PERFORMANCE OF DELTAPINE SEED BOLLGARD™ COTTON VARITIES IN THE NORTH DELTA

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Abstract

Deltapine Seed, a separate operating division of Delta and Pine Land Company conducted numerous on-farm field evaluations of its elite varieties with the Bollgard technology throughout the North Delta. Bollgard varieties evaluated included DP 448B (tested as DPX 9729B), DP 32B, NuCOTN 33B, DP 428B, DP 20B, DP 50B and one competitor, BG 4740. DP 448B produced the highest lint yields per acre followed by DP 32B and NuCOTN 33B. Turnout was lower than the three year average on all varieties due primarily to intense heat during late squaring, early bloom and prolonged drought. DP 32B produced the highest strength. Leaf grade average was well below the base of 4. No differences in fiber length or micronaire were observed between any of the Bollgard varieties tested. All Bollgard varieties produced profitable yields in the North Delta trials ranging from a high of 1372 pounds of lint produced by DP 448B to a low of 1076 pounds. DP 32B and NuCOTN 33B produced the second and third highest yields. Fiber analyses indicated staple, micronaire and strength were similar in all varieties. First position retention was excellent in all varieties.

Introduction

There is a growing interest in the use of Bollgard varieties in the North Delta due to continued high yields and profits of cotton varieties containing this technology. Dr. Gary Lentz (1997) an Entomologist with the University of Tennessee demonstrated higher yields with varieties containing Bt even in low level Heliothis and no spray situations. To evaluate crop growth and reproductive development, in-season and final plant mapping data was collected. Six Deltapine Seed varieties and BG 4740 containing the Bollgard technology were selected for evaluation in the North Delta. Locations included two trials at Scott, MS and one trial at Edmondson, AR.

Materials and Methods

Agronomic Service trials were designed to evaluate agronomic performance of seven cotton varieties with the Bollgard technology in the North Delta. DP 448B (DPX 9729B), a new short to mid-season Bollgard variety demonstrated very high yields under heat and drought conditions with excellent turnout and fiber quality properties. In the 1997 and 1998 Mid South Agronomic Service trials, DP 448B (DPX 9729B) has been at the top in performance ratings. DP 20B, DP 50B, and DP 428B are smooth leaf varieties with backgrounds that have long proven stable production records in the upper Mid South. These three varieties are classified as short season. DP 32B and NuCOTN 33B are mid-season varieties containing the Bollgard technology that are considered standards.

Trials were planted in the first two weeks of May 1998. Vigor ratings and population counts were taken 7-15 days after emergence. Plant mapping was recorded in August (In-season) and October (Final). All Bollgard trials were managed to control excessive vegetative growth.

Varieties averaged 31.4 inches in height and produced an average of 21.7 nodes (Table 1). Growth and height to node (HRN) ratios averaged less than 1.5 inches (Table 1). Boll retention per plant was excellent ranging from 15.6 (DP 428B) to 12.5 (NuCOTN 33B) as shown in Table 1. First position retention was excellent in all varieties. Main stem node retention on the bottom five fruiting branches was the highest in short-season varieties with DP 50B and DP 428B retaining 74% and 69%, respectively (Table 1). However, when main stem node retention was analyzed on the bottom five fruiting branches, differences were evident. The later maturing varieties and the varieties that initiate fruit late had a more negative reaction to the 1998 environment. This resulted in less fruit retention on the bottom five fruiting branches. The mid- to full-season varieties such as NuCOTN 33B (41%) and late fruiters such as BG 4740 (39%) had lower bottom five retention (Table 1).

All Bollgard varieties produced profitable yields in the North Delta trials. DP 448B (DPX 9729B) produced the highest yield at 1,372 pounds of lint per acre (Table 2). DP 32B (1,345 lb) and NuCOTN 33B (1,234 lb) produced the second and third highest lint yield per acre as reflected in Table 2. DP 50B produced the lowest yield of 1,076 lbs. per acre (Table 2). Turnout averaged 31.8% (Table 2) and ranged 2-4% lower than the past three-year average due largely to variety interaction with environmental factors. Fiber quality analyses indicated staple, micronaire, and strength were similar in all varieties and averaged 35.9, 4.4, and 26.8, respectively (Table 2).

Summary

Deltapine Seed Company conducted numerous on-farm field evaluations of its elite cotton varieties with the Bollgard technology throughout the North Delta. Bollgard varieties evaluated included DP 448B (tested as DPX 9729B), DP 32B, NuCOTN 33B, DP 428B, DP 20B, DP 50B and one competitor, BG 4740. There is a growing interest in the use of Bollgard varieties in the North Delta due to continued high yields and profits of cotton varieties containing this technology.

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DP 448B (DPX 9729B), a new short to mid-season Bollgard variety demonstrated very high yields under heat and drought conditions with excellent turnout and fiber quality properties. Three short-season varieties, DP 20B, DP 50B, and DP 428B are smooth leaf varieties with backgrounds that have long proven stable production records in the upper Mid South. DP 32B and NuCOTN 33B are mid-season varieties containing the Bollgard technology that are considered standards. Trials were planted in the first two weeks of May 1998. Vigor ratings and population counts were taken after emergence. Plant mapping was recorded in August and October. All Bollgard trials were managed to control excessive vegetative growth.

Varieties averaged 34.7 inches in height and produced an average of 21.9 nodes. Height-to-node (HRN) ratios averaged less than 1.5 inches. Boll retention per plant was excellent ranging from 15.6 to 12.5. Main stem node retention on the bottom five was the highest in short-season varieties with DP 50B and DP 428B retaining 74% and 69%, respectively. First position retention was excellent in all varieties, however, when main stem node retention was analyzed on the bottom five fruiting branches, differences were evident. The later maturing varieties and the varieties that initiate fruit late had a more negative reaction to environmental factors. This resulted in less fruit retention on the bottom five fruiting branches. The mid- to full-season varieties such as NuCOTN 33B and late fruiters such as BG 4740 had lower bottom five retention.

All Bollgard varieties produced profitable yields in the North Delta trials. DP 448B (formerly tested as DPX 9729B) produced the highest yield at 1,372 pounds of lint per acre. DP 32B and NuCOTN 33B produced the second and third highest lint yield per acre. Turnout averaged 31.8% and ranged 2-4% lower than the past three year average largely due to variety interaction with environmental factors. Fiber quality analyses indicated staple, micronaire, and strength were similar in all varieties. Short season and mid-season varieties containing the Bollgard gene clearly demonstrate their production capability in a wide range of environments in the North Delta.

Disclaimer

Mention of a trade name, proprietary product, or specific equipment does not constitute a guarantee or warranty by Deltapine Seed Company and does not imply approval of the product to the exclusion of others that may be available.

References

Lentz, Dr. Gary. 1997. Written correspondence.

Table 1. Bollgard varieties plant mapping data.

Variety	Height Inches	Total nodes	HNR Inches	Avg. Boll / Plant	% FP1 Retention 5-10
DP 9729B	30.0	19.6	1.5	14.7	58.0
DP 50B	30.2	21.3	1.4	15.0	74.0
BG 4740	31.5	22.9	1.4	13.2	39.0
DP 32B	31.8	21.9	1.4	14.6	52.0
NuCOTN 33B	31.9	22.8	1.4	14.2	41.0
DP 428B	32.2	22.2	1.5	15.6	69.0
DP 20B	32.2	21.3	1.5	12.5	65.0
Mean	31.4	21.7	1.44	14.3	56.8
P	NS	NS	NS	NS	NS
Std. Error	1.868	1.231	0.074	1.828	15.0
% CV	5.867	5.625	5.089	13.120	27.7

Table 2. Bollgard varieties fiber quality properties.

Variety	Lint (Lb/ac)	% Turnout	Staple	Strength	Mike
DP 9729B	1372	32.6	35.5	27.1	4.4
DP 32B	1345	32.1	35.3	27.5	4.6
NuCOTN 33B	1234	30.6	35.8	27.3	4.4
DP 428B	1231	31.7	36.0	25.6	4.3
DP 20B	1174	32.7	36.0	26.9	4.0
BG 4740	1146	33.0	36.0	28.2	4.8
DP 50B	1076	29.8	36.5	25.3	4.5
Mean	1225	31.8	35.9	26.8	4.4
P	N/S	N/S	N/S	0.002	0.032
Std. Error	92.26	0.516	0.416	0.166	0.081
%CV	15.1	3.2	2.8	1.1	3.2
LSD	-	-	-	-	0.19