NEW DELTAPINE CLASS OF '10 VARIETIES FOR EARLY TO MID SEASON MARKETS: DP 1028 B2RF AND DP 1034 B2RF

David W. Albers
Monsanto
Saint Louis, MO

Abstract

DP 1028 B2RF with Genuity™ Bollgard II® Roundup Ready Flex® (B2RF) is an early-mid maturity variety with excellent yield potential and excellent fiber quality potential that will be released for commercial sales in the 2010 growing season. This variety has smooth leaf pubescence and a medium-tall plant height. Average fiber properties of DP 1028 B2RF include fiber length of 1.16 to 1.17 inches, 4.8 micronaire, 28.7 g/tex fiber strength and 83.5 uniformity. The node of the first fruiting branch averages 5.8 nodes. The average yield performance of DP 1028 B2RF is improved compared to ST 4498B2RF and PHY375 WRF in the Upper MidSouth and Upper Southeast regions. DP 1028 B2RF has similar average lint yield and improved fiber length and micronaire compared to DP 0912 B2RF. The regional performance of DP 1028 B2RF showed the best performance in the Southeast and Midsouth regions including very good storm resistance.

DP 1034 B2RF is a mid maturing variety also with excellent yield potential that will be released for commercial sales in the 2010 growing season. This variety has smooth leaf pubescence and a medium-tall plant height. Average fiber properties of DP 1034 B2RF include fiber length of 1.14 inches, 4.8 micronaire, 28.5 to 29.5 g/tex fiber strength and 82.8 uniformity. The node of the first fruiting branch averages 5.6 nodes. DP 1034 B2RF has improved average lint yield and many fiber qualities over ST 5458B2RF, and PHY 485 WRF in both the Upper MidSouth and Upper Southeast. The regional performance of DP 1034 B2RF showed the best performance in the Southeast and Midsouth regions including very good storm resistance featuring a tighter boll when compared to other Deltapine varieties.

Introduction

In 2010, Deltapine brand is releasing for commercial introduction, a new early-mid maturity variety: DP 1028 B2RF and a new mid maturity variety: DP 1034 B2RF which both contain the Genuity™ Bollgard II and Roundup Ready Flex traits. The characteristics describing DP 1028 B2RF and DP 1034 B2RF are summarized in Table 1. The highlights of DP 1028 B2RF are improved staple length, micronaire and outstanding yield potential compared to previous Deltapine brand products and competitive check varieties. DP 1034 B2RF features outstanding yield potential combined with similar fiber quality to commercial standards when compared to similar mid-maturity Deltapine brand products and competitive check varieties.

Table 1. DP 1028 B2RF and DP 1034 Characteristics and Fiber quality

Trait	DP 1028 B2RF	DP 1034 B2RF
Maturity	Early-Mid	Mid
Leaf Pubescence	Smooth	Smooth
Plant Height	Med-Tall (39.8 inches)	Med-Tall (40.1)
Micronaire	4.8	4.8
Length	1.16 to 1.17	1.14
Strength	28.5 g/tex	28.5 to 29.5 g/tex
Uniformity	83.5	82.8
Number of Nodes	19.5	19.7
Number of Fruiting Nodes	10.3	10.9
Node First Fruiting Branch	5.8	5.6
Node Uppermost Harvestable Boll	15.1	15.5

Materials and Methods

The data describing DP 1028 B2RF and DP 1034 B2RF (along with internal and competitive check varieties) was obtained from the following sources: Monsanto breeder trials (2008), Monsanto on-farm trials (2009) referred to as Field Advancement Coordinated Trials (FACT). 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 on the dates noted in each data table for these analyses.

Results and Discussion

DP 1028 B2RF Lint Yield Per Acre Regional Comparison

The average lint yields per acre of DP 1028 B2RF, measured at harvest, are summarized in Tables 2. In the table DP 1028 B2RF is compared to several checks which have been averaged according to regional location. Check varieties include DP 0912 B2RF, DP 0935 B2RF, PHY 375 WRF, ST 4498B2RF, FM 9160B2F (West Texas only), FM 1740B2F (West Texas only) and FM 840B2F (South Texas only). The average lint yield of DP 1028 B2RF was equal to or higher than the check varieties in the Upper Southeast, Lower Southeast, Upper Midsouth, Lower Midsouth, South Texas and Central Texas regions.

Table 2. Yield data comparison of DP 1028 B2RF and checks (average yields of several cotton products by region) in Monsanto on-farm FACT trials in 2009.

Territory	DP 1028 B2RF	Checks	% Difference
Upper Southeast	1650	1570	5.1
Lower Southeast	1392	1209	15.1
Upper Midsouth	1113	1077	3.3
Lower Midsouth	754	712	5.9
South Texas	1052	1025	2.6
Central Texas	1225	1221	0.3
West Texas	1318	1430	-7.8
Arizona	1452	1526	-4.8
Check = DP 0935 B2RF, DP 0912 B2RF, PHY 375 WRF, ST 4498B2RF, FM 9160B2F (West Texas only) & FM 1740B2F (West Texas only) and FM 840B2F (South Texas only). Data from 2009 Field Advancement Coordination Trials (FACT). Data as of November 30, 2009			

DP 1028 B2RF Yield, Fiber Quality, and Value Comparisons

The improvements in DP 1028 B2RF over ST 4554B2RF in testing conducted in the Northern Tier of the Cotton Belt (Upper Midsouth and Upper Southeast regions) were crop value (increase of $37 /acre), average lint yield (increase of 87 lb/ acre), Lint % (increase of 3.8%), and fiber length (increase of 0.02). DP 1028 B2RF had a slight reduction in fiber strength when compared to ST 4498 B2RF (Table 3). The improved yield performance of DP 1028 B2RF gives growers a higher fiber quality option for several early to mid maturing markets.

Table 3. Crop Value, Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1028 B2RF and ST 4554B2RF in 2009 Field Advancement Coordination Trial testing.

Variety	Crop Value ($/acre)	Lint Yield (lb/acre)	Lint %	Fiber Length	Micronaire	Fiber Strength (g/tex)	Uniformity Index
DP 1028 B2RF	659	1331	43.9	1.17	4.8	28.4	84.7
ST 4498 B2RF	622	1244	40.1	1.15	4.5	30.4	84.6
% Difference	5.9%	7.0%					
Notes: Field Advancement Coordination Trial located in Upper Midsouth and Upper Southeast. Data a as of December 15, 2009 (n=20 locations) Crop Value = Lint Yield X Loan Value (assume color grade 31 and leaf grade 3)							

In FACT testing in 2009, DP 1028 B2RF also showed improvements over PHY 375 WRF in the Northern Tier of the Cotton Belt (Upper Midsouth and Upper Southeast). DP 1028 B2RF showed improvements in crop value (increase of 38 $/acre), average lint yield (increase of 77 lb/ acre), Lint % (increase of 1.3%), and fiber length (increase of .02). In comparisons DP 1028 B2RF and PHY 375 WRF resulted in similar fiber strength and uniformity index (Table 4).

Table 4. Crop Value, Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1028 B2RF and PHY 375 WRF in 2009 Field Advancement Coordination Trial testing.

Variety	Crop Value ($/acre)	Lint Yield (lb/acre)	Lint %	Fiber Length	Micronaire	Fiber Strength (g/tex)	Uniformity Index
DP 1028 B2RF	704	1407	44.7	1.17	4.8	28.4	84.8
PHY 375 WRF	666	1330	43.4	1.15	4.5	28.4	84.8
% Difference	5.7%	5.8%					
Notes: 2009 Field Advancement Coordination Trials located in Upper Midsouth and Upper Southeast Regions. Data as of December 15, 2009 (n=24 locations) Crop Value = Lint Yield x Loan Value (assume color grade 31 and leaf grade 3)							

DP 1028 B2RF Stability Graph

Stability analysis was performed by comparing the average lint yield (lb/acre) of DP 1028 B2RF and ST 4498B2RF in the 2009 FACT locations to the average lint yield of each location. The data for each variety was fit with a linear regression and the intercept, slope, and R^2 were compared. DP1028 B2RF produced an equal of higher yield potential across the range of average location yields (Figure 1). The slope of the DP 1028 was higher than ST 4498 B2RF showing a positive yield response to higher yield environments and the R^2 was equal or slightly higher, indicating a similar less scatter of the yield data, an indication of varietal stability.

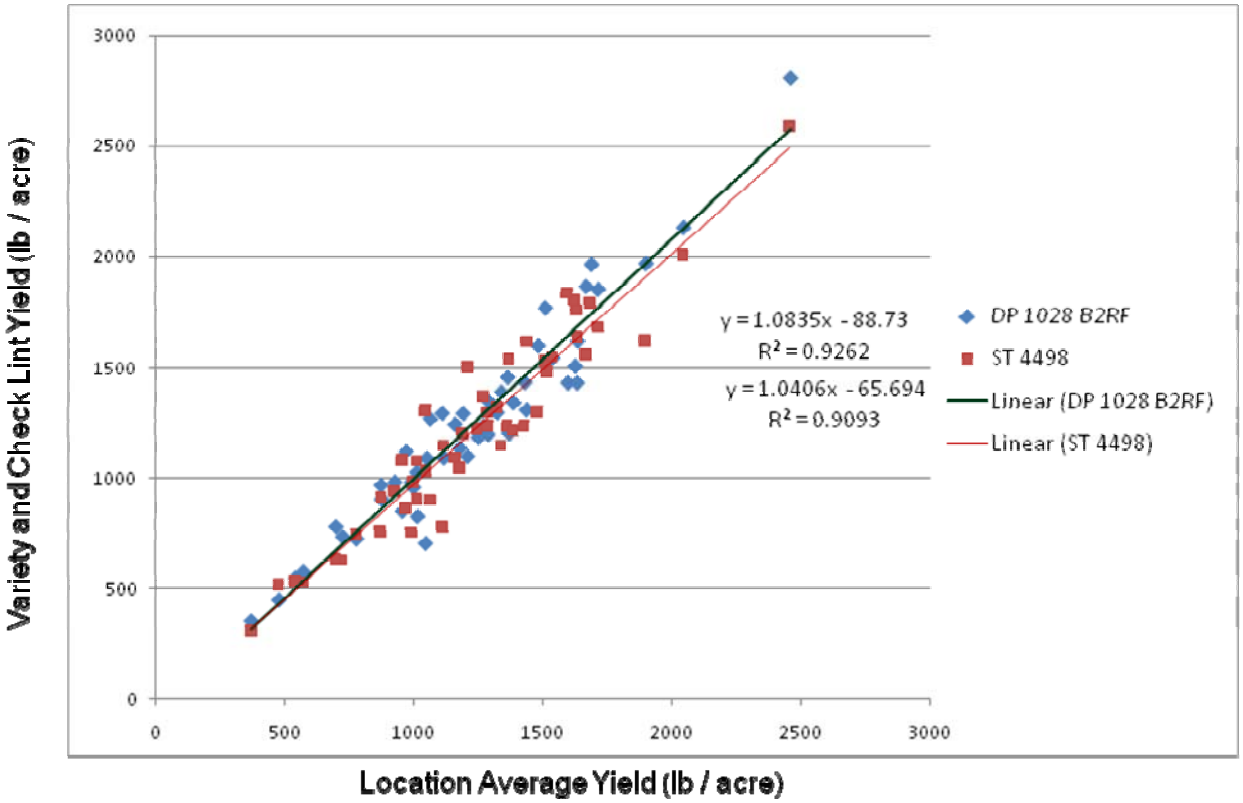

Figure 1. DP 1028 B2RF versus ST 4498B2RF comparing variety lint yield (lb/acre) by location average lint yield from several locations.

DP 1034 Lint Yield Per Acre Regional Comparison

The average lint yields per acre of DP 1034 B2RF, measured at harvest, are summarized in Tables 5. In the table DP 1034 B2RF is compared to several checks which have been averaged according to regional location. Check varieties include DP 0935 B2RF, DP 0949 B2RF, PHY 485 WRF, ST 5458B2RF, FM 9160B2F (West Texas only), FM 1740B2F (West Texas only) and FM 840B2F (South Texas only). The average lint yield of DP 1034 B2RF were equal to or greater than the check varieties in the Upper Southeast, Lower Southeast, Upper Midsouth, and Lower Midsouth region. In both the Central Texas and West Texas regions average lint yield of DP 1034 B2RF and the checks were similar.

Table 5. Yield data comparison of DP 1034 B2RF and checks (average yields of several cotton products by region) in Deltapine brand Field Advancement Coordination Trials 2009.

Territory	DP 1034 B2RF	Checks	% Difference
Upper Southeast	1383	1204	14.9
Lower Southeast	1312	1189	10.3
Upper Midsouth	1239	1012	22.4
Lower Midsouth	891	790	5.9
South Texas	670	686	-2.3
Central Texas	937	939	-.2
West Texas	1364	1364	0
Arizona	1566	1625	-3.6
Check = DP 0935 B2RF, DP 0949 B2RF, PHY 485 WRF, ST 5458B2RF, FM 9160B2F (West Texas only) & FM 1740B2F (West Texas only) and FM 840B2F (South Texas only). Data from 2009 Field Advancement Coordination Trials (FACT). Data as of November 30, 2009.			

DP 1034 B2RF Yield, Fiber Quality and Value Comparisons

In testing conducted in the Northern Tier of the Cotton Belt (Upper Midsouth and Upper Southeast regions), DP 1034 B2RF showed improvements over ST 5458B2RF in crop value (increase of 127 $/acre), average lint yield (increase of 224 lb/ acre), Lint % (increase of 3%), and uniformity index (increase of 1.1). DP 1034 B2RF was equivalent in fiber length and had a slight reduction in micronaire and fiber strength when compared to ST 5458B2RF (Table 6). The improved production of DP 1034 B2RF gives growers a higher yield potential option for several markets that fit mid-maturing varieties.

Table 6. Crop Value, Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1034 B2RF and ST 5458B2RF in 2009 Field Advancement Coordination Trial testing.

Variety	Crop Value ($/acre)	Lint Yield (lb/acre)	Lint %	Fiber Length	Micronaire	Fiber Strength (g/tex)	Uniformity Index
DP 1028 B2RF	710	1306	45.3	1.14	5.0	29.3	85.0
ST 5458B2RF	583	1082	42.3	1.14	5.3	30.9	83.9
% Difference	21.8%	20.7%					
Notes: Field Advancement Coordination Trial located in Upper Midsouth and Upper Southeast. Data as of December 15, 2009. (n=12 locations) Crop Value = Lint Yield X Loan Value (assume color grade 31 and leaf grade 3)							

At on-farm FACT sites in 2009, DP 1034 B2RF also showed yield improvements over PHY 485 WRF in the Northern Tier of the Cotton Belt (Upper Midsouth and Upper Southeast). DP 1034 B2RF had increased crop value (increase of 140 $/acre), average lint yield (increase of 270 lb/ acre), Lint % (increase of 3.6%), fiber length (increase of .02). DP 1034 B2RF showed a slight reduction in fiber strength compared to PHY 485 (Table 7).

Table 7. Crop Value, Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength and Uniformity Index comparisons of DP 1034 B2RF and PHY 485 WRF in 2009 Field Advancement Coordination Trial testing.

Variety	Crop Value ($/acre)	Lint Yield (lb/acre)	Lint %	Fiber Length	Micronaire	Fiber Strength (g/tex)	Uniformity Index
DP 1034 B2RF	713	1297	44.8	1.14	5.1	29.5	85.0
PHY 485 WRF	573	1027	41.2	1.12	5.0	31.4	84.3
% Difference	24.5%	26.3%					
Notes: 2009 Field Advancement Coordination Trials located in Upper Midsouth and Upper Southeast Regions. Data as of December 15, 2009 (n=10 locations) Crop Value = Lint Yield x Loan Value (assume color grade 31 and leaf grade 3)							

DP 1034 B2RF Stability Graph

The stability analysis of DP 1034 B2RF was completed by comparing the linear regression of lint yield (lb/acre) of DP 1034 B2RF and ST 5458B2RF at the 2009 FACT locations to the average lint yield of the locations. DP1034 B2RF produced an overall higher yield potential across the range of yields from the trials (Figure 2). The regression analysis showed that DP 1034 B2RF had 91 lb /acre higher intercept, with similar slope, resulting in the approximately 90 lb / acre yield advantage in across the range of environments. DP 1034 B2RF had a R^2 of 0.96 compared to 0.91 for ST 5458 B2RF, indicating less scatter to the DP 1034 B2RF yield data.

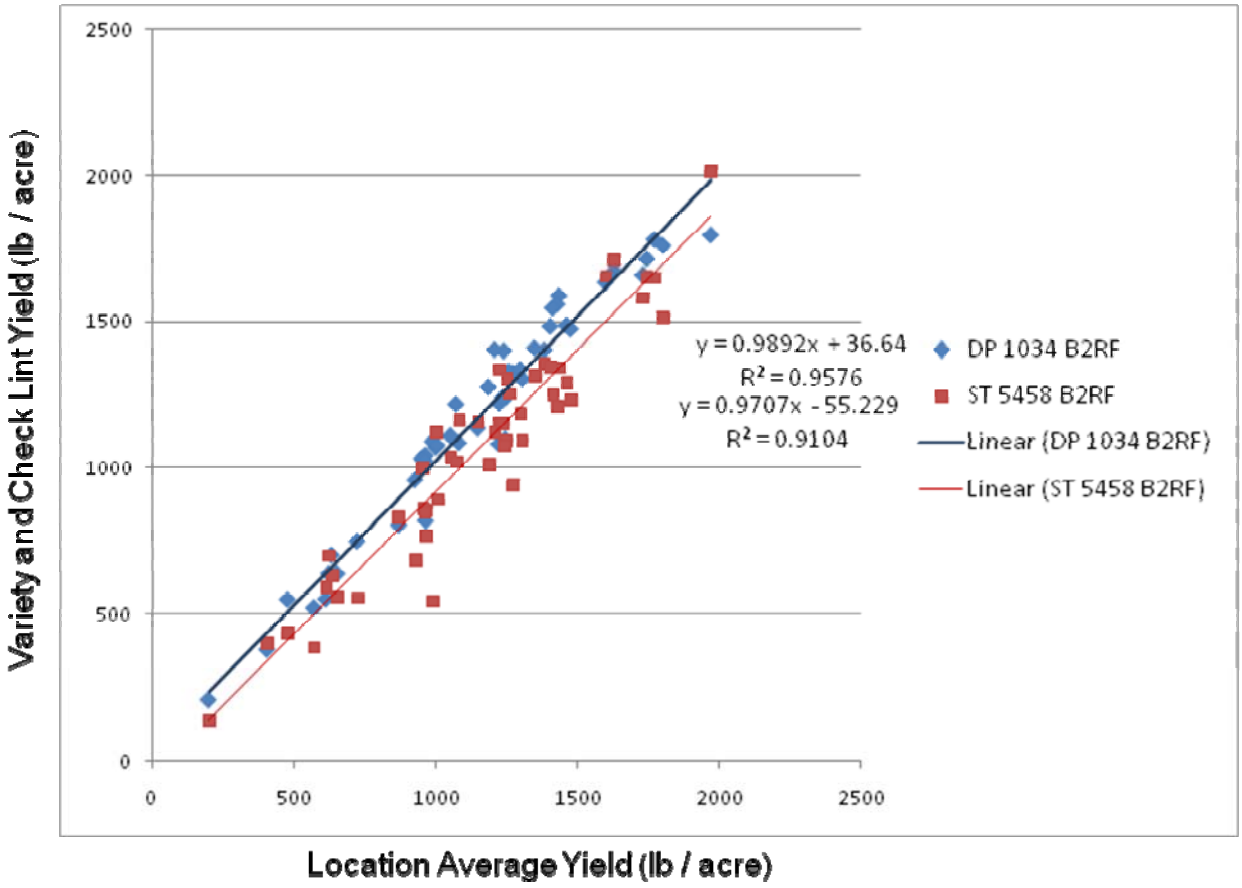

Figure 2. DP 1034 B2RF versus ST 5458B2RF comparing variety lint yield (lb/acre) by location average lint yield from 2009 FACT locations.

Summary

In a regional yield comparison DP 1028 B2RF was found to have greater yield performance than an average of several check varieties (DP 0935 B2RF, DP 0912 B2RF, PHY 375 WRF, ST 4498B2RF, FM 9160B2F (West Texas only) & FM 1740B2F (West Texas only) and FM 840B2F (South Texas only) in Upper Southeast, Lower Southeast, Upper Midsouth, and Lower Midsouth regions. In the 2009 trials, DP 1028 B2RF performed greatest in the Southeast and Midsouth regions. DP 1028 B2RF was found to have greater crop value ($/acre) and average lint yield (lbs/acre) performance to ST4498 B2RF and PHY 375 WRF from comparisons made in 2009 FACT Trials located in the Upper Midsouth and Upper Southeast Cotton Belt regions. In the same set of trials, DP 1028 B2RF had equal yield to DP 0912 B2RF and longer fiber length (+0.05) and lower micronaire (-0.03).

DP 1034 B2RF was found to have greater yield performance than an average of several check varieties (DP 0935 B2RF, DP 0949 B2RF, PHY 485 WRF, and ST 5458B2RF) in the Upper Southeast, Lower Southeast, Upper Midsouth and Lower Midsouth regions. DP 1034 B2RF was found to have greater crop value ($/acre), average lint yield (lbs/acre), lint % and uniformity index to ST 5458B2RF and PHY 485 WRF from comparisons made in 2009 on-farm FACT Trials located in the Upper Midsouth and Upper Southeast Cotton Belt regions.

The 2010 introduction of early to mid maturity variety DP 1028 B2RF and mid maturity variety DP 1034 B2RF will provide cotton producers new options for Deltapine products with advanced trait technology combined with exceptional yield potential and fiber quality.

Notes / Disclaimers

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.