CONVENTIONAL COTTON VARIETY PERFORMANCE IN GEORGIA

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Abstract

Recent decline in cotton prices has driven producers to reexamine their production systems for potential savings. Variety selection is one of those inputs which have become increasingly costly, due in large part because of herbicide tolerance and insect management traits. Research was conducted in large-plot, on-farm trials to evaluate several conventional varieties along with the top-performing transgenic cotton varieties in Georgia. Harvest delays in Georgia during 2015 prevented the on-farm, large-plot data from being analyzed in time to present at this meeting; however, a tremendous amount of information is produced each year by UGA's State-wide Variety Testing (SWVT) Unit. Two sets of data were utilized, one using the "early maturing" and one using the "later maturing" set of varieties tested by SWVT from 24 trials in 2012-2014. Of the nine earlier maturing varieties, the four conventional varieties ranked 6th, 7th, 8th and 9th with regards to average lint yields across all locations. Of the six later maturing varieties compared, the conventional variety GA 230 had the lowest average yield, at least 209 lbs/A below the top two statistically highest average yielding varieties, and among the top two of six varieties in 8% of the 24 locations. This data analysis provides information that of the conventional varieties examined here, yield potential could be sacrificed compared to top performing transgenic varieties. However, production system costs would likely be lower for conventional systems. Economic analysis is needed to further address the actual value of conventional options and should incorporate fiber quality.

Introduction

Recent cotton prices have driven producers to reexamine their production systems for ways to cut production costs. This process can be extremely difficult and most significant saving measures result in potential for losing yield. Variety selection is one of the most expensive inputs decisions producers deal with each year and one of the most important factors in regard to management, yield and fiber quality. Cotton seed prices have become increasingly costly in part because of herbicide tolerance and insect management traits. Although these traits provide significant value to producers, cotton prices paired with herbicide programs needed to control glyphosate-resistant Palmer amaranth may create a situation where conventional cotton varieties become more appealing. To help producers make decisions regarding conventional cotton varieties in Georgia, research was conducted in large-plot, on-farm trials to evaluate several potential conventional varieties along with the top-performing transgenic cotton varieties in Georgia.

Materials and Methods

Harvest delays in Georgia during 2015 prevented the on-farm, large plot data from being analyzed in time to present at this meeting. However, extensive work is completed each year by UGA's State-wide Variety Testing (SWVT) Unit and data from trials conducted in 2012 through 2014 was used to compare several conventional varieties to more widely planted varieties. Two sets of data were utilized, one using the "early maturing" and one using the "later maturing" set of varieties tested by SWVT. Six later maturing varieties (Table 1a) were compared and data from all SWVT locations (24 individual trials). A total of nine earlier maturing varieties were compared, with four conventional varieties, from a total of 24 SWVT locations (Table 2a).

Results and Discussion

Later Maturing Varieties

Of the six varieties compared, the conventional variety GA 230 had the lowest average yield and at least 209 lbs/A below the top two statistically highest average yielding varieties (Table 1a). With regard to consistency of top performance, the conventional variety was among the top two of six varieties in 8% of the 24 locations. The value of planting the conventional variety compared to other transgenic varieties was calculated to cost at least $108 per acre based on average yield loss (Table 1b).

Table 1a. Later maturing variety performance in Georgia in 2012-2014 across 24 locations

Variety	Avg. Lint Yield (lb/A)		% in Top 2
PHY 499 WRF	1694	a	58
CG 3787 B2RF	1645	ab	46
DP 1252 B2RF	1609	bc	46
DP 1050 B2RF	1579	bc	25
ST 6448 GLB2	1561	c	17
GA 230	1436	d	8

[a]Means separated with Fisher's Protected LSD at P≤0.05.
[b]Frequency of variety performance as percent of 19 individual trials.

Table 1b. GA 230 performance in Georgia in 2012-2014 across 24 locations compared to varieties in Table 1a.

Comparison	Diff. in Yield (lb/A)	Value (per acre)		
		@ 80 cents/lb	@ 70 cents/lb	@ 60 cents/lb
Avg. of other 5	-181	-$144.95	-$126.83	-$108.71
Avg. of Top 3	-213	-$170.41	-$149.11	-$127.81
Avg. of Top 2	-233	-$186.48	-$163.17	-$139.86

Earlier Maturing Varieties

Of the nine varieties, the four conventional varieties ranked 6th, 7th, 8th and 9th with regards to average lint yields across 24 locations (Table 2a). Compared to the top three ranked varieties, each of the conventional varieties had significantly lower yields (between 106 and 237 lbs/A) and the value of planting the conventional varieties was calculated to be at least $63 per acre and much more based on price and particular variety (Table 2b).

Table 2a. Variety performance in Georgia in 2012-2014 across 24 locations.

Variety	Avg. Lint Yield (lb/A)		% in Top 3
PHY 499 WRF	1736	a	79
ST 4946 GLB2	1598	b	54
NG 1511 B2RF	1596	b	54
DP 0912 B2RF	1563	bc	29
DP 1321 B2RF	1540	bcd	25
SSG AU 222	1537	bcd	13
GA2009100	1496	cd	25
SSG HQ 210 CT	1474	de	17
SSG CT Linwood	1407	e	4

[a]Means separated with Fisher's Protected LSD at P≤0.05.
[b]Frequency of variety performance as percent of 19 individual trials.

Table 2b. Conventional variety performance in Georgia in 2012-2014 across 24 locations compared to top 3 ranked varieties in Table 2a.

Variety	Diff. in Yield (lb/A)	Value (per acre)		
		@ 80 cents/lb	@ 70 cents/lb	@ 60 cents/lb
SSG AU 222	-106	-$84.53	-$73.97	-$63.40
GA2009100	-147	-$117.70	-$102.99	-$88.28
SSG HQ 210 CT	-169	-$135.20	-$118.30	-$101.40
SSG CT Linwood	-237	-$189.20	-$165.55	-$141.90

Conclusions

This data analysis provides information that of the conventional varieties examined here, yield potential could be sacrificed compared to top performing transgenic varieties. However, production system costs would likely be lower for conventional systems. Economic analysis will be conducted on this data along with on-farm data when completed and should address the actual value of conventional options. For additional Georgia cotton information, visit UGA Cotton Website at www.ugacotton.com.

Acknowledgements

The Georgia Cotton Commission provided support for this project. A special thanks to the University of Georgia State-wide Variety Testing team, including but not limited to John Gassett, Dustin Dunn, Blake McCranie and Robert Brooke.