DP 0920 B2RF AND DP 0924 B2RF: NEW EARLY-MID MATURING CLASS OF 2009 B2RF VARIETIES FROM DELTA AND PINE LAND

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Abstract

DP 0920 B2RF and DP 0924 B2RF are both early-mid maturity variety with excellent yield potential that will be released for commercial sales in the 2009 growing season. Both varieties have semi-smooth leaf pubescence, medium plant height. The average fiber properties of DP 0920 B2RF are 35.5 staple, 4.56 micronaire, and 27.5 g/tex fiber strength with the node of the first fruiting branch average at 6.4 nodes. The average fiber properties of DP 0924 B2RF are ~35.5 staple, 4.61 micronaire, and 28.4 g/tex fiber strength with the node of the first fruiting branch average at 6.2 nodes. DP 0920 B2RF and DP 0924 B2RF varieties were developed from the Monsanto cotton breeding program using elite genetics. The yield performance of DP 0920 B2RF is greater than ST 4554 B2RF in a Beltwide comparison and greater than FM 9180 B2RF in W. Texas testing locations. The yield performance of DP 0924 B2RF is similar to ST 4554 B2RF in a Beltwide comparison and greater than FM 9180 in W. Texas region.

Introduction

Deltapine brand is releasing for commercial introduction in 2009, two new early-mid maturity variety that contains both the Bollgard II and Roundup Ready Flex traits: DP 0920 B2RF and DP 0924B2RF. The characteristics describing DP 0920 B2RF are summarized in Table 1. DP 0920 B2RF and DP 0924 B2RF were developed by Doug Shoemaker and Robert McGowen at the Monsanto Cotton Breeding site in Scott, MS. The highlights of DP 0920 B2RF characteristics are improved yield and gin turnout compared previous Deltapine brand varieties and competitive check varieties, particularly in dryland locations.

Table 1. DP 0920 B2RF Characteristics and Fiber quality

Trait	Description
Maturity	Early-Mid
Leaf Pubescence	Semi-Smooth
Plant Height	Medium
Verticillium Tolerance	Good
Micronaire	4.56
Staple	35.5
Strength	27.5 g/tex
Node First Fruiting Branch	6.4
Seed size (seed / lb)	4800 - 5200

The characteristics describing DP 0924 B2RF are summarized in Table 2. The highlights of DP 0924 B2RF characteristics are improved yield and gin turnout compared previous Deltapine brand varieties and competitive check varieties, particularly in dryland locations.

Table 2. DP 0924 B2RF Characteristics and Fiber quality

Trait	**Description**
Maturity	Early-Mid
Leaf Pubescence	Semi-Smooth
Plant Height	Medium
Verticillium Tolerance	Good
Micronaire	4.61
Staple	~35
Strength	28.4 g/tex
Node First Fruiting Branch	6.2
Seed size (seed / lb)	4400 - 4800

Materials and Methods

The data describing DP 0920 B2RF and DP 0924 B2RF(along with internal and competitive check varieties) was obtained from the following sources: Monsanto breeder trials (2007 and 2008), Monsanto on-farm trials (2008). Plant growth, fruiting, and maturity comparisons were made by plant mapping a subset of the Monsanto on-farm trials when approximately 50% of the bolls were open. All available yield, fiber quality and plant mapping data were queried on the dates noted in each data table for these analyses. Analysis of variance was completed using JMP 5.0 statistical software (SAS Institute) and LS Means are presented in the data tables.

Results and Discussion

Plant Mapping Comparisons for DP 0920 B2RF

The growth and fruiting characteristics of DP 0920 B2RF, as measured by end-of-season plant mapping, are summarized in Table 3. The growth and fruiting variables of DP 0920 B2RF are similar to ST 4554 B2RF, with the exception of node of first fruiting branch, where DP 0920 B2RF is 0.3 nodes greater than ST 4554 B2RF (Table 3). DP 0920 B2RF is characterized as an early-mid maturity variety, with medium plant height due, in part, to the similarity of its fruiting and plant development characteristics compared to ST 4554 B2RF which is also early-mid maturity.

Table 3. Plant mapping comparison of DP 0920 B2RF and ST 4554 B2RF in on-farm variety trials, 2008.

	DP 0920 B2RF	ST 4554 B2RF
Plant Ht.	36.2	35.9
Total Nodes	20.0	20.1
Fruiting Nodes	10.4	10.3
HNR	1.81	1.78
NFFB	6.4	6.1
n= Beltwide comparisons,156 locations, 2008 HNR = Height to Node Ratio (inches / node); NFFB = Node of First Fruiting Branch		

Plant Mapping Comparisons for DP 0924 B2RF

The growth and fruiting characteristics of DP 0924 B2RF, as measured by end-of-season plant mapping, are summarized in Table 4. The growth and fruiting variables of DP 0924 B2RF are similar to ST 4554 B2RF, with the exception of plant height and total nodes, where DP 0924 B2RF plant height averages 1.8 inches greater and total nodes averages 0.7 greater than ST 4554 B2RF (Table 4). DP 0924 B2RF is characterized as an early-mid maturity variety, with medium plant height due, in part, to the similarity of its fruiting and plant development characteristics compared to ST 4554 B2RF which is also early-mid maturity.

Table 4. Plant mapping comparison of DP 0924 B2RF and ST 4554 B2RF in Deltapine brand on-farm variety trials, 2008.

	DP 0920 B2RF	ST 4554 B2RF
Plant Ht.	37.7	35.9
Total Nodes	20.8	20.1
Fruiting Nodes	10.6	10.3
HNR	1.81	1.78
NFFB	6.2	6.1
n= Beltwide comparisons, 158 locations, 2008 HNR = Height to Node Ratio (inches / node); NFFB = Node of First Fruiting Branch		

Yield, Fiber Quality, and Value Comparisons for DP 0920 B2RF

DP 0920 B2RF had similar staple and fiber strength compared to ST 4554 B2RF, in 174 locations of testing in 2008. The improvement in DP 0920 B2RF over ST 4554 were crop value (increase of 40 $/acre), lint yield (increase of 77 lb/acre), and gin turnout (1.9 % increase)(Table 5). The improved production of DP 0920 B2RF gives growers a higher yield potential option for several markets that fit the early to mid maturity of this variety.

Table 5. Lint Yield, Fiber Quality, and Value comparisons of DP 0920 B2RF and ST 4554 B2RF in 2008 testing.

Variety	Crop Value ($/acre)	Lint Yield (lb/acre)	% Gin Turnout	Staple (32nd's inch)	Micronaire	Fiber Strength (g/tex)	Uniformity Index	Loan Value (cents/lb)
DP0920B2RF	598	1083	37.3	35.5	4.56	27.5	81.8	54.88
ST 4554 B2RF	558	1006	35.4	35.5	4.55	29.2	81.9	55.15
Notes: Beltwide Data, 2008 testing, all locations Loan Value = $0.52/lb +/- premiums or discounts according to 2007 USDA Loan Chart, assuming 31 color and 3 leaf grade. Data available as of 12.03.08								

DP 0920 B2RF also had high yield and gin turnout compared to FM 9180 in 16 comparisons for the 2008 testing located in W. Texas (Table 6). In this case, the improvements in lint yield resulted in a higher crop value (increase of 28 $/acre), with a slightly lower loan value (cents/ lb). The micronaire of the two varieties was also similar in this comparison.

Table 6. Lint Yield, Fiber Quality, and Value comparisons of DP 0920 B2RF and FM 9180 B2RF in 2008 testing located in W. Texas.

Variety	Crop Value ($/acre)	Lint Yield (lb/acre)	% Gin Turnout	Staple (32nd's inch)	Micronaire	Fiber Strength (g/tex)	Uniformity Index	Loan Value (cents/lb)
DP 0920B2RF	595	1088	36.1	36.0	4.40	27.1	81.9	54.17
FM 9180B2RF	567	1013	33.6	37.4	4.20	30.0	81.9	55.75
Notes: 2008 testing, W. Texas 16 locations Loan Value = $0.52/lb +/- premiums or discounts according to 2007 USDA Loan Chart, assuming 31 Color and 3 leaf grade. Data available as of 12.03.08								

Yield, Fiber Quality, and Value Comparisons for DP 0924 B2RF

The improvement in DP 0924 B2RF over ST 4554 were highlighted in the dryland trials in 2008. In these trials, DP 0924 B2RF had improved crop value (increase of 33 $/acre), lint yield (increase of 72 lb/ acre), and gin turnout (0.7 % increase) (Table 7). The improved production of DP 0924 B2RF gives growers a higher yield potential choice for dryland acres in several markets that fit the early to mid maturity of this variety.

Table7. Lint Yield, Fiber Quality, and Value comparisons of DP 0924 B2RF and DP ST 4554 in 2008 Beltwide dryland trial testing.

Variety	Crop Value ($/acre)	Lint Yield (lb/acre)	% Gin Turnout	Staple (32nd's inch)	Micronaire	Fiber Strength (g/tex)	Uniformity Index	Loan Value (cents/lb)
DP0924B2RF	523	964	37.1	34.2	4.75	28.3	82.0	53.46
ST 4554 B2RF	490	892	36.4	34.9	4.62	29.2	81.8	54.30

Notes: Beltwide Data, 2008 testing, 71 locations
Loan Value = $0.52/lb +/- premiums or discounts according to 2007 USDA Loan Chart, assuming 31 color and 3 leaf grade. Data available as of 12.03.08

DP 0924 B2RF had similar to slightly higher yield and gin turnout compared to ST 4554 in all 174 comparisons for the on-farm 2008 testing Beltwide (Table 8). The improvement in DP 0924 B2RF over ST 4554 were crop value (increase of 11 $/acre), lint yield (increase of 31 lb/ acre), and gin turnout (0.8 % increase) (Table 8). DP 0924 B2RF had slightly higher micronaire compared to ST 4554 B2RF.

Table 8. Lint Yield, Fiber Quality, and Value comparisons of DP 0924 B2RF and ST 4554 B2RF in 2008 testing Beltwide.

Variety	Crop Value ($/acre)	Lint Yield (lb/acre)	% Gin Turnout	Staple (32nd's inch)	Micronaire	Fiber Strength (g/tex)	Uniformity Index	Loan Value (cents/lb)
DP 0924B2RF	569	1037	36.2	34.9	4.61	28.4	82.1	54.54
ST 4554 B2RF	558	1006	35.4	35.5	4.55	29.2	81.9	55.15

Notes: Beltwide data, 2008 testing, 174 locations.
Loan Value = $0.52/lb +/- premiums or discounts according to 2007 USDA Loan Chart, assuming 31 Color and 3 leaf grade. Data available as of 12.03.08

DP 0924 B2RF also had high yield and gin turnout compared to FM 9180 in 16 comparisons for the 2008 testing located in W. Texas (Table 9). The improvement in DP 0924 B2RF over FM 9180 B2F were crop value (increase of $19/acre), lint yield (increase of 53 lb/ acre), and gin turnout (1.9 % increase) (Table 9).

Table 9. Lint Yield, Fiber Quality, and Value comparisons of DP 0924 B2RF and FM 9180 B2RF in 2008 testing located in W. Texas.

Variety	Crop Value ($/acre)	Lint Yield (lb/acre)	% Gin Turnout	Staple (32nd's inch)	Micronaire	Fiber Strength (g/tex)	Uniformity Index	Loan Value (cents/lb)
DP 0924B2RF	586	1066	3502	35.5	4.34	27.9	82.0	54.24
FM 9180B2F	567	1013	33.6	37.4	4.20	30.0	81.9	55.75

Notes: 2008 testing, W. Texas 16 locations
Loan Value = $0.52/lb +/- premiums or discounts according to 2007 USDA Loan Chart, assuming 31 Color and 3 leaf grade. Data available as of 12.03.08

Regional Yield and Crop Value Performance for DP 0920 B2RF and DP 0924 B2RF

The regional yield (lb lint/acre) and crop value ($/acre) of DP 0920 B2RF and DP 0924 B2RF was compared to ST 4554 BRRF to calculate the % difference within each data region listed below (Figure 1 & 2).

DP 0920 B2RF had a higher lint yield and crop value than ST 4554 B2RF in all regions (Figure 1). Regions with higher percent lint yield and crop value for DP 0920 included N. Southeast, S. Southeast, N. Delta, S. Delta, E. Texas, and W. Texas. In the N. Southeast region, the percent yield difference was greatest for DP 0920 B2RF with over a 15.5% difference when compared to ST4554 B2RF and also a 15.1% crop value difference. Results were most similar in the W. Texas region with DP 0920 B2RF at 2.3% increase in yield difference and 1.7% increase in crop value over ST 4544 B2RF.

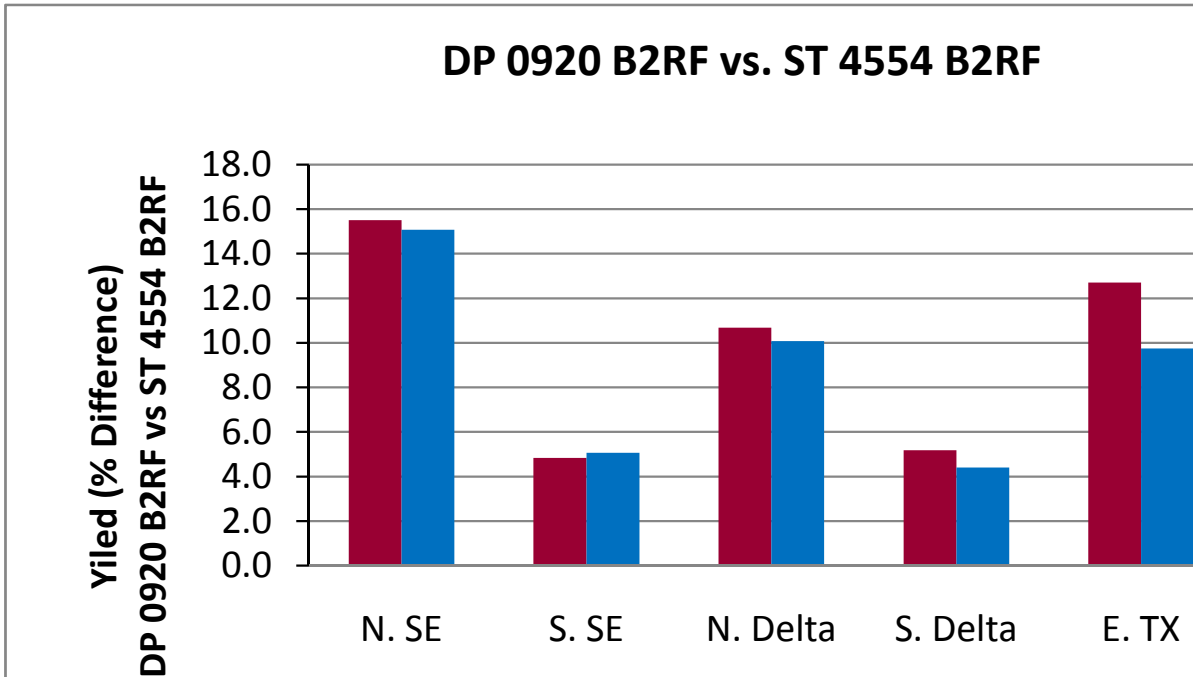

Figure 1. DP 0920 B2RF regional yield and crop value performance expressed as % difference when compared to ST 4554 B2RF in 2008 testing. Regions: N. SE (N. Southeast), S. SE (S. Southeast), N. Delta, S. Delta, E. TX (E. Texas), and W. TX (W. Texas).

DP 0924 B2RF had a higher lint yield and crop value than ST 4554 B2RF in the following regions: N. Southeast, S. Southeast, N. Delta, and E. Texas (Figure 2). In the W. Texas region, both products had similar yield and crop value. In the N. Southeast region, the percent yield difference was greatest for DP 0924 B2RF with a 10.7% difference when compared to ST4554 B2RF and also a 9.5% crop value difference.

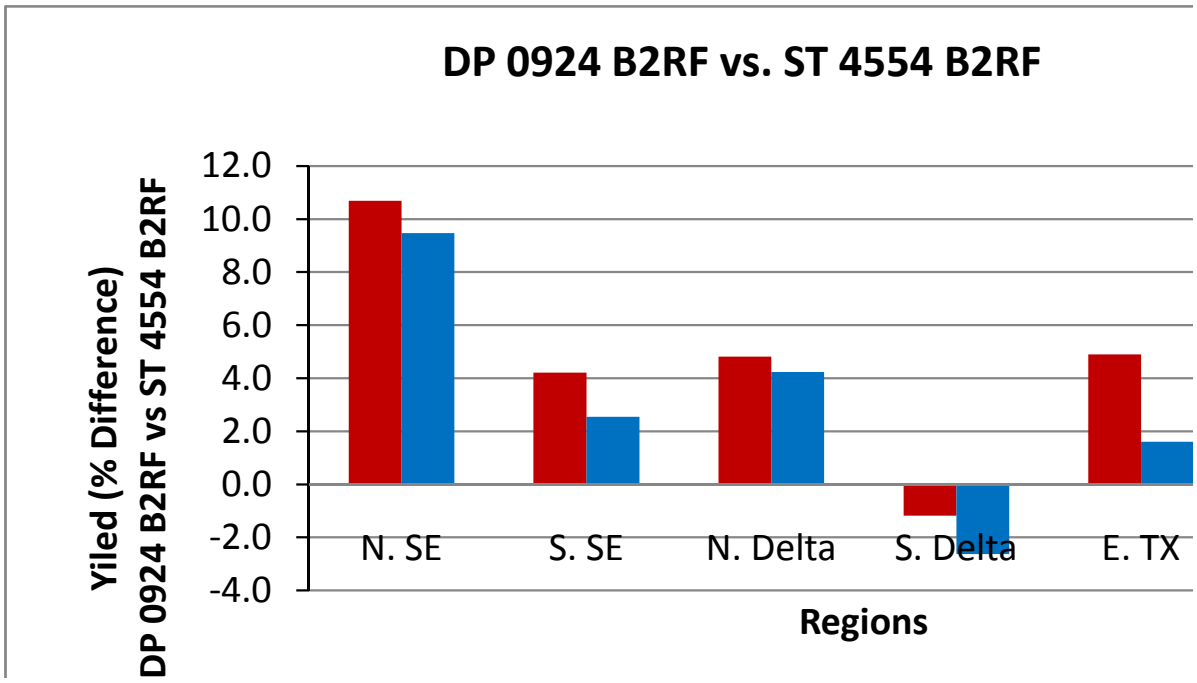

Figure 2. DP 0924 B2RF regional yield and crop value performance expressed as % difference when compared to ST 4554 B2RF in 2008 testing. Regions: N. SE (N. Southeast), S. SE (S. Southeast), N. Delta, S. Delta, E. TX (E. Texas), and W. TX (W. Texas).

Summary

DP 0920 B2RF was found to have 7.7% improved yield performance compared to ST 4554 B2RF Beltwide. Lint yield and gin turnout of DP 0920 B2RF was similar or improved compared to ST 4554 in all regions discussed. The crop value of DP 0920 B2RF was 5.0% greater than ST4554 B2RF in Beltwide comparisons. The regional performance of DP 0920 B2RF showed increases in yield and crop value when compared to ST 4554 B2RF in all regions. DP 0920 B2RF was also found to have similar yield performance to FM 9180 B2RF in W. Texas testing. The improved turnout and very good fiber properties of DP 0920 B2RF provides for consistent crop value across a variety of environments and soil types.

DP 0924 B2RF was found to have slightly greater (+3.1%) yield performance to ST 4554 B2RF Beltwide and 5.1% greater yield compared to FM 9180 B2RF in W. Texas. Lint yield of DP 0924 B2RF was 8.1% greater compared to ST 4554 B2RF in dryland trials. The crop value of DP 0924 B2RF was 6.7% greater than ST4554 B2RF in Beltwide dryland trials. The regional performance of DP 0924 B2RF showed increases in both yield and crop value differences when compared to ST 4554 B2RF in most regions including N. Southeast, S. Southeast, N. Delta, and E. Texas. DP 0924 B2RF showed strong performance across a range of environments, particularly in dryland tests and performed well against widely planted checks throughout the region.