REPLICATED AGRONOMIC COTTON EVALUATION (RACE) TRIAL IN THE ROLLING PLAINS OF TEXAS -2016

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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 (*Gossypium hirsutum* L.) varieties to producers in the Rolling Plains of Texas. Seven cotton varieties were planted in 14 locations across the Rolling Plains of Texas. Cotton were planted on-farm with plot size varying from 0.001 to 2.90 ac. The study was replicated three times and designed as randomized complete block design. Estimated lint yields were 1145 lb/ac in irrigated and 1016 lb/ac in dryland sites at 30% turnout at 9 locations out of 14 locations. Dryland cotton production in the Rolling Plains was improved from 2015 cropping seasons.

Introduction and objectives

Cultivar selection is the most important decision made by the cotton producers especially in the Rollins Plains of Texas, where dryland cotton production is dominant. 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. Therefore, 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 cultivars were planted in 8 drylands and 6 irrigated fields across 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 2.9 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. Plot weights were determined using a weighing boll buggy equipped with integral electronic scales. Sub-samples from each plot will be ginned on a Continental 10 saw gin with a lint cleaner. 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. Analysis of variance was conducted using proc GLM of SAS. Mean separation was conducted at $P<0.10$. We will only be presenting lint yields at 30% turn out for harvested 9 locations out of 14 locations.

Table 1. Trial location, cooperator, planting date, harvesting date, plot size information of 2016 Texas A&M AgriLife Extension Service RACE trial

County	Producer Cooperators	County Extension Agents	Irr./ Dry	Planting date	Harvest date	Population Seeds/ac	Rows × width (in)	Plot size (ac)
Childress	Cade Wyatt	Zeb Petty	D	6/13	12/28	26000	8 × 40	0.53
Collingsworth	Micah Carter	Katy White	I	5/9	11/10	40000	6 × 40	2.90
Collingsworth	Jerry Dan Davis	Katy White	D	6/7	11/30	30000	8 × 30	0.46
Cottle	Joe Smith	Luke Feaster	D	6/9	TBD	NA	4 × 40	TBD
Hardeman	AgriLife Extension	Justin Filliam	I	6/8	11/20	40000	4 × 40	0.19
Haskell	Doug Easterling	Jason Westbrook	I	5/27	11/17	41000	8 × 30	1.22
Haskell	Gilbart Casillias	Jason Westbrook	D	6/14	11/21	36000	4 × 32	0.23
Kent	Gary Myers	Jay Kingston	D	6/5	1/10	21785	8 × 40	0.38
Knox	Harlan Farms	Jerry Coplen	I	6/15	12/19	55000	8 × 40	0.37
Knox	Harlan Farms	Jerry Coplen	D	6/14	12/12	40000	8 × 40	0.77
Motley	Josh Lee	Ryan Martin	I	5/27	12/14	39000	1 × 40	0.001
Stonewall	Billy Kirk Meador	Cody Myers	D	6/14	1/13	19602	8 × 40	0.67
Wheeler	Hardcastle Farms	Dale Dunlap	I	5/24	11/22	42000	6 × 40	0.28
Wilbarger	Donald Shoppa	Langdon Reagan	D	6/10	1/11	23000	4 × 40	0.69

Results and discussion

In-season precipitation during May to November in the Rolling Plains varied widely across the trial sites from 21.2 in to 7.3 in (Fig. 1.) Wheeler co. site received the least precipitation of 7.3 in, where heat unit was also lower than other locations (Fig. 2). Average yields so far from the RACE trials were 1145 lb/ac in irrigated and 1016 lb/ac in dryland sites (Table 2 and 3). Yield of dryland cotton production was close to twice higher as compared to the yield observed in 2015 (584 lb/ac) RACE trials. In contrast, average yield of irrigated sites were reduced in 2016 than 2015 (1584 lb/ac). Variety ranking will be determined for cotton producers in the region following completion of all RACE trial harvesting.

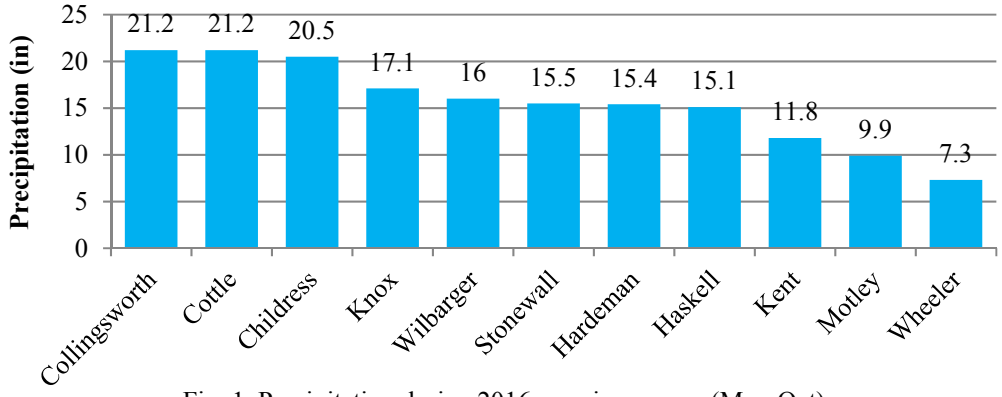

Fig. 1. Precipitation during 2016 growing season (May-Oct)

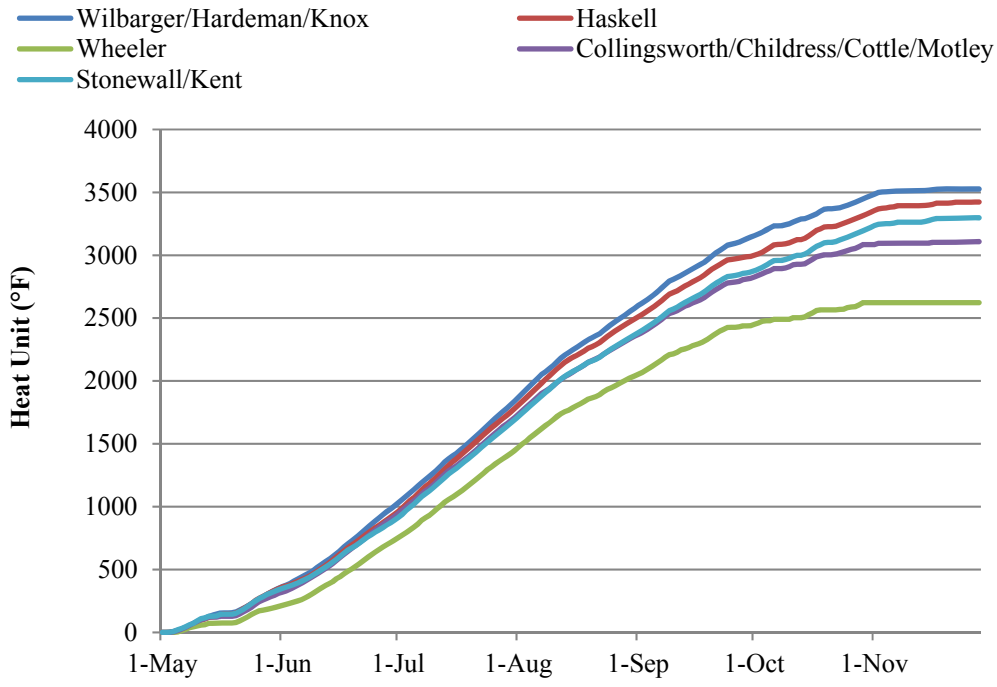

Fig. 2. Accumulated heat unit (F) during 2016 growing season

Table 2. Lint yield (lb/ac) at 30% turnout in irrigated sites in the Rolling Plains of Texas

Entry	Collingsworth	Haskell	Hardeman	Knox	Wheeler	Average
ST 4747 GLB2	1767	952a	1519a	965a	1198	1280
PHY 243 WRF	1776	899ab	1430cd	873a	1242	1244
DP 1522 B2XF	1512	689abc	1466bc	887a	1241	1159
FM 1830 GLT	1582	619bc	1446bcd	558b	1295	1099
NG 3406 B2XF	1621	622bc	1399de	898a	1098	1128
NG 4545 B2XF	1400	502c	1489ab	739ab	1199	1066
PHY 333 WRF	1191	773abc	1357e	898a	1152	1074
Mean	1550	722	1444	831	1203	1145
CV %	NA	27	3	21	13	-

Table 3. Lint yield (lb/ac) at 30% turnout in dryland sites in the Rolling Plains of Texas

Entry	Childress	Collingsworth	Haskell	Knox	Average
FM2007GL	1289	977	1343	611	1055
PHY444WR	1106	1013	1437	603	1040
ST4946GL	1035	940	1480	592	1012
NG4545B2	1227	1009	1365	552	1038
NG3406B2	1118	944	1361	570	998
PHY333WR	1067	900	1389	609	991
DP1522B2XF	1164	903	1298	556	980
Mean	1144	955	1382	585	1016
CV %	11	8	2	5	-

Conclusion

Dryland cotton production was improved for 2016 in the Rolling Plains of Texas. Early projections are for planted acres of cotton in 2017 to be more than in 2016 in the Rolling Plains region, especially dryland acreage.

Acknowledgement

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