A LOOK AT THE PERFORMANCE OF BOLLGARD II® XTENDFLEX® COTTON VARIETIES IN GEORGIA DURING 2015

Jared R. Whitaker
University of Georgia
Tifton, GA
M. Brent Allen
University of Georgia Cooperative Extension Service
Sandersville, GA
Seth A. Bryd
Texas A&M University
Lubbock, TX
D. Scott Carlson
University of Georgia Cooperative Extension Service
Tifton, GA
Raynor D. Churchwell
University of Georgia Cooperative Extension Service
Cochran, GA
Brian L. Cresswell
University of Georgia Cooperative Extension Service
Blakely, GA
J. Blake Crabtree
University of Georgia Cooperative Extension Service
Sylvester, GA
D. Shane Curry
University of Georgia Cooperative Extension Service
Baxley, GA
J. Dawson
Fort Valley State University Extension
Valdosta, GA
Chris Earls
University of Georgia Cooperative Extension Service
Claxton, GA
Jason D. Edenfield
University of Georgia Cooperative Extension Service
Lyons, GA
J. Mark Freeman
University of Georgia Cooperative Extension Service
Hawkinsville, GA
Mark A. Frye
University of Georgia Cooperative Extension Service
Jesup, GA
Billy Griffin
University of Georgia Cooperative Extension Service
Reidsville, GA
Brian Hayes
University of Georgia Cooperative Extension Service
Cairo, GA
Thomas J. Hathorn
University of Georgia Cooperative Extension Service
Morgan, GA
Ray Hicks
University of Georgia Cooperative Extension Service
Sylvania, GA
Sam Ingram
University of Georgia Cooperative Extension Service
Springfield, GA

Brooke H. Jefferies
University of Georgia Cooperative Extension Service
Alamo, GA
E. Lanier Jordan
University of Georgia Cooperative Extension Service
Newton, GA
Justin D. Lanier
University of Georgia Cooperative Extension Service
Cordele, GA
Joshua L. Lanier
University of Georgia Cooperative Extension Service
Claxton, GA
Jason Mallard
University of Georgia Cooperative Extension Service
Millen, GA
Nicholas D. McGhee
University of Georgia Cooperative Extension Service
Dawson, GA
Jennifer T. Miller
University of Georgia Cooperative Extension Service
Mount Vernon, GA
Wade B. Parker
University of Georgia Cooperative Extension Service
Statesboro, GA
Daniel S. Price
University of Georgia Cooperative Extension Service
Adel, GA
Jake G. Price
University of Georgia Cooperative Extension Service
Valdosta, GA
J. Peyton Sapp
University of Georgia Cooperative Extension Service
Waynesboro, GA
Pamela Sapp
University of Georgia Cooperative Extension Service
Louisville, GA
Andy Shirley
University of Georgia Cooperative Extension Service
Camilla, GA
Chris T. Tyson
University of Georgia Cooperative Extension Service
Reidsville, GA
W.G. Tyson
University of Georgia Cooperative Extension Service
Statesboro, GA
J. Larry Varnadoe
University of Georgia Cooperative Extension Service
Sylvester, GA
Tim Varnedore
University of Georgia Cooperative Extension
Hazlehurst, GA

Abstract

In 2015, cotton varieties with the Bollgard II XtendFlex (B2XF) trait were released for planting in the U.S. The XF technology provides topical herbicide tolerance to glyphosate, glufosinate and dicamba, an attractive technology for

controlling glyphosate-resistant and other difficult to control weeds in cotton. The objective of this work was to determine the effect of the B2XF technology on variety performance in Georgia. This study consisted of 12 varieties evaluated in 19 on-farm, large-plot field trials located throughout Georgia. Of the 12 varieties, five had the B2XF trait, two had the B2RF trait, three had the WRF trait and one each had the GLB2 and GLT traits. When yields were analyzed across all locations, five varieties had statistically similar and top yields. Of those five, three had the B2XF trait. However, the other two B2XF varieties ranked 7th and 12th. When compared to the average yield of the seven non-B2XF varieties, three of the five B2XF varieties produced average yields between 63 and 107 lb/A higher than the non-B2XF varieties and consistently outperformed the non-B2XF average, in at least 15 of the 19 trials. Data in 2015 indicates three varieties with the B2XF trait ranked 1st, 3rd and 4th based on average yields across all locations, and subsequently reveals great yield potential among some B2XF varieties in the traits launch year and also emphasized the importance of an in-depth variety evaluation program to growers for them to make selection decisions.

Introduction

In 2015, cotton varieties with the Bollgard II XtendFlex (B2XF) trait were released for planting in the U.S. The XF technology provides topical herbicide tolerance to glyphosate, glufosinate and dicamba, an attractive technology for controlling glyphosate-resistant and other difficult to control weeds in cotton. However, regulations resulted in limited variety data for producers and dicamba applications were not approved for use in 2015. Nevertheless, interest was high and significant acreage was planted with B2XF varieties in the Southeast, especially in Georgia where market share reached 20% (USDA AMS, 2015). Our objective was to determine the effect of the B2XF technology on performance in 2015 compared to earlier released highly productive varieties with difference cotton herbicide traits.

Materials and Methods

A total of 12 varieties (Table 1) were evaluated in 19 on-farm, large-plot field trials located throughout Georgia. Of the 12 varieties, five had the B2XF trait, two had the B2RF trait, three had the WRF trait, and one variety each had the GLB2 and GLT traits. Plots were one variety planted in a strip, four to six rows wide and at least 500 feet long, replicated three times in a randomized complete block design. Lint yield potential and consistency was compared among all varieties individually and between B2XF and other traits.

Results and Discussion

When yields were analyzed across all locations, five varieties had statistically similar and top yields (Table 1). Of those five, three had the B2XF trait. However, the other two B2XF varieties ranked 7th and 12th. Using consistency of performance of top performance, six varieties had yields above the trial average in at least 74% of the 19 locations. The top four ranked varieties produced yields in the top 4 of 12 between 53 and 74%. The top five ranked varieties had yields within the top 3 between 37 to 58%, and within the top 2 between 21 to 37%.

Each B2XF variety was compared to the average yield of all non-B2XF varieties (Table 2). Three of the five B2XF varieties produced average yields between 63 and 107 lb/A higher than the non-B2XF varieties. Additionally, those varieties consistently outperformed the non-B2Xf average (in at least 15 of the 19 trials). The variety NG 5007 B2XF produced statistically similar yields (-3 lb/A) and NG 3405 B2XF produced statistically lower yields (-94 lb/A) than the non-B2XF average.

The potential value of each B2XF variety compared to the average of non-B2XF varieties based on three potential cotton prices (Table 2). Even at depressed prices, the value of utilizing three of the B2XF varieties was figured to be at least $37 per acre, and significantly higher with more desirable prices.

Conclusions

Data in 2015 indicates that the top four or five ranked varieties were most consistent in producing top yields. Of those, three had the B2XF trait and ranked 1st, 3rd and 4th based on average yields across all locations (and were statistically similar). Overall, some of the B2XF varieties performed extremely well in GA during 2015 and three of five bring increased yield potential to the market along with additional topical herbicide options. However, this work also

revealed that not all B2XF varieties had similar performance and emphasized the importance of proper variety assessment information. It should be noted that fiber quality data was not available in time of printing, and this information will need to be examined to ensure that Georgia producers can continue to deliver superior fiber quality.

Table 1. Variety performance in Georgia during 2015.

Variety	Avg. Yield (lbs/A)	% Above Trial Avg.	% in Top 4	% in Top 3	% in Top 2	% in Top 1
DP 1538 B2XF	1,298 a[a]	84[b]	53[b]	42	37	37
DP 1558NR B2RF	1,270 ab	84	53	37	21	16
CG 3885 B2XF	1,266 ab	95	74	58	42	16
DP 1553 B2XF	1,254 ab	74	58	47	26	5
ST 6182 GLT	1,237 abc	79	37	37	26	11
DP 1252 B2RF	1,211 bcd	74	37	21	16	0
NG 5007 B2XF	1,188 cde	42	21	16	11	0
PHY 333 WRF	1,179 cde	37	26	16	16	11
PHY 444 WRF	1,166 de	32	16	16	5	5
PHY 552 WRF	1,144 ef	21	11	5	0	0
ST 4946 GLB2	1,131 ef	16	11	5	0	0
NG 3405 B2XF	1,097 f	5	0	0	0	0

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

Table 2. Value of B2XF varieties in Georgia during 2015.

Variety	Avg. Lint Yield (lbs/A)	Yield and value (per acre) of B2XF vs. non-B2XF varieties			
		Yield (lbs)	@ 80 cents/lb	@ 70 cents/lb	@ 60 cents/lb
DP 1538 B2XF	1,298	107[a]	$85.51[b]	$71.82	$64.13
CG 3885 B2XF	1,266	75	$59.67	$52.21	$44.75
DP 1553 B2XF	1,254	63	$50.67	$44.28	$37.96
NG 5007 B2XF	1,188	-3	-$2.50	-$2.19	-$1.88
NG 3405 B2XF	1,097	-94	-$75.17	-$65.78	-$56.38
B2XF Advantage		30	$23.62	$20.67	$17.72

[a]Diff. in B2XF varieties and avg. of seven non-B2XF varieties.
[b]Value compared to non-B2XF variety avg. at 3 prices levels.

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