DELTAPINE[®] NEW CLASS OF '14 VARIETIES: DP 1454NR B2RF, DP 1410 B2RF, AND DP 1441 RF David W. Albers Monsanto Company Saint Louis, MO Eric C. Best Monsanto Company Lubbock, TX Douglas Jost Monsanto Company Garden City, TX

Abstract

DP 1454NR B2RF, DP 1410 B2RF and DP 1441 RF are new cotton varieties that will be released for commercial sale in the 2014 growing season. DP 1454NR B2RF and DP 1410 B2RF are Genuity[®] Bollgard II[®] Roundup Ready[®] Flex cotton varieties. DP 1441 RF is a Genuity[®] Roundup Ready[®] Flex cotton variety being introduced as a high yielding option for dryland or refuge acres.

DP 1454NR B2RF is a full maturity cotton variety with resistance to root knot nematodes (RKN). DP 1454NR B2RF provides a yield advantage in fields with moderate to high root knot nematode populations when compared to RKN-susceptible varieties. DP 1454NR B2RF has light hairy leaf pubescence with a tall plant height and very good storm resistance. Fiber quality ratings include fiber length of 1.13 inches, 4.6 micronaire, 30.0 g/tex fiber strength, and 82.9% uniformity.

The new cotton variety DP 1410 B2RF is an early maturing cotton variety with high yield potential, excellent seedling vigor and fiber quality. DP 1410 B2RF has light hairy leaf pubescence with medium plant height. Fiber quality ratings include fiber length of 1.16 inches, 4.3 micronaire, 31.2 g/tex fiber strength, and 82.2% uniformity. DP 1410 B2RF has very good to excellent storm resistance and also has outstanding tolerance to Verticillium wilt and is resistant to Bacterial Blight.

DP 1441 RF is a mid to mid-full maturing variety that will also be released for commercial sale in 2014. This variety has semi-smooth leaf pubescence with a medium plant height. Average fiber properties of DP 1441 RF include fiber length of 1.11 inches, 4.3 micronaire, 30.4 g/tex fiber strength, and 82.3% uniformity. This product provides a consistent performance on dryland or refuge acres.

Introduction

In 2014, Deltapine[®] brand is releasing for commercial introduction, a new full maturing variety, DP 1454NR B2RF, a new early maturing variety, DP 1410 B2RF, both with Genuity[®] Bollgard II[®] and Roundup Ready[®] Flex traits, and a new mid to mid-full maturing variety, DP 1441 B2RF with the Genuity[®] Roundup Ready[®] Flex trait. The characteristics describing DP 1454NR B2RF, DP 1410 B2RF, and DP 1441 RF are summarized in Table 1. The highlights of DP 1454NR B2RF are outstanding yield potential, fiber quality, and RKN resistance. DP 1410 B2RF has an excellent combination of yield potential, fiber quality, and disease package for early maturing markets. The new variety DP 1441 RF is an excellent option for cotton production on tough dryland acres with limited water performance or for refuge acres.

Trait	DP 1454NR B2RF	DP 1410 B2RF	DP 1441 RF
Maturity	Full	Early	Mid to Mid-Full
Leaf Pubescence	Light Hairy	Light Hairy	Semi-smooth
Plant Height	Tall	Medium	Medium
Seed Size	4950 - 5425 seed/lb	4510 seed/lb	5100 seed/lb
Micronaire	4.6	4.3	4.3
Length	1.13 inches	1.16 inches	1.11 inches
Strength	30.0 g/tex	31.2 g/tex	30.4 g/tex
Uniformity	82.9%	82.2%	82.3%
Lint Percent	41.8%	40.6%	39.6%
Storm Resistance	Very Good	Very Good to Excellent	Slightly looser than DP 1044 B2RF
Root Knot Nematode	Resistant	Susceptible	Susceptible
Fusarium Wilt	Very Good	Very Good	Moderately Resistant
Verticillium Wilt	Susceptible	Very Good	Moderately Resistant
Bacterial Blight	Susceptible	Resistant	Susceptible
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Table 1. DP 1454NR B2RF, DP 1410 B2RF, and DP 1441 RF Characteristics and Fiber Quality.

Materials and Methods

The data describing DP 1454NR B2RF, DP 1410 B2RF, and DP 1441 RF (along with internal and competitive check varieties) was obtained from the following sources: Monsanto breeder trials, Monsanto on-farm trials, and University trials. 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.

Results and Discussion

DP 1454NR B2RF Plant Mapping Comparisons

The growth and fruiting characteristics of DP 1454NR B2RF, as measured by end-of-season plant mapping, are summarized in Table 2. The growth and fruiting variables of DP 1454NR B2RF are similar to DP 1252B2RF in the Southeast region. DP 1454NR B2RF requires 51 more DD60's compared to DP 1252 B2RF to achieve 100% open boll. DP 1454NR B2RF is characterized as a full maturity variety, with a slightly shorter plant height than DP 1252 B2RF.

Table 2. Plant mapping comparison of DP 1454NR B2RF and DP 1252 B2RF in Monsanto Trials (2013) in Southeast region.

	DP 1454NR B2RF	DP 1252 B2RF								
Plant Height (inches)	44.3	43.6								
Total Nodes	21.7	21.3								
Number of Fruiting Nodes	11.4	10.8								
% Est Open	39.1%	45.6%								
Node of First Fruiting Branch	6.6	6.2								
DD60's to 100% open	346	294.9								
Vigor	3.5	3.9								
Fall Out Rating	1.4	1.6								
String Out Rating	1.8	2.3								
Data source: 2013 Monsanto PCM4 trials in the Southeast region										
Fall Out and String Out Rating:	1=Tight, Storm-Proof boll; 9	=Loose boll								

The growth and fruiting characteristics of DP 1454NR B2RF, as measured by end-of-season plant mapping, are summarized in Table 3. The growth and fruiting variables of DP 1454NR B2RF are similar to DP 1044 B2RF in the Texas region. DP 1454NR B2RF requires 36 more DD60s compared to DP1044 B2RF to achieve 100% open boll. DP 1454NR B2RF has improved fall out and string out ratings than compared to DP 1044 B2RF. DP 1454NR B2RF is characterized as a full maturity variety, with a slightly taller plant height than DP 1252 B2RF.

Table 3. Plant mapping comparison of DP 1454NR B2RF and DP 1044 B2RF in Monsanto Trials (2013) in the Texas region.

	DP 1454NR B2RF	DP 1044 B2RF								
Plant Height (inches)	29.5	26.5								
Total Nodes	19.6	19.1								
Number of Fruiting Nodes	8.4	8.4								
% Est Open	36.8%	45.5%								
Node of First Fruiting Branch	7.4	6.8								
DD60's to 100% open	267.2	230.7								
Vigor	4.1	2.5								
Fall Out Rating	2.2	3.0								
String Out Rating	3.3	3.9								
Data source: 2013 Monsanto PCM4 trials in the Texas region										
Fall Out and String Out Rating:	1=Tight, Storm-Proof boll; 9	=Loose boll								

DP 1454NR B2RF Yield, Fiber Quality, and Value Comparisons

DP 1454NR B2RF was tested in non-RKN sites in both West Texas and the Southeast region (Tables 4 to 9) to determine if its yield was equal to RKN susceptible check in the absence or low pressure situations of RKN. DP 1454NR B2RF was compared to PHY 367 WRF in testing conducted in the Southeast region for non-RKN sites. DP 1454NR B2RF showed improvements over PHY 367 WRF in lint yield (increase of 108 lbs/acre), lint % (increase of 1.38%), and uniformity index (increase of 0.17)(Table 4).

Table 4. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1454NR B2RF and PHY 367 WRF in the Southeast region, 2012-2013.

	Lint				Fiber	
	Yield		Fiber		Strength	Uniformity
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index
DP 1454NR B2RF	1475	44.6	1.13	4.9	29.2	83.85
PHY 367 WRF	1367	43.2	1.12	4.6	30	83.68
Significance	*	**		+		
Observations	10	10	5	5	5	5
Years	2	2	2	2	2	2
% Wins	60	88	40	0	40	60
Significance levels der	noted by $+ =$	0.1; * = 0.0	05; ** = 0.01	l alpha error le	evels.	
Data Source: All Mons	santo (Breed	ling, Tech D	evelopment	, Commercial) and public	trials
available for the year a	and geograph	hy listed				

The improvement in DP 1454NR B2RF over DP 1252 B2RF in testing conducted in the Southeast region for nonroot knot nematode sites was fiber strength (increase of 0.65 g/tex). DP 1454NR B2RF had lower micronaire and higher fiber strength when compared to DP 1252 B2RF (Table 5). The improved production of DP 1454NR B2RF gives growers a higher quality option for the Southeast market that fits for full maturing varieties.

	Lint				Fiber	
	Yield		Fiber		Strength	Uniformity
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index
DP 1454NR B2RF	1157	40.4	1.14	4.7	30.4	82.33
DP 1252 B2RF	1189	42.3	1.15	4.8	29.8	83.13
Significance		**				
Observations	26	24	3	3	3	3
Years	1	1	1	1	1	1
% Wins	42	12	33	100	100	33
Significance levels der	noted by + =	0.1; * = 0.0	05; ** = 0.0	l alpha error le	evels.	
Data Source: All Mon	santo (Breed	ling, Tech D	Development	, Commercial) and public	trials
available for the year a	and geograp	hv listed	_		-	

Table 5. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1454NR B2RF and DP 1252 B2RF in the Southeast region 2012-1213.

DP 1454NR B2RF was compared to DP 1050 B2RF in testing conducted in the Southeast region in below threshold and non-RKN sites. DP 1454NR B2RF showed improvement over DP 1050 B2RF in fiber strength (increase of 1.04 g/tex) and was similar in length and micronaire (increase of 0.06) (Table 6). The new variety DP 1454NR B2RF provides a similar fit when compared to DP 1050 B2RF in the Southeast region.

Table 6. Li	nt Yield,	Lint %,	Fiber Length,	Micronaire,	Fiber Strength,	and	Uniformity	Index	comparisons	of
DP 1454NR	B2RF ar	nd DP 10.	50 B2RF in the	e Southeast re	gion, 2012-2013					

	Lint				Fiber	
	Yield		Fiber		Strength	Uniformity
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index
DP 1454NR B2RF	1354	42.5	1.13	4.9	29.4	83.42
DP 1050 B2RF	1380	43.7	1.15	4.8	28.4	84.72
Significance		**	*		*	**
Observations	24	24	7	7	7	7
Years	2	2	2	2	2	2
% Win	50	9	14	29	86	0
Significance levels der	noted by $+ =$	0.1; * = 0.0	05; ** = 0.01	alpha error le	evels.	
Data Source: All Mons	santo (Breed	ling, Tech D	evelopment	, Commercial) and public	trials
available for the year a	and geograph	hy listed				

DP 1454NR B2RF was compared to DP 1219 B2RF in non-RKN plot testing conducted in the West Texas region. DP 1454NR B2RF showed improvements over DP 1219 B2RF in lint % (increase of 1.84%) and uniformity index (increase of 0.62) (Table 7). The new variety DP 1454NR B2RF provides a similar fit when compared to DP 1219 B2RF in the West Texas region.

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	Lint				Fiber	
	Yield		Fiber		Strength	Uniformity
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index
DP 1454NR B2RF	1758	42.4	1.09	4.7	28.8	81.79
DP 1219 B2RF	1790	40.5	1.13	4.4	31.5	81.17
Significance		**	**	**	**	
Observations	21	21	6	6	6	6
Years	1	1	1	1	1	1
% Wins	43	100	0	0	0	50
Significance levels der	noted by + =	= 0.1; * = 0.0	05; ** = 0.01	l alpha error le	evels.	
Data Source: All Mon	santo (Breed	ling, Tech D	Development	, Commercial) and public	trials
available for the year a	and geograp	hy listed				

Table 7. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1454NR B2RF and DP 1219 B2RF in the West Texas region, 2013.

DP 1454NR B2RF was also compared to DP 1044 B2RF in non-root knot nematode plot testing conducted in the West Texas region. DP 1454NR B2RF showed improvement over DP 1044 B2RF in lint % (increase of 2.96%) and was similar in micronaire rating (Table 8). The new variety DP 1454NR B2RF provides a similar fit when compared to DP 1044 B2RF in the West Texas region.

Table 8.	Lint	Yield,	Lint %	, Fiber	Length,	Micronaire,	Fiber	Strength,	and	Uniformity	Index	comparisons	of
DP 1454	NR B	2RF an	d DP 104	44 B2R	F in the	West Texas r	egion,	2013.					

	Lint				Fiber	
	Yield		Fiber		Strength	Uniformity
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index
DP 1454NR B2RF	1585	41.9	1.11	4.6	28.8	81.88
DP 1044 B2RF	1596	38.9	1.12	4.4	19	82.03
Significance		**		+		
Observations	45	45	20	20	20	20
Years	2	2	2	2	2	2
% Wins	60	93	32	21	40	35
Significance levels der	noted by $+ =$	0.1; * = 0.0	05; ** = 0.01	alpha error le	evels.	
Data Source: All Mons	santo (Breed	ling, Tech D	evelopment	, Commercial)) and public	trials
available for the year a	and geograph	hy listed				

The improvements in DP 1454NR B2RF over FM 1944GLB2 in non-RKN plot testing conducted in the West Texas region were lint yield (increase of 55 lb/acre), lint % (increase of 2.86%), micronaire (increase of 0.19) and uniformity index (increase of 0.9). DP 1454NR B2RF had lower fiber length and fiber strength when compared to FM 1944GLB2 (Table 9). The improved production of DP 1454NR B2RF gives growers a higher quantity option for the West Texas market that fits the full maturing varieties.

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	Lint				Fiber	
	Yield		Fiber		Strength	Uniformity
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index
DP 1454NR B2RF	1659	40.5	1.09	4.7	29.0	81.72
FM 1944GLB2	1604	37.7	1.14	4.5	30.5	80.82
Significance		**	**		*	*
Observations	31	31	11	11	11	11
Years	1	1	1	1	1	1
% Wins	65	90	0	30	18	73
Significance levels der	noted by + =	= 0.1; * = 0.0	05; ** = 0.01	l alpha error le	evels.	
Data Source: All Mon	santo (Breed	ling, Tech D	Development	, Commercial) and public	trials
available for the year a	and geograp	hy listed	_		-	

Table 9. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1454NR B2RF and FM 1944GLB2 in the West Texas region, 1213.

In testing with fields under high RKN infestation, DP 1454NR B2RF with the Acceleron[®] N Seed Treatment Product had significantly higher lint yield than cotton varieties tested and treated with Acceleron I Seed Treatment Products, ST 5458 B2RF (increase of 142 lbs/acre), PHY 367 WRF (increase of 179 lbs/acre), and susceptible checks (Table 10). The improved production of DP 1454NR B2RF gives growers a higher quantity option for the West Texas market on acres with high RKN infestations.

Table	10.	Lint	Yield	comparisons	of DP	1454NR	B2RF,	13R341B2RF,	ST	5458	B2RF,	PHY	367	WRF	and
suscep	otible	e chec	k with	different seed	l treatm	ent produ	cts at a	site with high R	KN	infesta	tion, 20)13.			

Variety	Treatment							Lint Yield (lbs/acre)
DP 1454 NR B2RF	Acceleron [®] N Seed	Α						1752
	Treatment Products							
13R341B2RF	Acceleron N Seed	Α	В					1704
	Treatment Products							
DP 1454 NR B2RF	Acceleron I Seed	Α	В	С				1680
	Treatment Products							
13R341B2RF	Acceleron I Seed		В	С	D			1632
	Treatment Products							
ST 5458 B2RF	Aeris [®] /Trilex TM			С	D	Е		1610
PHY 367 WRF	Avicta [®] Complete				D	E	F	1573
Susceptible Ck	Acceleron N Seed					Е	F	1531
	Treatment Products							
Susceptible Ck	Acceleron I Seed						F	1510
	Treatment Products							
2013 Monsanto Trials:	27 Reps, 5 Sites							
Tahoka, TX, Tarzan, TX, Stanton, TX, Omega, GA, Tillar, AR								
Levels not connected by	y same letter are significantly	y diff	erent	•				

The number of RKN eggs per gram of root was evaluated at 45 days after planting for cotton products ST 5458 B2RF, PHY 367 WRF, DP 1454NR B2RF, 13R341B2RF and the susceptible check (Table 11). The RKN-susceptible check had the highest number of eggs/gram of root, followed by ST 5458B2RF and PHY 367 WRF when comparing products with competitor seed treatments to Acceleron N Seed Treatment Products.

Variety	Treatment				RKN Eggs per gram of root @ 45
					DAP
Susceptible Ck	Acceleron [®] N Seed	А			1004
	Treatment Products				
ST 5458 B2RF	Aeris [®] /Trilex TM		В		681
PHY 367 WRF	Avicta Complete			С	339
DP 1454NR B2RF	Acceleron N Seed			С	335
	Treatment Products				
13R341B2RF	Acceleron N Seed			С	301
	Treatment Products				
2013 Monsanto Trials: 2	27 Reps, 5 Sites				
Tahoka, TX, Tarzan, TX	K, Stanton, TX, Omega, C	βA, Ti	llar, A	R	
Levels not connected by	same letter are significant	ntly di	ifferen	t.	

Table 11. A comparison of RKN eggs per gram of root at 45 days after planting for the RKN-susceptible check, ST5458 B2RF, PHY 367 WRF, DP 1454NR B2RF, and 13R341B2RF at a site with high infestation of RKN, 2013.

DP 1410 B2RF Plant Mapping Comparisons

The growth and fruiting characteristics of DP 1410 B2RF, as measured by end-of-season plant mapping, are summarized in Table 12. When comparing the growth and fruiting variables of DP 1410 B2RF to DP 0912 B2RF, DP 1410 B2RF has more total nodes than DP 0912 B2RF. When comparing the growth and fruiting variables of DP 1410 B2RF to DP 1321 B2RF, DP 1410 B2RF also has more total nodes than DP 1321 B2RF and a higher vigor rating. DP 1410 B2RF has an improved fall out and string out rating than DP 0912 B2RF and DP 1321 B2RF which improves the storm resistance of the crop. DP 1410 B2RF requires fewer DD60s than DP 0912 B2RF and DP 1321 B2RF to achieve 100% open boll. DP 1321 B2RF is characterized as an early maturing variety, with a shorter plant height than DP 0912 B2RF and DP 1321 B2RF.

Table 12. Plant mapping comparison of DP 1410 B2RF to DP 0912 B2RF and DP 1321 B2RF in Monsanto PCM4 Trials (2013) in the Texas region.

	DP 1410 B2RF	DP 0912 B2RF	DP 1321 B2RF						
Vigor	3.3	4.0	2.5						
Plant Height (inches)	26.2	27.5	27.2						
Total Nodes	19.8	18.9	19.4						
Number of Fruiting Nodes	8.4	8.6	9.1						
% Est Open	51.4%	45.1%	51.3%						
Node of First Fruiting Branch	7.3	6.7	6.4						
DD60's to 100% open	206.7	236.8	222.9						
Fall Out Rating	1.4	4.2	3.7						
String Out Rating	1.6	6.0	5.2						
Data source: 2013 Monsanto PCM4 trials in Texas region									
*Significantly different than DP 0912 B2RF									
Fall Out and String Out Rating:	1=Tight, Storm-Proof boll; 9	=Loose boll							

DP 1410 B2RF Yield, Fiber Quality, and Value Comparisons

DP 1410 B2RF was compared to DP 0912 B2RF in testing conducted in the West Texas region in 2011-2013. DP 1410 B2RF showed improvements over DP 0912 B2RF in lint % (increase of 0.28%), fiber length (increase of 0.09 inches), and strength (increase of 2.83 g/tex)(Table 13). The improved fiber quality of DP 1410 B2RF gives growers additional options in the West Texas market for early maturing varieties.

	Lint				Fiber					
	Yield		Fiber		Strength	Uniformity				
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index				
DP 1410 B2RF	1415	40.7	1.15	4.2	30.7	81.53				
DP 0912 B2RF	1420	40.4	1.06	5.0	27.9	81.82				
Significance		+	**	**	**					
Observations	39	41	19	19	19	19				
Years	3	3	3	3	3	3				
% Wins	49	68	100	100	100	47				
Significance levels der	noted by $+ =$	= 0.1; * = 0.0	05; ** = 0.01	l alpha error le	evels.					
Data Source: All Mon	Data Source: All Monsanto (Breeding, Tech Development, Commercial) and public trials									
available for the year a	and geograph	hy listed								

Table 13. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1410 B2RF and DP 0912 B2RF in the West Texas region, 2011-2013.

DP 1410 B2RF was compared to DP 1044 B2RF in testing conducted in the West Texas region in 2011-2013. DP 1410 B2RF showed improvements over DP 1044 B2RF in lint yield (increase of 42 lb/acre), lint % (increase of 1.31%), fiber length (increase of 0.05 inches), and strength (increase of 1.87 g/tex) (Table 14).

Table 14. Lint Yield, Lint %,	Fiber Length, Micronai	re, Fiber Strength,	and Uniformity	Index comparisons of
DP 1410 B2RF and DP 1044	B2RF in the West Tex	as region, 2011-20	013.	

	Lint				Fiber	
	Yield		Fiber		Strength	Uniformity
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index
DP 1410 B2RF	1403	40.7	1.15	4.2	30.7	81.56
DP 1044 B2RF	1361	39.4	1.11	4.5	28.9	82.08
Significance	+	**	**	**	**	*
Observations	41	42	22	22	22	22
Years	3	3	3	3	3	3
% Wins	66	63	95	95	82	27
Significance levels der	noted by $+ =$	= 0.1; * = 0.0	05; ** = 0.01	alpha error le	evels.	
Data Source: All Mons	santo (Breed	ling, Tech D	evelopment	, Commercial) and public	trials
available for the year a	and geograpl	hy listed				

DP 1410 B2RF was compared to DP 1212 B2RF in testing conducted in the West Texas region in 2011-2013. DP 1410 B2RF showed improvements over DP 1212 B2RF in lint yield (increase of 49 lb/acre), fiber length (increase of 0.03 inches), and fiber strength (increase of 1.4 g/tex) (Table 15). In all testing observations, DP 1410 B2RF had improved micronaire rating over DP 1212 B2RF.

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	Lint				Fiber	
	Yield		Fiber		Strength	Uniformity
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index
DP 1410 B2RF	1360	41.1	1.16	4.0	32.1	81.29
DP 1212 B2RF	1311	41.3	1.13	4.6	30.7	82.35
Significance			+	**		*
Observations	22	23	9	9	9	9
Years	2	2	2	2	2	2
% Wins	59	43	78	100	67	11
Significance levels der	noted by $+ =$	= 0.1; * = 0.0	05; ** = 0.01	l alpha error le	evels.	
Data Source: All Mon	santo (Breed	ling, Tech D	Development	, Commercial) and public	trials
available for the year a	and geograp	hy listed	-		-	

Table 15. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1410 B2RF and DP 1212 B2RF in the West Texas region, 2011-2013.

DP 1410 B2RF was compared to DP 1219 B2RF in testing conducted in the West Texas region in 2011-2013. DP 1410 B2RF showed improvements over DP 1219 B2RF in lint yield (increase of 33 lb/acre) and fiber length (increase of 0.02 inches) (Table 16).

Table 16. Lint Yield, Lint %	, Fiber Length, Microna	ire, Fiber Strength,	and Uniformity	Index comparisons of
DP 1410 B2RF and DP 121	9 B2RF in the West Tex	as region, 2011-20	013.	

	Lint				Fiber				
	Yield		Fiber		Strength	Uniformity			
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index			
DP 1410 B2RF	1360	41.1	1.16	4.0	32.1	81.29			
DP 1219 B2RF	1327	40.7	1.14	4.2	31.3	81.47			
Significance				*					
Observations	22	23	9	9	9	9			
Years	2	2	2	2	2	2			
% Wins	59	78	78	89	38	44			
Significance levels der	noted by $+ =$	= 0.1; * = 0.0	05; ** = 0.01	l alpha error le	evels.				
Data Source: All Monsanto (Breeding, Tech Development, Commercial) and public trials									
available for the year a	and geograph	hy listed							

The improvements in DP 1410 B2RF over FM 1944GLB2 in testing conducted in the West Texas region were lint yield (increase of 102 lb/acre), lint % (increase of 0.77%), and fiber strength (increase of 0.95 g/tex). DP 1410 B2RF had reduced micronaire when compared to FM 1944GLB2 (Table 17). The improved production of DP 1410 B2RF gives growers a higher quantity option for the West Texas market that fits the early maturing varieties.

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	Lint				Fiber	
	Yield		Fiber		Strength	Uniformity
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index
DP 1410 B2RF	1572	38.9	1.14	4.2	31.0	80.58
FM 1944GLB2	1470	38.1	1.14	4.7	30.0	80.9
Significance	*	**		**	+	
Observations	14	14	8	8	8	8
Years	1	1	1	1	1	1
% Wins	64	93	62	88	75	50
Significance levels der	noted by + =	= 0.1; * = 0.0	05; ** = 0.01	l alpha error le	evels.	
Data Source: All Mon	santo (Breed	ling, Tech D	Development	, Commercial) and public	trials
available for the year a	and geograp	hy listed	_		-	

Table 17. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1410 B2RF and FM 1944GLB2 in the West Texas region 2012-1213.

The improvements in DP 1410 B2RF over FM 9170B2F in testing conducted in the West Texas region were lint yield (increase of 116 lb/acre), lint % (increase of 1.14%), fiber length (increase of 0.01 inches), and fiber strength (increase of 0.92 g/tex). DP 1410 B2RF had reduced micronaire when compared to FM 9170B2F (Table 18). The improved production of DP 1410 B2RF gives growers a higher quantity option for the West Texas market that fits the early maturing varieties.

Table	18.	Lint	Yield,	Lint	%,	Fiber	Length,	Micronaire,	Fiber	Strength,	and	Uniformity	Index	comparisons	of
DP 14	10 E	32RF	and FN	A 917	0B2	2F in t	he West	Texas region	2012-	1213.		-		-	

	Lint				Fiber	
	Yield		Fiber		Strength	Uniformity
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index
DP 1410 B2RF	1435	40.1	1.15	4.2	31.0	81.23
FM 9170B2F	1319	39.0	1.14	4.2	30.1	81.63
Significance	*	**			+	
Observations	28	30	10	10	10	10
Years	2	2	2	2	2	2
% Wins	71	80	70	44	70	50
Significance levels der	noted by $+ =$	= 0.1; * = 0.0	05; ** = 0.01	l alpha error le	evels.	
Data Source: All Mons	santo (Breed	ling, Tech D	evelopment	, Commercial)) and public	trials
available for the year a	and geograph	hy listed	-			

DP 1441 RF Yield, Fiber Quality, and Value Comparisons

The growth and fruiting characteristics of DP 1441 RF, as measured by end-of-season plant mapping, are summarized in Table 19. When comparing the growth and fruiting variables of DP 1441 RF to DP 1044 B2RF, DP 1441 RF has a taller plant height, more total nodes, and a higher number of fruiting nodes than DP 1044 B2RF. DP 1441 RF has a slightly improved fall out and string out rating than DP 1044 B2RF which improves the storm resistance of the crop. The performance and plant type of DP 1441 RF has shown excellent performance in limited water situations.

	DP 1441 RF	DP 1044 B2RF
Vigor	3.6	2.5
Plant Height (inches)	27.3	26.5
Total Nodes	19.8	19.1
Number of Fruiting Nodes	9.4	8.4
% Est Open	42.0%	45.5%
Node of First Fruiting Branch	6.6	6.8
DD60's to 100% open	273.9	230.7
Fall Out Rating	2.9	3.0
String Out Rating	3.7	3.9

Table 19. Plant mapping comparison of DP 1441 RF to DP 1044 B2RF in Monsanto PCM4 Trials (2013) in the Texas region.

DP 1441 RF was compared to DP 1044 B2RF in testing conducted in the West Texas region in 2011-2013. DP 1441 RF showed improvements over DP 1044 B2RF in lint yield (increase of 24 lb/acre), lint % (increase of 2.51%), fiber strength (increase of 0.37 g/tex), and uniformity index (increase of 0.13) (Table 20).

Table 20. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1441 RF and DP 1044 B2RF in the West Texas region, 2011-2013.

	Lint Yield		Fiber		Fiber Strength	Uniformity	
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index	
DP 1441 RF	1412	39.1	1.10	4.3	30.1	81.75	
DP 1044 B2RF	1388	36.5	1.11	4.4	29.7	81.62	
Significance		**					
Observations	63	63	32	32	32	32	
Years	3	3	3	3	3	3	
% Wins	68	92	41	56	66	59	
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 1441 RF was compared to DP 1321 B2RF in testing conducted in the West Texas region in 2011-2013. DP 1441 RF showed improvements over DP 1321B2RF in lint % (increase of 0.64%) (Table 21). DP 1441 RF also had reduced micronaire rating when compared to DP 1321 B2RF.

Table 21. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1441 RF and DP 1321 B2RF in the West Texas region, 2011-2013.

	Lint Yield		Fiber		Fiber Strength	Uniformity	
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index	
DP 1441 RF	1323	37.2	1.11	4.3	30.2	81.67	
DP 1321 B2RF	1329	36.6	1.12	4.4	30.4	82.06	
Significance		+		+		+	
Observations	52	52	33	33	33	33	
Years	2	2	2	2	2	2	
% Wins	63	62	36	67	48	35	
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							

The improvements in DP 1441 RF over FM 1944GLB2 in testing conducted in the West Texas region were lint % (increase of 2.35%), fiber strength (increase of 0.14 g/tex), and uniformity index (increase of 1.55). DP 1441 RF and FM 1944GLB2 had similar lint yield and micronaire rating (Table 22). The improved fiber quality of DP 1441 RF gives growers a new option for the West Texas market that fits the mid to mid-full maturing varieties.

Table 22. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1441 RF and FM 1944GLB2 in the West Texas region 2011-2013.

	Lint				Fiber		
	Yield		Fiber		Strength	Uniformity	
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index	
DP 1441 RF	1410	37.8	1.11	4.2	30.5	82.02	
FM 1944GLB2	1407	35.4	1.14	4.1	30.4	80.48	
Significance		**	+			*	
Observations	23	23	8	8	8	8	
Years	1	1	1	1	1	1	
% Wins	74	100	17	38	50	75	
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							

The improvements in DP 1441 RF over FM 9170B2F in testing conducted in the West Texas region were lint yield (increase of 74 lb/acre), lint % (increase of 2.32%), and uniformity index (increase of 0.44). DP 1441 RF and FM 9170B2F had similar micronaire rating (Table 23). The improved fiber yield of DP 1441 RF gives growers a high quality option for the West Texas market.

Table 23. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1441 RF and FM 9170B2F in the West Texas region 2011-2013.

	Lint		F '1		Fiber	TT 'C '	
	Yield		Fiber		Strength	Uniformity	
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index	
DP 1441 RF	1308	37.2	1.11	4.3	30.2	81.68	
FM 9170B2F	1234	34.9	1.13	4.2	30.8	81.24	
Significance	*	**	**			*	
Observations	55	55	34	34	34	34	
Years	2	2	2	2	2	2	
% Wins	60	82	26	34	44	66	
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							

The improvements in DP 1441 RF over DP 174 RF in testing conducted in the West Texas region were lint yield (increase of 32 lb/acre), lint % (increase of 0.2%), fiber strength (increase of 1.55 g/tex), and uniformity index (increase of 0.61). DP 1441 RF and DP 174 RF had similar micronaire rating (Table 24). The improved fiber yield of DP 1441 RF gives growers a high quality Roundup Ready[®] Flex Cotton option for the West Texas market.

		U				
	Lint				Fiber	
	Yield		Fiber		Strength	Uniformity
Variety	(lb/acre)	Lint %	Length	Micronaire	(g/tex)	Index
DP 1441 RF	1320	39.1	1.10	4.3	30.2	81.80
DP 174 RF	1288	38.9	1.11	4.3	28.6	81.19
Significance					**	*
Observations	57	57	32	34	34	34
Years	3	3	3	3	3	3
% Wins	54	55	53	48	85	74
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						

Table 24. Lint Yield, Lint %, Fiber Length, Micronaire, Fiber Strength, and Uniformity Index comparisons of DP 1441 RF and DP 174 RF in the West Texas region 2011-2013.

Summary

DP 1454NR B2RF is a full maturing variety with RKN resistance that is ideal for production in the Southeast and Northern Texas regions. In non-RKN tests in the Southeast and Texas regions, DP 1454NR B2RF was found to have similar yield performance and fit when compared to DP 1050 B2RF, DP 1219 B2RF, and DP 1321 B2RF. In addition, DP 1454NR B2RF reported higher yield potential and quality ratings when compared to competitor products PHY 367 WRF, ST 5458B2RF, and FM 1944GLB2 at non-RKN sites. In moderate to high RKN sites, DP 1454NR B2RF in combination with Acceleron[®] N Seed Treatment Product significantly improved yields compared to ST 5458 B2RF, PHY 367 WRF, and the susceptible check and reduced the number of RKN eggs per gram of root when evaluated at 45 days after planting.

DP 1410 B2RF was found to have similar or greater yield potential and improved fiber quality when compared to other Deltapine[®] yield standards (DP 0912 B2RF, DP 1044 B2RF, DP 1212 B2RF, and DP 1219 B2RF) in West Texas. DP 1410 B2RF had improved yield when compared to competitor product FM 9170B2F and FM 1944GLB2 in West Texas. DP 1410 B2RF also provides excellent fiber quality with improved fiber length compared to DP 1212 B2RF and FM 9170B2F, a fiber strength of 31 to 32 g/tex, and a micronaire rating of 4.2 to 4.3. DP 1410 B2RF has an early maturity best suited for short-season environments or for short-season management.

DP 1441 RF was found to have similar yield potential and plant type when compared to DP 1044 B2RF. In West Texas testing, DP 1441 B2RF had improved percent lint and uniformity index when compared to competitor products FM 1944GLB2 and FM 9170B2F. DP 1441 RF is and easy to manage solid performing cotton ideal for areas with limited water.

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