHY 499WRF | 1791 | 44.7 | 52.95 | 955 |
| ST 5458B2F | 1713 | 42.4 | 51.85 | 857 |

Table 3. Jackson County Average Yield, Turnout, Loan Value and Lint Value.

| Variety | Lint (lbs/acre) | Turnout % | Loan Value (¢/lb) | Lint Value ($/acre) |
|---|---|---|---|---|
| DP 1044B2F | 1793 a | 42.2 | 52.47 | 934 ab |
| PHY 499WRF | 1791 a | 44.7 | 52.95 | 955 a |
| NG 1511B2RF | 1788 a | 44.2 | 51.15 | 902 abc |
| CG 3787B2RF | 1748 ab | 44.9 | 52.37 | 889 abc |
| ST 5458B2F | 1713 ab | 42.4 | 51.85 | 857 abc |
| PHY 375WRF | 1689 ab | 42.1 | 53.5 | 882 abc |
| DP 1048B2F | 1687 ab | 43.4 | 53.32 | 866 abc |
| FM 1944GLB2 | 1576 abc | 41.2 | 52.83 | 830 bc |
| AT Nitro 44B2RF | 1545 bc | 38.8 | 53 | 808 cd |
| FM 2989GLB2 | 1397 c | 37.4 | 52.2 | 698 d |
| Mean | 1673 | 42.1 | 52.56 | 862 |
| P>F | 0.0231 | NS | NS | 0.0169 |
| LSD (P=.05) | 222.7 | 4.8 | 2.4 | 120.3 |
| STD DEV | 129.8 | 2.8 | 1.4 | 70.1 |
| CV% | 7.8 | 6.7 | 2.6 | 8.1 |

Table 4. Matagorda County Average Yield, Turnout, Loan Value and Lint Value.

| Variety | Yield (lbs/acre) | Turnout % | Loan Value (¢/lbs) | Lint Value ($/Ac) |
|---|---|---|---|---|
| PHY 499WRF | 1484 a | 39.9 a | 52.48 ab | 779 a |
| AT Nitro 44B2RF | 1290 b | 35.3 fg | 52.95 a | 683 b |
| FM 1944GLB2 | 1259 bc | 36.1 ef | 52.80 ab | 665 bc |
| NG 1511B2RF | 1225 cd | 37.9 c | 52.48 ab | 643 cd |
| CG 3787B2RF | 1222 cd | 39.3ab | 52.80 ab | 645 cd |
| ST 5458B2F | 1212 cd | 37.2 cd | 52.62 ab | 638 cd |
| DP 1048B2F | 1179 de | 38.7 b | 52.80 ab | 622 de |
| PHY 375WRF | 1146 ef | 36.2 def | 52.35 ab | 600 ef |
| DP 1044B2F | 1126 ef | 36.0 ef | 51.93 ab | 585 f |
| FM 2989GLB2 | 926 h | 34.0 h | 52.40 ab | 485 h |
| Mean | 1182 | 36.9 | 52.52 | 621 |
| P>F | 0.0001 | 0.0001 | 0.0454 | 0.0001 |
| LSD (P=.05) | 48.3 | 0.8 | 0.9 | 25.5 |
| STD DEV | 28.7 | 0.5 | 0.5 | 15.1 |
| CV% | 2.4 | 1.3 | 1 | 2.4 |

Table 5. Wharton County Average Yield, Turnout, Loan Value and Lint Value.

| Variety | Yield (lbs/acre) | Turnout % | Loan Value (¢/lbs) | Lint Value ($/acre) |
|---|---|---|---|---|
| FM 1944GLB2 | 1052 bc | 41.5 de | 53.40 a | 562 ab |
| ST 5458B2F | 1023 c | 40.8 fg | 51.67 b | 526 cd |
| FM 2989GLB2 | 925 d | 39.4 h | 53.87 a | 498 e |
| PHY 499WRF | 1131 a | 44.8 a | 51.67 b | 582 a |
| PHY 375WRF | 960 d | 41.9 d | 53.27 a | 513 de |
| DP 1044B2F | 1049 bc | 40.7 g | 53.82 a | 565 ab |
| DP 1048B2F | 1045 bc | 43.3 bc | 53.67 a | 562 ab |
| AT Nitro 44B2RF | 1068 b | 41.2 ef | 54.27 a | 579 a |
| NG 1511B2RF | 1052 bc | 43.2 c | 51.73 b | 544 bc |
| CG 3787B2RF | 1050 bc | 43.8 b | 54.1 a | 568 ab |
| Mean | 1035 | 42.1 | 53.13 | 550 |
| P>F | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| LSD (P=.05) | 42.2 | 0.5 | 1 | 26 |
| STD DEV | 24.6 | 0.3 | 0.6 | 15.2 |
| CV% | 2.4 | 0.7 | 1.1 | 2.8 |

Table 6. Fort Bend County Average Yield, Turnout, Loan Value and Lint Value.

| Variety | Yield (lbs/acre) | Turnout % | Loan Value (¢/lbs) | Lint Value ($/Ac) |
|---|---|---|---|---|
| PHY 499WRF | 2196 a | 49.7 ab | 54.03 ab | 1187 a |
| DP 1048B2F | 2061 ab | 51.2 a | 53.70 bc | |
| CG 3787B2RF | 2004 bc | 48.4 bcd | 53.73 bc | 1077 bc |
| AT Nitro 44B2RF | 1926 bc | 46.5 ef | 54.20 a | 1044 bc |
| NG 1511B2RF | 1913 c | 48.9 bc | 53.42 c | 1022 cd |
| FM 1944GLB2 | 1879 cd | 46.9 de | 53.98 ab | 1014 cd |
| PHY 375WRF | 1772 de | 47.8 cde | 53.42 c | 947 de |
| ST 5458B2F | 1719 e | 47.1 de | 53.72 bc | 924 e |
| DP 1044B2F | 1711 ef | 46.2 ef | 53.70 bc | 919 ef |
| FM 2989GLB2 | 1573 f | 44.9 f | 53.83 ab | 847 f |
| Mean | 47.8 | 53.77 | 53.77 | 1009 |
| P>F | 0.0001 | 0.0057 | 0.0057 | 0.0001 |
| LSD (P=.05) | 1.7 | 0.4 | 0.4 | 76.3 |
| STD DEV | 1 | 0.2 | 0.2 | 44.5 |
| CV% | 2.1 | 0.4 | 0.4 | 4.4 |

Table 7. Colorado County Average Yield, Turnout, Loan Value and Lint Value.

| Variety | Yield (lbs/acre) | Turnout % | Loan Value (¢/lbs) | Lint Value ($/Ac) |
|---|---|---|---|---|
| PHY 499WRF | 2140 a | 44.7 ab | 54.03 a | 1156 a |
| NG 1511B2RF | 1968 ab | 44.8 a | 54.00 a | 1063 ab |
| CG 3787B2RF | 1912 bc | 45.0 a | 53.80 a | 1029 bc |
| DP 1048B2F | 1853 bc | 42.2 bcd | 54.05 a | 1001 bc |
| ST 5458B2F | 1843 bc | 42.5 a-d | 53.68 a | 990 bc |
| AT Nitro 44B2RF | 1830 bc | 43.4 abc | 53.95 a | 987 bc |
| DP 1044B2F | 1829 bc | 41.8 cd | 53.75 a | 983 bc |
| FM 1944GLB2 | 1806bc | 42.2 bcd | 53.90 a | 973 bc |
| Mean | 1844 | 42.9 | 53.9 | 994 |
| P>(F) | 0.0038 | 0.0294 | 0.8835 | 0.003 |
| LSD (P=.05) | 190.87 | 2.586 | NS | 100.43 |
| STD DEV | 84.38 | 1.14 | 0.26 | 44.4 |
| CV % | 4.58 | 2.66 | 0.49 | 4.47 |

## Summary

The information in this article represents only 5 of the 22 different Replicated Agronomic Cotton Evaluations (RACE) trials that were conducted in South and East-Central Texas in 2012 by Texas A&M AgriLife Extension Service.

In general, although mean yields were good, yields were slightly lower in 2012 than 2011 for this region. This was due mainly to less favorable in-season weather conditions in 2012 than were experienced in 2011. A brief period of cloudy, wet weather caused some fruit loss in early July, which limited yields.

Fortunately, many varieties performed exceptionally well across the Upper Gulf Coast region of Texas in 2012 which should provide growers with improved variety choices and technology for 2013 and beyond.

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