DP 0949 B2RF: A NEW MID-FULL MATURING CLASS OF 2009 B2RF VARIETY FROM DELTA AND PINE LAND

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Abstract

DP 0949 B2RF is a mid-full maturity variety with high fiber quality that will be released for commercial sales in the 2009 growing season. The variety has light hairy leaf pubescence, medium to tall plant height. The average fiber properties of DP 0949 B2RF are 35.5 to 36 staple, 4.55 micronaire, and 28.9 g/tex fiber strength. The node of the first fruiting branch averages 6.7 nodes. The yield performance of DP 0949 B2RF is greater than ST 4554 B2RF and PHY 485 WRF in the southern Cotton Belt. The staple length of DP 0949 B2RF was longer and the lint yield was higher in all three comparison varieties: DP 555 BG/RF, PHY 485 WRF, and ST 4554 B2RF. The crop value of DP 0949 B2RF is greater than ST 4554 B2RF in several regions. The regional performance of DP 0949 B2RF showed the best performance in the S. Southeast, along with strong performance in W. Texas.

Introduction

Deltapine brand is releasing for commercial introduction in 2009, a new mid-full maturity variety that contains both the Bollgard II and Roundup Ready Flex traits: DP 0949 B2RF. The characteristics describing DP 0949 B2RF are summarized in Table 1. DP 0949 B2RF was developed by Doug Shoemaker and Robert McGowen at the Monsanto Cotton Breeding program in Scott, MS. The highlights of DP 0949 B2RF characteristics are high yield potential and improved fiber quality compared to DP 555 BG/RF and competitive check varieties,.

Table 1. DP 0949 B2RF Characteristics and Fiber quality

Trait	Description
Maturity	Mid – Full
Leaf Pubescence	Lt. Hairy
Plant Height	Med – Tall
Seed Size (seed / lb)	4800-5200
Verticillium Tolerance	Good
Micronaire	4.55
Staple	35.5 to 36
Strength	28.9 g/tex
Node First Fruiting Branch	6.7

Materials and Methods

The data describing DP 0949 B2RF (along with internal and competitive check varieties) was obtained from the following sources: Monsanto Deltapine breeder trials (2007), 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

The growth and fruiting characteristics of DP 0949 B2RF, as measured by end-of-season plant mapping, are summarized in Tables 2 and 3. The growth and fruiting variables of DP 0949 B2RF are similar to DP 161 B2RF, with the exception of total nodes, where DP 161 B2RF is 0.8 nodes greater than DP 0949 B2RF (Table 2). DP 0935 B2RF is characterized as a mid-full maturity variety, with medium to tall plant height due, in part, to the similarity of its fruiting and plant development characteristics compared to DP 161 B2RF.

Table 2. Plant mapping comparison of DP 0949 B2RF and DP 161 B2RF in on-farm variety trials, 2008.

	DP 0949 B2RF	DP 161 B2RF
Plant Ht.	39.2	39.9
Total Nodes	20.6	21.4
Fruiting Nodes	10.5	10.9
HNR	1.91	1.87
NFFB	6.7	6.5
n= 63 locations, 2008 HNR = Height to Node Ratio (inches / node); NFFB = Node of First Fruiting Branch		

DP 0949 B2RF is compared to DP 555 BG/RR in Table 3. In this comparison, DP 555 BG/RF was found to be taller, with more total nodes, more fruiting nodes, and slightly higher NFFB. DP 0949 B2RF's slightly earlier maturity and less aggressive growth pattern, should result in less growth regulator management required by this variety, compared to DP 555 BG/RR

Table 3. Plant mapping comparisons of DP 0949 B2RF and DP 555 BG/RF in on-farm variety trials, 2008.

	DP 0949 B2RF	DP 555 BG/RR
Plant Ht.	39.2	41.1
Total Nodes	20.6	23.3
Fruiting Nodes	10.5	12.1
HNR	1.91	1.76
NFFB	6.7	7.4
n=63 locations, 2008 HNR = Height to Node Ratio (inches / node); NFFB = Node of First Fruiting Branch		

Yield, Fiber Quality, and Value Comparisons

DP 0949 B2RF had similar lint yield and gin turnout compared to DP 555 BG/RF, in 62 locations of testing in 2008 (Table 4). The fiber properties that showed improvement in DP 0949 B2RF were staple (1.1 staple longer), fiber strength (1 g/tex stronger), uniformity index (1.2 higher), and loan value (1.62 cents/lb higher). The improved fiber quality of DP 0949 B2RF gives growers a higher quality option for several markets that fit the mid to full maturity of this variety.

Table 4. Lint Yield, Fiber Quality, and Value comparisons of DP 0949 B2RF and DP 555 BG/RF 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)
DP0949B2RF	579	1042	37.9	35.7	4.55	28.9	82.0	55.23
DP 555BG/RF	559	1036	38.3	34.6	4.47	27.9	80.8	53.61
Notes: FACT On-Farm Data, 2008 testing, 62 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 0949 B2RF was found to have higher crop value, lint yield, and gin turnout when compared to FM 9180 B2RF in 11 comparisons located in W. Texas for the 2008 testing (Table 5). The improvement in DP 0949 B2RF over FM B2RF were crop value (increase of $12 / acre), lint yield (increase of 83 lb/acre), and gin turnout (3.7 % increase). The fiber qualities for DP 0949 B2RF are lower for staple, micronaire, fiber strength, and uniformity index than FM 9180 B2RF. Loan value for FM 9180 B2RF was 1.9 cents per pound higher than DP 0949B2RF.

Table 5. Lint Yield, Fiber Quality, and Value comparisons of DP 0949 B2RF and FM 9180 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)
DP0949B2RF	579	1096	37.3	36.1	4.17	27.9	81.6	53.81
FM9180 B2RF	567	1013	33.6	37.4	4.20	30.0	81.9	55.75
Notes: FACT On-Farm Data W. Texas, 2008 testing, 11 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 0949 B2RF had improvements in lint yield and staple when compared to DP 555 BG/RR, PHY 485 WRF, and ST 4554 B2RF in 16 comparisons located in the Southern Tier regions (S. Delta, S. Texas, and Southeast Monsanto breeder locations) for the 2008 testing (Table 6). The staple, strength, and uniformity index were all improved for DP 0949 B2RF compared to DP 555 BG/RR. DP 0949 B2RF had longer staple, but similar measurements for micronaire, fiber strength and uniformity index. The staple, fiber strength, and uniformity index for DP 0949 B2RF were similar to ST 4554 B2RF.

Table 6. Lint Yield, Fiber Quality, and Value comparisons of DP 0949 B2RF, DP 555 BG/RRST 4554 B2RF, and PHY 485 WRF in 16 breeder locations, (S. Delta, S. Texas, Southeast) 2008 testing.

Variety	Lint Yield (lb/acre)	Lint Percent	Staple (32nd's inch)	Micronaire	Fiber Strength (g/tex)	Uniformity Index
DP0949B2RF	1450	43.0	37.0	4.53	30.0	83.8
DP 555 BG/RR	1373	42.7	36.1	4.17	29.3	81.9
PHY485WRF	1339	39.8	36.5	4.55	30.7	83.7
ST 4554 B2RF	1304	39.7	36.9	4.45	30.3	83.6
Notes: Southern Cotton Belt (S. Southeast, S. Delta, S. Texas) data, 2008 testing, 16 breeder 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

The regional yield (lb lint/acre) and crop value ($/acre) of DP 0949 B2RF was compared to ST 4554 BRRF to calculate the % difference within each data region listed below (Figure 1). In regions S. Southeast, N. Delta, and W. Texas, both the lint yield and crop value for DP 0949 B2RF were greater than ST 4554 B2RF. In the N. Delta region, the percent yield difference was greatest for DP 0949 B2RF with over a 6.5% difference when compared to ST4554 B2RF and also a 6.7% crop value difference. Results were most similar in the W. Texas region with DP 0949 B2RF at 3% increase in yield difference and 2% in crop value over ST 4544 B2RF.

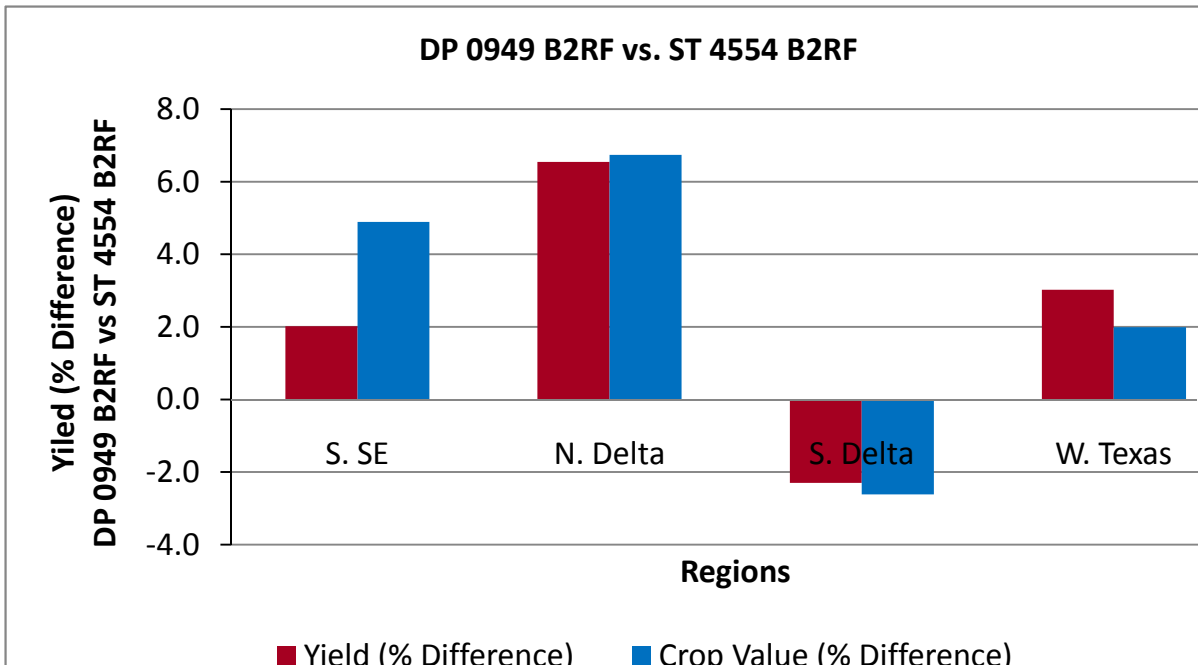

Figure 1. DP 0935 B2RF regional yield and crop value performance expressed as % difference when compared to ST 4554 B2RF in 2008 testing. Regions:S. SE (S. Southeast), N. Delta, S. Delta, W. TX (W. Texas).

Summary

DP 0949 B2RF was found to have similar or higher yield performance to DP 555 BG/RF and higher yield performance to PHY 485 WRF, and ST 4554 B2RF (southern Cotton Belt, Southeast, S. Delta, and S. Texas). The fiber quality of DP 0949 B2RF was improved for staple length compared to all three check varieties discussed. The excellent fiber quality resulted in higher loan value and crop value of DP 0949 B2RF when compared to DP 555 BG/RR.