

**2013 EVALUATION OF NON-IRRIGATED EARLY-SEASON
MATURING COTTON VARIETIES, JAY, FLORIDA**



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2013 Evaluation of Non-Irrigated Early-Maturing Cotton Varieties, Jay, Florida

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This report included a summary of the 2013 early-season cotton OVT trial in Jay, Florida. It shows the performance of eleven 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.

Early-season varieties that were evaluated:

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|-------------------|------------------|
| 1. DP 1137 B2RF | 7. PHY 339 WRF |
| 2. DP 1321 B2RF | 8. PHY 499 WRF |
| 3. MON 12R224B2R2 | 9. PHY 333 WRF |
| 4. DP 0912 B2RF | 10. NG 1511 B2RF |
| 5. PHY 375 WRF | 11. AM 1550 B2RF |
| 6. PHY 367 WRF | |

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 planted 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 ranged from DP 0912 B2RF 2.49 plants/ft to PHY 375 WRF 1.78 plants/ft on 28 May and were significantly different (Table 2). Deer damaged was noted and dead plants per plot were also enumerated, DP 1321 B2RF had the greatest damage while no damage was detected in PHY 333 WRF and NG 1511 B2RF plots. Plots were replanted by hand on 12 Jun in areas where 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, stands ranged from an average of 2.04 to 1.76 plants/ft. Differences in plant height were detected on 6 Aug, DP 1137 B2RF was the tallest at 100.0 cm and DP 0912 B2RF was the shortest at 85.0 cm. No differences between varieties for the number of flowers on 6 Aug were detected.

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

Variety	Plants/ft ¹ (28 May)	Dead plants/ plot ² (28 May)	Plants/ft ¹ (27 Jul)	Height ³ (cm) (6 Aug)	Flowers/ plant ³ (6 Aug)
DP 1137 B2RF.....	2.31 a-c	4.5 a-c	2.03	100.0 a	2.0
DP 1321 B2RF.....	2.06 cd	16.8 a	1.99	90.5 cd	2.0
MON 12R224B2R2	2.24 a-c	12.5 a-c	1.98	93.8 a-c	2.1
DP 0912 B2RF.....	2.49 a	0.0 c	2.01	85.0 d	1.4
PHY 375 WRF.....	1.78 d	11.5 a-c	2.01	92.2 b-d	1.7
PHY 367 WRF.....	2.26 a-c	4.3 a-c	2.04	94.9 a-c	2.2
PHY 339 WRF.....	2.20 a-c	14.8 ab	2.03	96.1 a-c	1.5
PHY 499 WRF.....	2.40 a-c	0.8 c	1.88	93.2 a-c	1.4
PHY 333 WRF.....	2.45 ab	0.0 c	1.86	98.1 ab	2.5
NG 1511 B2RF	2.27 a-c	0.0 c	1.76	91.9 b-d	2.1
AM 1550 B2R.....	2.14 bc	3.8 bc	1.79	88.7 cd	2.4
<i>Mean</i>	<i>2.24</i>	<i>6.3</i>	<i>1.94</i>	<i>93.1</i>	<i>1.9</i>
<i>LSD</i>	<i>0.35</i>	<i>12.5</i>	<i>n.s.</i>	<i>7.5</i>	<i>n.s.</i>
<i>CV</i>	<i>11.00</i>	<i>138.89</i>	<i>11.68</i>	<i>21.98</i>	<i>101.30</i>
<i>P(F)</i>	<i>0.0197</i>	<i>0.0489</i>	<i>0.6139</i>	<i>0.0773</i>	<i>0.1221</i>

¹ Determined from counts of two, 25-ft rows per plot. Final count taken on 27 Jul after replant from deer damage.

² Deer damage caused dead plants that were observed on 28 May.

³ 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 ($P=0.05$), except for height means separated at $\alpha=0.10$.

No differences between varieties for the number of open bolls on 16 Sep were detected (Table 3). Yield of lint+seed ranged from 3112 to 3888 lb/A, no differences between varieties were detected. Significant differences were detected for gin turn-out (GTO) between varieties with PHY 333 WRF having the highest percentage of lint to seed cotton (40%), while DP 0912 B2RF had the lowest at 36%. Though differences were detected for GTO, no significant differences in total lint yield (1169 to 1417 lb lint/A) or number of bales/A (2.43 to 2.95 bales/A) were detected between the eleven varieties tested. The three highest yielding varieties were MON 12R224B2R2, PHY 333 WRF and DP 1137 B2RF.

Table 3. Effect of variety on yield of cotton.

Variety	Open bolls ^v (16 Sep)	Yield			
		lb/A ^w	GTO ^x	Lint/A ^y	Bales/A ^z
DP 1137 B2RF.....	5.5	3464	39.0 a-c	1356	2.83
DP 1321 B2RF.....	6.1	3224	36.9 d-f	1191	2.48
MON 12R224B2R2	5.3	3888	36.4 ef	1417	2.95
DP 0912 B2RF.....	6.9	3496	35.6 f	1246	2.60
PHY 375 WRF.....	4.4	3112	37.6 c-e	1169	2.43
PHY 367 WRF.....	12.6	3224	36.5 d-f	1179	2.46
PHY 339 WRF.....	11.8	3472	37.8 b-e	1311	2.73
PHY 499 WRF.....	7.1	3368	38.1 a-d	1284	2.68
PHY 333 WRF.....	7.4	3440	39.7 a	1367	2.85
NG 1511 B2RF.....	6.4	3312	39.3 ab	1299	2.71
AM 1550 B2R.....	6.0	3200	38.0 a-e	1220	2.54
<i>Mean</i>	7.2	3382	37.7	1276	2.66
<i>LSD</i>	<i>n.s.</i>	<i>n.s.</i>	0.02	<i>n.s.</i>	<i>n.s.</i>
<i>CV</i>	81.35	10.81	3.15	11.73	11.73
<i>P(F)</i>	0.1283	0.2540	0.0004	0.3146	0.3146

^v Determined from counts in a 5-ft section of each row per plot.

^w Weight (lb/A) includes lint + seed.

^x GTO = gin turn out lint/seed cotton.

^y Weight of lint (lb/A).

^z 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 fitness and maturity, ranged from 4.0 (PHY 375 WRF) to 4.9 (NG 1511 B2RF) in the early- maturing varieties (Table 4). Fiber length ranged from 1.10 to 1.18 inches and strength 28.6 to 31.7 g/tex. Uniformity, the ratio between mean length and upper-half mean length of fibers, ranged from 80.6 to 82.6%. HVI color grades included 31-1, 31-2, and 41-1, while leaf grades averaged 2.3 to 3.8. Net loan price which was calculated based on \$0.52/lb +/- premiums and discounts and ranged from 54.0 ¢/lb (PHY 367 WRF) to 56.75 ¢/lb (DP 1137 B2RF). Overall lint value per acre ranged from \$637 to \$803, with six varieties with net values greater than \$700, MON 12R224B2R2, DP1137 B2RF, PHY 333 WRF, and PHY 339 WRF, NG1511 B2RF, and PHY 499 WRF.

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

Variety	Gin turnout ^s (%)	Lint yield ^t (lb/A)	Mic ^u	Fiber length ^v (in.)	Fiber strength ^w (g/tex)	Unifor- mity ^x (%)	HVI color ^y	Leaf grade ^z	Net loan price (¢/lb)	Lint value (\$/A)
MON 12R224B2R2.....	36.4 ef	1417	4.2 ef	1.17 a	30.0 bc	81.8 a-c	31-2	3.3 ab	56.65	803
DP 1137 B2RF	39.0 a-c	1356	4.7 a-c	1.13 bc	28.7 cd	82.1 ab	31-1	2.3 c	56.75	770
PHY 333 WRF	39.7 a	1367	4.4 c-e	1.18 a	30.3 b	82.0 ab	41-1	3.8 a	54.35	743
PHY 339 WRF	37.8 b-e	1311	4.3 de	1.17 a	30.5 ab	81.8 a-c	31-2	3.0 b	56.50	741
NG 1511 B2RF	39.3 ab	1299	4.9 a	1.13 bc	30.5 ab	81.5 a-c	41-1	3.0 b	54.20	704
PHY 499 WRF	38.1 a-d	1284	4.7 a-c	1.15 ab	31.7 a	82.6 a	41-1	3.8 a	54.45	704
DP 0912 B2RF	35.6 f	1246	4.7 a-c	1.11 cd	30.6 ab	82.3 a	31-2	3.0 b	56.50	699
AM 1550 B2R	38.0 a-e	1220	4.7 a-c	1.10 d	28.6 d	80.6 c	31-2	2.3 c	55.70	680
DP 1321 B2RF	36.9 d-f	1191	4.8 ab	1.11 cd	29.6 b-d	80.9 bc	31-2	3.0 b	56.20	669
PHY 375 WRF	37.6 c-e	1169	4.0 f	1.14 bc	29.8 b-d	81.9 ab	31.2	3.5 ab	56.45	660
PHY 367 WRF	36.5 d-f	1179	4.6 b-d	1.13 bc	29.8 b-d	81.7 a-c	41-1	3.3 ab	54.00	637
<i>Mean.....</i>	<i>37.7</i>	<i>1276</i>	<i>4.5</i>	<i>1.14</i>	<i>30.0</i>	<i>81.7</i>	<i>41</i>	<i>3.1</i>	<i>54.25</i>	<i>692</i>
<i>LSD</i>	<i>0.02</i>	<i>n.s.</i>	<i>0.3</i>	<i>0.03</i>	<i>1.3</i>	<i>1.3</i>		<i>0.7</i>		
<i>CV.....</i>	<i>3.15</i>	<i>11.73</i>	<i>4.9</i>	<i>1.79</i>	<i>3.1</i>	<i>1.13</i>		<i>16</i>		
<i>P(F).....</i>	<i>0.0004</i>	<i>0.3146</i>	<i>0.0001</i>	<i>0.0001</i>	<i>0.0027</i>	<i>0.1576</i>		<i>0.0008</i>		

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

^t Weight of lint (lb/A).

^u 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.

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

^w 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.

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

^y 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).

^z 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 lint 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.