REPLICATED AGRONOMIC COTTON EVALUATION (RACE) TRIAL IN THE ROLLING PLAINS OF TEXAS -2015

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Abstract

Variety selection is one of the most important decision producers need to make before planting; however, it has become more difficult to make the decision as varieties are released rapidly with new technologies. Our objective of this project is to provide agronomic information of cotton varieties to producers in the Rolling Plains of Texas. Seven varieties were planted in 10 locations across the Rolling Plains of Texas. The 7 entries of cotton varieties were planted on-farm with plot size varying from 0.001 to 1.05 ac. The study was replicated three times with RCBD. Mean yields across locations widely varied in 2015. For example, yield of NexGen 3406B2XF across three irrigated locations ranged from 886 to 2491 lbs./ac, indicating that environmental factor plays important role in the variety selection. Yields of all varieties averaged 1615 lbs/ac in irrigated site and 662 lb./ac in dryland. Turnout also varied by locations; from 28 to 37 for Croplan 3475 B2XF and 36 to 41 for Fibermax 2334 GLT. Phytogen 333 WRF performed well in both irrigated and dryland sites in the Rolling Plains this year, for which average yield was 1689 lb./ac in irrigated and 711 lb./ac in dryland. There was no difference in turnout among varieties in dryland. Mean turnout were 36% at Haskell and 27% at Motley County.

Introduction and Objectives

Variety selection is the most crucial decision made by the cotton (*Gossypium hirsutum* L.) growers; however, with the expansion 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 biggest expenses of growing cotton, especially in non-irrigated Rolling Plains. With the rapid introduction of new cultivars/technologies into the market today, growers are forced to make cultivar selection decisions more blindly than in the past. Consequently, an on-farm, large-plot, replicated cultivar testing program was developed by Texas A&M AgriLife Extension cotton agronomists with the goal of providing growers with information necessary in making cultivar decisions. Agronomic management of weeds, insects and plant growth regulator use and harvest operations are as reflective of commercial production as possible. The objective of this project was to compare yield and lint quality of Stacked-Gene insect and herbicide tolerant cultivars grown in large plot replicated trials on producer-cooperator fields in the Rolling Plains region of Texas.

Materials and Methods

Seven varieties were planted in total of 10 locations including 5 dryland and 5 irrigated fields in the Rolling Plains of Texas. Cultivar selection were determined with input from grower cooperators/committees, Extension faculty, and seed industry representatives. Plot size ranged from .001 to 1.05 acres in size, depending on the location (Table 1). Study was designed as CRBD with 3 replications. All trials were machine harvested with grower harvesters, except for Motley County. The trial at Motley County was hand-picked from 13.1 ft. of row. Plot weights were determined using a weighing boll buggy equipped with integral electronic scales. Sub-samples from each plot were ginned on a Continental 10 saw gin with lint cleaner at Texas A&M AgriLife Extension at Lubbock. Lint quality will be quantified by a high volume instrument (HVI) at the Fiber and Biopolymer Research Institute at Texas Tech University in Lubbock, TX. Additionally, all data will be standardized to a color grade and leaf of 41 – 4. Lint value per pound will be calculated using Cotton Incorporated's 2015 Cotton Loan Calculator. Analysis of variance was conducted using proc GLM of SAS. Mean separation was conducted at $P<0.05$. We will only be presenting lint yields and lint turnout from five locations at this time due to the fact that we are still in the process of analyzing fiber data.

Results and Discussion

Mean yields across locations widely varied in 2015. For example, yield of NexGen 3406B2XF across three irrigated locations ranged from 886 to 2491 lbs/ac, indicating that environmental factor plays important role in the variety selection (Table 2). Yields of all varieties averaged 1615 lbs/ac in irrigated site and 662 lb./ac in dryland (Table 2 and 3). Turnout also varied by locations; from 28 to 37 for Croplan 3475 B2XF and 36 to 41 for Fibermax 2334 GLT (Table 2). Phytogen 333 WRF performed well in both irrigated and dryland sites in the Rolling Plains this year, for which average yield was 1689 lb./ac in irrigated and 711 lb./ac in dryland. There was no differences in turnout among varieties in dryland. Mean turnout were 36% at Haskell and 27% at Motley County.

Table 1. Trial location, cooperator, planting date, harvesting date, plot size information of 2015 Texas A&M AgriLife Extension Service RACE trial

County	Extension Agents	Cooperator	Planting date	Harvest date	Population Seeds/ac	Row spacing (in)	Plot Width	Irrigated/ dryland	Plot size (ac)
Childress	Zeb Petty	Cade Wyatt	6/22	12/17	26000	40	8 rows	Irrigated	.49
Collingsworth	Katy White	Rex Henard	5/27	11/14	40000	40	6 rows	Irrigated	.86
Collingsworth	Katy White	Jason Wischkaemper	6/5	12/8	32000	40	6 rows	Dryland	.41
Haskell	Jason Westbrook	Doug Easterling	6/11	11/18	39000	40	8 rows	Irrigated	.76
Haskell	Jason Westbrook	Gilbert Casillas	6/3	11/3	36000	32	6 rows	Dryland	.53
Knox	Jerry Coplen	Jeremy Sanders	6/6	11/9	31363	40	6 rows	Irrigated	.52
Motley	Ryan Martin	Hal Martin	6/6	11/25	26500	40	1 row	Dryland	.001
Wheeler	Dale Dunlap	Hardcastle Farms	5/26	11/24	45000	40	6 rows	Irrigated	.22
Wilbarger	Langdon Reagan	Layne Chapman	6/3	11/12	45650	40	8 rows	Irrigated	.36
Wilbarger	Langdon Reagan	Donald Shoppa	6/23	12/10	23000	40	8 rows	Dryland	1.05

Table 2. Lint yield (lb./ac) and turnout (TO) of cotton under Irrigated sites in the Rolling Plains of Texas

	Collingsworth		Wheeler		Knox	
Entry	**Yield**	**TO**	**Yield**	**TO**	**Yield**	**TO**
CL 3475B2XF	2415 a	37 a	1259 a	28 a	1044 ab	35 d
DP 1321B2RF	2003 a	33 c	1474 a	33 a	1151 a	37 bc
FM 2334GLT	2228 a	36 ab	1726 a	38 a	1043 abc	41 a
NG 3406B2XF	2491 a	33 c	1517 a	32 a	886 c	36 cd
PHY 333WRF	2480 a	32 c	1465 a	30 a	1123 a	38 b
PHY 339WRF	2393 a	34 ab	1407 a	32 a	942 bc	36 bc
ST 4747GLB2	2320 a	34 c	1489 a	33 a	1073 ab	35 d
Mean	2333	34	1477	32	1037	37
CV %	7.7	3.4	7.7	3.4	8.5	2.0

Table 3. Lint yield (lb./ac) and turnout (TO) of cotton under dryland sites in the Rolling Plains of Texas

	Haskell		Motley	
Entry	**Yield**	**TO**	**Yield**	**TO**
CL 3475B2XF	762 a	40 a	721 ab	26 a
DP 1044B2RF	657 a	36 a	596 bc	25 a
FM 1900GLT	645 a	35 a	531 c	27 a
NG 3406B2XF	683 a	36 a	516 c	26 a
PHY 333WRF	706 a	36 a	715 ab	29 a
PHY 499WRF	699 a	37 a	567 c	27 a
ST 4946GLB	677 a	34 a	793 a	27 a
Mean	690	36	634	27
CV %	10.2	10.3	8.5	7.5

Conclusion

The information in this poster represents only 5 of the 10 different Replicated Agronomic Cotton Evaluations (RACE) trials that were conducted in Rolling Plains of Texas in 2015 by Texas A&M AgriLife Extension Service. In general, mean yields were better in 2014 as compared to the yield obtained in 2015 in the Rolling Plains region due to the late planting caused by wet spring. In addition, harvesting was delayed by the fall rainfall and wet field condition. Early projections are for planted acres of cotton in 2016 to be more than in 2015 in the Rolling Plains region. 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 2015 and beyond.

Acknowledgements

These projects were supported with funding from the Texas State Support Committee-Cotton Incorporated, cotton seed companies, including Americot, CPS, Bayer CropScience, Croplan Genetics, Dow AgroSciences, and Monsanto. Texas A&M Extension greatly appreciates farmer cooperators in the Rolling Plains.