

DELTAPINE® FULL MATURITY NEW CLASS OF '13 COTTON VARIETY:**DP 1359 B2RF****Eric Best****Monsanto****Lubbock, TX****David W. Albers****Monsanto Company****Saint Louis, MO****Abstract**

DP 1359 B2RF is a Genuity® Bollgard II® with Roundup Ready® Flex cotton product. This full maturing variety has potential for excellent lint yield and fiber quality that will be released for commercial sales in the 2013 growing season. This variety has a smooth leaf pubescence with tall plant height. Average fiber properties of DP 1359 B2RF include fiber length of 1.12 inches, 4.5 micronaire, 30.1 g/tex fiber strength and 81.0 percent uniformity in its target market of Texas. The average turnout of DP 1359 B2RF is 39.3 percent. DP 1359 B2RF is rated very good for storm resistance, similar to DP 1032 B2RF and DP 1212 B2RF.

Introduction

In 2013, Deltapine® brand is releasing for commercial introduction, a new full maturing variety. The characteristics describing DP 1359 B2RF are summarized in Table 1. The highlights of DP 1359 B2RF are outstanding yield potential with a maturity which makes it a great fit for full-season Texas, Oklahoma, and Arizona regions. DP 1359 B2RF has excellent fiber quality when compared to similar full season varieties of Deltapine brand products and competitive check varieties.

Table 1. DP 1359 B2RF Characteristics and Fiber Quality

Trait	DP 1359 B2RF
Maturity	Full
Leaf Pubescence	Smooth
Plant Height	Tall
Micronaire	4.5
Length	1.12 inches
Strength	30.1 g/tex
Uniformity	81.0%
Lint Percent	39.3%
Number of Fruiting Nodes	9.4
Node First Fruiting Branch	6.8

Materials and Methods

The data describing DP 1359 B2RF (along with internal and competitive check varieties) was obtained from the following sources: Monsanto breeder trials, Monsanto on-farm trials, and University trials in its target market of Texas. Plant growth, fruiting, and maturity comparisons were made by plant mapping a subset of the Deltapine brand on-farm trials when approximately 50% of the bolls were open. All available yield, fiber quality, and plant mapping data were queried within the area noted and on the dates noted in each data table for these analyses.

Results and Discussion**Plant Mapping Comparisons**

The growth and fruiting characteristics of DP 1359 B2RF, as measured by end-of-season plant mapping, are summarized in Table 2. The growth and fruiting variables of DP 1359 B2RF are similar to DP 1044 B2RF, with the exception of plant height, where DP 1359 B2RF was significantly taller by 3.3 inches, fruiting nodes, where DP 1359 B2RF averaged 0.7 more fruiting nodes and total nodes, where DP 1359 B2RF averaged 1 more node than

DP 1044 B2RF (Table 2). DP 1359 B2RF requires approximately 26.4 more DD60s than DP 1044 B2RF to achieve 100% open boll. DP 1359 B2RF is characterized as a full maturing variety, with a slightly taller plant height than DP 1044 B2RF.

Table 2. Plant mapping comparison of DP 1359 B2RF and DP 1044 B2RF from Texas/Oklahoma In-Season data (2011-2012).

	DP 1359 B2RF	DP 1044 B2RF
Plant Height (inches)	28.5*	25.8
Total Nodes	19.2*	18.2
Number of Fruiting Nodes	9.4*	8.7
% Est. Open	46.1%	46.9%
Node of First Fruiting Branch	6.8	6.6
DD60's to 100% Open (Difference)	+26.4	0
*Significantly different than DP 1044 B2RF check. Data source: Texas/Oklahoma In-Season data 2011-2012.		

DP 1359 B2RF Yield, Fiber Quality, and Value Comparisons

The improvements in DP 1359 B2RF over Deltapine Check DP 1044 B2RF in testing conducted in East Texas were lint percent (increase of 1.8 percent), fiber length (increase of 0.02 inches), and fiber strength (increase of 0.78 g/tex). DP 1359 B2RF had similar micronaire and uniformity index when compared to DP 1044 B2RF (Table 3). The performance and fiber quality profile of DP 1359 B2RF gives growers another high yield potential variety option fit for the East Texas region.

Table 3. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1359 B2RF and DP 1044 B2RF in East Texas, 2010-2012.

Variety	Lint Yield (lb/acre)	Lint %	Fiber Length	Micronaire	Fiber Strength (g/tex)	Uniformity Index
DP 1359 B2RF	1119	38.9	1.08	4.5	29.2	80.80
DP 1044 B2RF	1115	37.1	1.06	4.5	28.4	80.89
Significance		**	**		+	
Observations	38	36	33	33	33	33
% Wins	53	88	77	57	55	36
Significance levels denoted by + = 0.1; * = 0.05; ** = 0.01 alpha error levels. Data Source: All Monsanto (Breeding, Tech Development, Commercial) and public trials available for the year and geography listed.						

DP 1359 B2RF was compared to Deltapine DP 1044 B2RF in testing conducted in West Texas and exhibited improved lint percent (increase of 1.29 percent), with similar yield performance, fiber length, and fiber strength. DP 1359 B2RF had lower uniformity index and micronaire when compared to DP 1044 B2RF (Table 4).

Table 4. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1359 B2RF and DP 1044 B2RF in West Texas, 2010-2012.

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In testing in 2011 and 2012, DP 1359 B2RF also showed improvements over FM 9170B2F in West Texas. DP 1359 B2RF showed improvements in lint yield (increase of 105 lb/ acre) and lint percent (increase of 2 percent). In comparisons, DP 1359 B2RF showed similar fiber length, and micronaire, but lower fiber strength, and uniformity index when compared to FM 9170B2F (Table 5).

Table 5. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1359 B2RF and FM 9170B2F in West Texas, 2011-2012.

Variety	Lint Yield (lb/acre)	Lint %	Fiber Length	Micronaire	Fiber Strength (g/tex)	Uniformity Index
DP 1359 B2RF	1075	37.4	1.09	4.4	29.1	79.84
FM 9170B2F	969	35.3	1.11	4.3	30.1	80.73
Significance	**	**			*	*
Observations	33	35	16	16	16	16
% Wins	76	85	38	36	25	31

Significance levels denoted by + = 0.1; * = 0.05; ** = 0.01 alpha error levels.
 Data Source: All Monsanto (Breeding, Tech Development, Commercial) and public trials available for the year and geography listed

In testing in 2011 and 2012, DP 1359 B2RF also showed improvements over DP 1044 B2RF in Arizona. DP 1359 B2RF showed improvements in lint yield (increase of 282 lb/acre), lint percent (increase of 2.4 percent), fiber length (increase of 0.03 inches), and fiber strength (increase of 2.66 g/tex). In comparisons, DP 1359 B2RF showed similar micronaire rating and uniformity index to DP 1044 B2RF (Table 6).

Table 6. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1359 B2RF and DP 1044 B2RF in Arizona (2011-2012).

Variety	Lint Yield (lb/acre)	Lint %	Fiber Length	Micronaire	Fiber Strength (g/tex)	Uniformity Index
DP 1359 B2RF	2037	40.78	1.16	4.74	31.52	81.50
DP 1044 B2RF	1755	38.38	1.12	4.90	28.86	81.96

Significance levels denoted by + = 0.1; * = 0.05; ** = 0.01 alpha error levels.
 Data Source: All Monsanto (Breeding, Tech Development, Commercial) and public trials. 2011 - 2012, 5 locations.

Summary

DP 1359 B2RF is a full maturing variety ideal for production in Texas and Arizona environments. DP 1359 B2RF is a great fit for full season management. DP 1359 B2RF has similar performance to DP 1044 B2RF and in pre-commercial trials DP 1359 B2RF has shown improved fiber quality in East Texas. DP 1359 B2RF requires aggressive plant growth regulator (PGR) management prior to bloom if irrigation and rainfall results in higher than normal water availability.

In regional yield comparisons in Texas and Arizona, DP 1359 B2RF was found to have similar yield performance and fit when compared to Deltapine Checks DP 1044 B2RF, but DP 1359 B2RF reported improved fiber quality potential in the East Texas and Arizona regions. When compared to similar full maturing variety FM 9170B2F in West Texas, DP 1359 B2RF had higher lint yield, and lint percent, when averaging all Monsanto (Breeding, Tech. Development, and Commercial) and public trial testing.

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