

**2013 EVALUATION OF NON-IRRIGATED MID- TO FULL-  
SEASON MATURING COTTON VARIETIES, JAY, FLORIDA**



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## 2013 Evaluation of Non-Irrigated Mid- to Full- Season Maturing Cotton Varieties, Jay, Florida

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This report included a summary of the 2013 mid- to full-season cotton OVT trial in Jay, Florida. It shows the performance of sixteen cotton varieties. This data represents only one year and one location, test results should be considered over several locations and years before final conclusions are valid.

Mid- to full-season varieties that were evaluated:

- |                   |                  |
|-------------------|------------------|
| 1. DP 1050 B2RF   | 9. PHY 575 WRF   |
| 2. DP 1137 B2RF   | 10. PHY 599 WRF  |
| 3. DP 1252 B2RF   | 11. PHY 417 WRF  |
| 4. MON 12R242B2R2 | 12. PHY 427 WRF  |
| 5. CG 3787 B2RF   | 13. NG 1511 B2RF |
| 6. PHY 339 WRF    | 14. NG 5315 B2RF |
| 7. PHY 499 WRF    | 15. FM 1944GLB2  |
| 8. PHY 565 WRF    | 16. ST 6448GLB   |

### **2013 Growing Conditions and Experimental Design**

The soil type was a Tifton sandy loam that has a history of cotton production. The field was planted in a rotation of peanut and cotton in 2012 and 2011, respectively. Each cotton variety was plated on 14 May under conventional tillage. Plots were four, 25-ft rows with 36-in. row spacing and replicated in four randomized complete blocks. Standard practices for non-irrigated cotton production were followed throughout the season. Stealth 1 qt/A was applied on 8 May for pre-plant weed control, and Roundup 22 oz/A was applied 20 Jun and 31 Jul for post-emergence weed control. Bidrin 8 3.2 oz/A was applied on 31 May, Belay 4 oz/A on 30 Jul and Tombstone 3.2 oz/A on 7 Aug were applied for insect control. Headline 9 oz/A was applied on 30 Jul for disease control. Growth regulator Potenza was applied 12 oz/A on 30 Jul and 16 oz/A on 7 Aug. Takedown 2.0 oz/A, Display 0.5 oz/a were applied on 14 Oct. Cotton was picked on 4 Nov and samples were sent for fiber analysis.

Rainfall in May, June and Oct was 7.1, 0.74, 4.21 in. below normal, respectively; rainfall in Jul, Aug, and Sep was 5.23, 1.37, and 3.65 in. above normal, respectively. Rainfall during the period totaled 33.23 in., which was 1.61 in. below normal. Weather data was obtained from Florida Automated Weather Network (FAWN) station located on Jay research farm and normal represents the mean for the past 54 years of records (Table 1).

Table 1. Weather conditions during 2013 in Jay, FL.

Month	Total rainfall (in.)	Average minimum air temperature (°F)	Average maximum air temperature (°F)
May	0.7 (7.1 below normal*)	43.0	91.8
June	5.8 (0.7 below normal)	65.5	93.8
July	11.8 (5.2 above normal)	67.6	92.9
August	5.5 (1.4 above normal)	67.5	95.2
September	8.0 (3.7 above normal)	58.6	93.7
October	1.7 (4.2 below normal)	38.0	88.1

\* Normal represents the mean for the past 54 years of records.

## Summary

Stand counts were significantly different on 28 of May; DP 1050 B2RF had the lowest 1.25 plants/ft, while PHY 399 WRF had the highest plant population 2.56 plants/ft (Table 2). Deer damage was noted and dead plants per plot were also enumerated, PHY 427 WRF, PHY 499 WRF, DP 1050 B2RF and NG 1511 B2RF had the most damage, while PHY 599 WRF had the least. Plots were replanted by hand on 12 Jun in areas where deer damage occurred and seed germinated on 17 Jun. A final stand count was taken on 27 Jul and there were no significant differences between varieties, cotton stand ranged from 1.67 to 2.24 plants/ft. Differences in plant height were detected on 15 Aug, PHY 599 WRF was the tallest variety (127.9 cm), while PHY499 WRF was the shortest (93.0 cm). DP 1137, PHY 339 WRF, PHY 575 WRF, NG5315 B2RF, FM 1944GLB2, and ST 6448GLB2 were all greater than 109 cm tall, while DP 1050 B2RF, DP 1252 B2RF, PHY 427 WRF were less than 99 cm tall. The number of flowers open on 15 Aug ranged from 0.70 flowers/plant (DP1252 B2RF and PHY 599 WRF) to 1.70 flowers/plant (PHY499 WRF).

Table 2. Effect of variety on emergence, growth, and flower in cotton.

Variety	Plants/ft <sup>1</sup> (28 May)	Dead plants/ plot <sup>2</sup> (28 May)	Plants/ft <sup>1</sup> (27 Jul)	Height <sup>3</sup> (cm) (15 Aug)	Flowers/ plant <sup>3</sup> (15 Aug)
DP 1050 B2RF.....	1.25 e	26.5 a-c	1.91	96.4 gf	0.88 de
DP 1137 B2RF.....	2.17 ab	8.5 cd	2.18	115.0 bc	0.93 c-e
DP 1252 B2RF.....	2.07 a-c	14.0 b-d	2.24	97.2 gf	0.70 e
MON 12R242B2R2 .....	2.12 a-c	21.8 b-d	2.21	105.9 c-f	1.23 a-e
CG 3787 B2RF .....	1.61 c-e	16.0 b-d	1.98	106.2 c-f	0.88 de
PHY 339 WRF.....	2.56 a	9.8 cd	2.04	110.0 b-e	1.63 a
PHY 499 WRF.....	1.82 b-d	35.0 ab	1.98	93.0 g	1.70 a
PHY 565 WRF.....	1.84 b-d	10.0 cd	2.23	107.4 c-f	1.03 b-e
PHY 575 WRF.....	2.23 ab	23.0 bc	2.03	109.7 b-e	1.25 a-e
PHY 599 WRF.....	2.13 a-c	0.8 d	2.01	127.9 a	0.70 e
PHY 417 WRF.....	2.14 a-c	13.3 bd	1.57	103.2 d-g	1.68 a
PHY 427 WRF.....	1.40 de	47.3 a	2.07	98.7 e-g	1.33 a-d
NG 1511 B2RF .....	1.73 b-e	28.3 a-c	2.10	104.2 c-g	1.53 ab
NG 5315 B2RF .....	1.95 bc	9.3 cd	1.89	115.3 bc	1.25 a-e
FM 1944GLB2.....	2.08 a-c	6.8 cd	1.67	112.8 b-d	1.48 a-c
ST 6448GLB2.....	2.05 a-c	10.3 cd	1.79	120.1 ab	1.50 a-c
<i>Mean</i> .....	<i>1.95</i>	<i>17.5</i>	<i>1.99</i>	<i>107.7</i>	<i>1.23</i>
<i>LSD</i> .....	<i>0.55</i>	<i>21.9</i>	<i>n.s.</i>	<i>11.4</i>	<i>0.60</i>
<i>CV</i> .....	<i>20.00</i>	<i>87.81</i>	<i>15.33</i>	<i>24.02</i>	<i>110.91</i>
<i>P(F)</i> .....	<i>0.0034</i>	<i>0.0101</i>	<i>0.1115</i>	<i>0.0001</i>	<i>0.0012</i>

<sup>1</sup> Determined from counts of two, 25-ft rows per plot. Plots replanted due to deer damage.

<sup>2</sup> Dead plants due to deer damage in plots.

<sup>3</sup> Height and flower number determined from averaging ten plants per plot. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ).

PHY 339 WRF had the greatest number of open bolls on 16 Sep (22.3 open bolls/5-ft), but wasn't significantly different from PHY 565WRF (Table 3). PHY 575 WRF has the lowest number of open bolls (5.5 open bolls/5-ft), but wasn't significantly different from NG 1511 B2RF, DP 1050 B2RF, DP 1252 B2RF, MON 12R242B2R2, CG 3787 B2RF, PHY 499 WRF, PHY599 WRF, PHY 427 WRF, FM 1944GLB2, and ST 6448GLB2. PHY 599 WRF and ST 6448GLB2 were the highest yielding varieties in lint+seed, 4344 and 4288 lb/A, respectively. Other varieties with similar yield included DP 1137 B2RF, MON 12R242B2R2, CG 3787 B2RF, PHY 339 WRF, PHY 565 WRF, PHY 575 WRF, NG 5315 B2RF, and FM 1944GLB2. PHY 417 WRF was the lowest yielding variety (2944 lb/A of lint+seed), but it wasn't significantly different from DP 1050 B2RF, DP 1252 B2RF, PHY 427 WRF, and NG 1511 B2RF. Gin turn-out (GTO) ranged from 36 to 40% lint. NG 5315 B2RF and PHY 599 WRF had the highest lint yield 1620 lbs lint/A (3.38 bales/A), while DP 1137 B2RF, MON 12R242B2R2, CG 3787 B2RF, PHY 565 WRF, FM 1944 GLB2, and ST6448GLB2 has similar yields. PHY 4167 WRF was the lowest yielding mid- to late maturing variety 1122 lb lint/A (2.34 bales/A).

Table 3. Effect of variety on open bolls and yield of cotton.

Variety	Open bolls <sup>v</sup> (16 Sep)		Yield				
			lb/A <sup>w</sup>	GTO <sup>x</sup>	Lint/A <sup>y</sup>	Bales/A <sup>z</sup>	
DP 1050 B2RF.....	6.1	de	3448 c-e	39.1 ab	1344 c-e	2.80 c-e	
DP 1137 B2RF.....	14.8	bc	4024 a-c	38.7 a-c	1558 a-c	3.25 a-c	
DP 1252 B2RF.....	6.0	de	3424 c-e	40.0 a	1372 b-d	2.86 b-d	
MON 12R242B2R2.....	8.6	c-e	4216 ab	38.0 b-e	1600 ab	3.33 ab	
CG 3787 B2RF.....	6.8	de	3976 a-c	39.0 ab	1552 a-c	3.23 a-c	
PHY 339 WRF.....	22.3	a	3744 a-d	36.6 ef	1372 b-d	2.86 b-c	
PHY 499 WRF.....	11.6	c-e	3632 b-d	37.4 c-f	1358 b-e	2.83 b-e	
PHY 565 WRF.....	18.9	ab	3920 a-d	36.4 f	1432 a-d	2.98 a-d	
PHY 575 WRF.....	5.5	e	3696 a-d	36.1 f	1328 c-e	2.77 c-d	
PHY 599 WRF.....	10.1	c-e	4344 a	37.3 d-f	1620 a	3.38 a	
PHY 417 WRF.....	15.0	bc	2944 e	38.1 b-d	1122 e	2.34 e	
PHY 427 WRF.....	7.9	de	3320 de	36.2 f	1204 de	2.51 de	
NG 1511 B2RF.....	5.6	e	3504 c-e	38.3 b-d	1344 c-e	2.80 c-e	
NG 5315 B2RF.....	12.1	cd	4184 ab	38.7 a-c	1620 a	3.38 a	
FM 1944GLB2.....	7.8	de	4048 a-c	36.0 f	1456 a-c	3.03 a-c	
ST 6448GLB2.....	7.4	de	4288 a	36.7 ef	1571 a-c	3.27 a-c	
<i>Mean</i> .....	<i>10.4</i>		<i>3795</i>	<i>37.7</i>	<i>1428</i>	<i>2.98</i>	
<i>LSD</i> .....	<i>6.5</i>		<i>651</i>	<i>0.01</i>	<i>247</i>	<i>0.51</i>	
<i>CV</i> .....	<i>62.94</i>		<i>12.04</i>	<i>2.59</i>	<i>12.15</i>	<i>12.15</i>	
<i>P(F)</i> .....	<i>0.0001</i>		<i>0.0021</i>	<i>0.0001</i>	<i>0.0023</i>	<i>0.0023</i>	

<sup>v</sup> Determined from counts in a 5-ft section of each row per plot.

<sup>w</sup> Weight (lb/A) includes lint + seed.

<sup>x</sup> GTO = gin turn out lint/seed cotton.

<sup>y</sup> Weight of lint (lb/A).

<sup>z</sup> Bales/A are weight of lint only at 480 lb/bale

Plots were harvested on 4 Nov. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ).

Fiber quality was classed at the USDA Classing Office in Memphis, TN. Micronaire (Mic), a measure of fiber fineness and maturity, ranged from 4.3 (PHY 417 WRF) to 4.9 (NG 1511 B2RF) in the mid- to full- maturing varieties (Table 4). Fiber length ranged from 1.12 to 1.20 inches and strength 28.5 to 33.0 g/tex. Uniformity, the ratio between mean length and upper-half mean length of fibers, ranged from 80.8 to 82.8%. HVI color grades included 31-2, 31-4, and 41-1, while leaf grades averaged 2.5 to 4.0. Net loan price which was calculated based on \$0.52/lb +/- premiums and discounts and ranged from 53.8 ¢/lb (PHY 339 WRF) to 56.95 ¢/lb (CG 3787 B2RF). Overall value per acre ranged from \$631 to \$918, with six varieties net values greater than \$800, NG 5315 B2RF, DP 1137 B2RF, CG 3787 B2RF, PHY 599 WRF, MON 12R242B2RF, and ST 6448GLB2.

Table 4. Effect of variety on lint yield and fiber quality.

Variety	Gin turnout <sup>s</sup> (%)	Lint yield <sup>t</sup> (lb/A)	Mic <sup>u</sup>	Fiber length <sup>v</sup> (in.)	Fiber strength <sup>w</sup> (g/tex)	Unifor- mity <sup>x</sup> (%)	HVI color <sup>y</sup>	Leaf grade <sup>z</sup>	Net loan price (¢/lb)	Lint value (\$/A)
NG 5315 B2RF .....	38.7 a-c	1620 a	4.8 ab	1.13 fg	28.5 f	81.2	31-2	2.5 d	56.65	918
DP 1137 B2RF .....	38.7 a-c	1558 a-c	4.7 ab	1.14 d-g	28.6 f	82.4	31-2	2.5 d	56.85	886
CG 3787 B2RF .....	39.0 ab	1552 a-c	4.6 bc	1.17 b-e	29.3 d-f	82.7	31-2	2.8 cd	56.95	884
PHY 599 WRF .....	37.3 d-f	1620 a	4.3 d-f	1.17 b-e	30.2 c-e	81.4	41-1	3.5 a-c	54.25	879
MON 12R242B2R2 ..	38.0 b-e	1600 ab	4.8 a	1.16 c-f	29.0 ef	82.8	41-1	3.5 a-c	54.15	866
ST 6448GLB2 .....	36.7 ef	1571 a-c	4.8 ab	1.18 a-c	30.6 cd	80.8	41-1	3.3 a-d	54.25	852
FM 1944GLB2 .....	36.0 f	1456 a-c	4.8 a	1.19 ab	33.0 a	81.8	41-1	2.8 cd	54.40	792
DP 1252 B2RF .....	40.0 a	1372 b-d	4.6 bc	1.15 c-g	29.2 ef	81.9	31-2	2.5 d	56.85	780
PHY 565 WRF .....	36.4 f	1432 a-d	4.6 bc	1.15 c-g	31.0 bc	81.4	41-1	3.0 b-d	54.35	778
DP 1050 B2RF .....	39.1 ab	1344 c-e	4.5 b-d	1.16 c-f	29.2 d-f	81.9	31-2	2.5 d	56.85	764
NG 1511 B2RF .....	38.3 b-d	1344 c-e	4.9 a	1.13 g	29.7 c-f	82.1	31-4	3.8 ab	56.30	757
PHY 575 WRF .....	36.1 f	1328 c-e	4.2 f	1.20 a	30.1 c-e	81.2	31-2	3.0 b-d	56.65	752
PHY 499 WRF .....	37.4 c-f	1358 b-e	4.7 ab	1.14 e-g	32.1 ab	82.5	41-1	3.3 a-d	54.45	739
PHY 339 WRF .....	36.6 ef	1372 b-d	4.5 c-e	1.17 a-d	31.1 bc	82.1	41-1	4.0 a	53.80	738
PHY 427 WRF .....	36.2 f	1204 de	4.4 d-e	1.12 g	30.3 c-e	80.8	41-1	3.3 a-d	54.20	653
PHY 417 WRF .....	38.1 b-d	1122 e	4.3 ef	1.13 fg	29.5 d-f	81.3	31-2	3.3 a-d	56.20	631
Mean.....	37.7	1428	4.6	1.15	30.1	81.8		3.1	54.25	775
LSD .....	0.01	247	0.2	0.03	1.4	1.35		0.8		
CV.....	2.59	12.15	3.49	1.98	3.22	1.16		18.88		
P(F).....	0.0001	0.0023	0.0001	0.0001	0.0001	0.0686		0.0061		

<sup>s</sup> Gin turnout= weight of lint as a percent of seed cotton weight, which is composed of lint, seed, trash, and excess moisture.

<sup>t</sup> Weight of lint (lb/A).

<sup>u</sup> Mic (micronaire)= a measure of fiber fineness or maturity. An airflow instrument measures the air permeability of a given mass of cotton lint compressed to a fixed volume. Low "mike" values indicate finer or less mature fibers.

<sup>v</sup> Fiber length= average fiber length of the longer one-half of the fibers sampled, in hundredths of an inch.

<sup>w</sup> Fiber strength = force required to break a bundle of fibers one tex unit in size. A tex is the weight in grams of 1,000 meters of fiber. HVI clamp jaw spacing is 1/8 inch.

<sup>x</sup> Uniformity = length uniformity is the ratio between the mean length and the upper-half mean length of the fibers, expressed as a percentage.

<sup>y</sup> HVI Color = color grade is a function of white reflectance (Rd) and yellowness (+b) of the lint sample. The HVI color code identifies the quadrant of the Nickerson-Hunter cotton colorimeter diagram in which Rd and +b values intersect (USDA, 1999).

<sup>z</sup> Leaf Grade = visual estimate of the amount of cotton plant leaf particles in a sample of lint. There are seven leaf grades represented by physical standards, plus a below grade designation.

Entries are listed according to value in \$/Acre based on \$0.52/lb +/- premium/discounts. Samples ginned at the University of Tennessee's West TN Research and Education Center and classed at the USDA Classing Office in Memphis, TN.

#### REFERENCES CITED

USDA. 1999. The Classification of Cotton. Agricultural Marketing Service, Agric. Handbook 566. Rev.1/99. Washington, DC. 23 pp.