

2014 Evaluation of Non-Irrigated Early-Maturing Cotton Varieties, Jay, Florida

Darcy Telenko, Mike Donahoe and Barry Brecke

This report includes the summary of the 2014 early-maturing cotton replicated variety trial at West Florida Research and Education Center, Jay, Florida. It shows the performance of 15 early-maturing cotton varieties. This data represents only one year, results should be considered over several locations and years before conclusions are valid.

Varieties that were evaluated:

1. NexGen NG 1511 B2RF
2. Deltapine DP 1321 B2RF
3. Deltapine DP 0912 B2RF
4. MON 12R224B2R2
5. Phytogen PHY499 WRF
6. Phytogen PHY339 WRF
7. Phytogen PHY333 WRF
8. Phytogen PHY427 WRF
9. Phytogen PX4444-13 WRF
10. Phytogen PX3003-10 WRF
11. Phytogen PX3122b-51 WRF
12. Phytogen PHY495 WRF
13. Dyna-Gro 2355 B2RF
14. Dyna-Gro CT13125
15. Dyna-Gro CT14515

2014 Growing Conditions and Experimental Design:

The study area soil type was a Dothan sandy loam with 2% organic matter and pH 6.5 and a history of corn production during 2013. Fertilizer was applied according to soil test results (350 lb/A 18.8-3.6-14.5 with 8.6% S applied 7 July). Each cotton variety was planted on 6 June under strip tillage. Plots were four, 25-ft rows with 36-in. row spacing and replicated in four randomized complete blocks. Standard production practices for non-irrigated cotton production were followed throughout the season. Pendimethalin (Stealth, Loveland Products) 1.8 pt/A + Roundup 26 oz/A was applied on 6 June for burndown and preemergence weed control. Dual at 1.3 pt/A + Roundup at 26 oz/A were applied 27 June.

Sherpa insecticide was applied at 8 oz/A 30 July and 11 August. Headline fungicide was applied at 9 oz/A 31 July. The plant growth regulator Potenza was applied 1 pt/A on 30 July and on 11 August. Cotton was harvested with a conventional spindle picker on 3 November and samples were sent to a commercial lab for fiber analysis.

Rainfall in June, August, October and November was 2.13, 1.58, 0.15 and 2.31 in. below normal, respectively; rainfall in July and September was 0.65 and 0.32 in. above normal, respectively. Rainfall during the cotton growing season totaled 28.96 in., which was 7.24 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 2014 cotton trial.

Month	Total Rainfall (in)	Average minimum air temperature (°F)	Average maximum air temperature (°F)
June	5.27 (2.13 below normal)	66.6	94.4
July	8.70 (0.65 above normal)	62.1	94.9
August	4.94 (1.58 below normal)	66.9	96.0
September	4.11 (0.32 above normal)	57.4	92.5
October	4.05 (0.15 below normal)	42.6	87.9
November	1.89 (2.31 below normal)	22.3	78.9

Summary

Stand count for all varieties ranged from 3.2 to 3.8 plants/ft (46,000 to 55,600 plants/A) (Table 2). All varieties except NG 1511, PHY339, Dyna-Gro CT13125 and Dyna-Gro CT14515 had plant populations higher than 49,000 plants/A.

Cotton plant height on 25 August ranged from 36 to 44 inches with PHY495 the tallest and Dyna-Gro 2355 the shortest (Table 2). There were no differences in flower number among varieties when evaluated on 25 August (Table 2). The number of open bolls on 9 September ranged from 2 for Dyna-Gro CT14515 to 31 for PHY339 with most varieties ranging from 8 to 15 open bolls (Table 3). There were no differences detected for cotton yield or gin turnout. Yields ranged from 1700 to 1900 lb lint/A with gin turnout of 42.5 to 44.9% (Table 3). The three early-maturing varieties with the highest yield and highest lint value/A were MON 12R224, PHY333 and PX3003-10 (Tables 3 and 4). MON 12R224 and PHY333 were also the highest yielding early-maturing varieties in 2013.

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

Variety	Plants/ft ¹ (26 June)	Plants/A ¹ (26 June)	Height ³ (cm) (25 August)	Flowers/ plant ³ (25 August)
NG 1511 B2RF	3.2 cde	46028 cde	40.0 cd	1.4
DP 1321 B2RF	3.5 bc	50602 bc	41.2 a-e	1.7
DP 0912 B2RF	3.4 bcd	49368 bcd	38.8 de	1.6
MON 12R224B2R2	3.4 bcd	49295 bcd	40.5 bcd	1.4
PHY499 WRF	3.5 bcd	50457 bcd	42.3 abc	1.4
PHY339 WRF	3.0 e	44068 e	42.2 abc	1.8
PHY333 WRF	3.8 a	55684 a	41.5 a-d	1.5
PHY427 WRF	3.6 ab	52925 ab	41.7 a-d	1.8
PX4444-13 WRF	3.7 ab	53071 ab	40.2 cd	1.5
PX3003-10 WRF	3.6 ab	52853 ab	40.4 cd	1.5
PX3122b-51 WRF	3.6 ab	51691 ab	43.9 ab	1.5
PHY495 WRF	3.5 ab	51401 ab	44.3 a	1.5
Dyna-Gro 2355 B2RF	3.6 ab	52345 ab	36.4 e	1.4
Dyna-Gro CT13125	3.2 de	45811 de	39.6 cde	1.5
Dyna-Gro CT14515	3.2 cde	46101 cde	39.6 cde	1.7
<i>Mean</i>	<i>3.5</i>	<i>50113</i>	<i>40.8</i>	<i>1.6</i>
<i>LSD</i>	<i>0.3</i>	<i>4696</i>	<i>3.39</i>	<i>n.s.</i>
<i>CV</i>	<i>6.57</i>	<i>6.57</i>	<i>5.81</i>	<i>18.6</i>
<i>P(F)</i>	<i>0.0002</i>	<i>0.0002</i>	<i>0.0051</i>	<i>0.61</i>

¹ Determined from counts of two, 25-ft rows per plot.

² Height and flower number determined by averaging measurements from 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 $\alpha=0.10$.

Table 3. Effect of variety on yield of cotton.

Variety	Open bolls ^y		Yield		
	(9 September)	lb/A ^w	GTO ^x	Lint/A ^y	Bales/A ^z
NG 1511 B2RF	15 bc	3933	44.9	1765	3.68
DP 1321 B2RF	16 b	4082	43.2	1766	3.68
DP 0912 B2RF	8 b-e	4120	44.2	1823	3.80
MON 12R224B2R2	8 b-e	4353	44.0	1916	3.99
PHY499 WRF	15 bc	4021	44.7	1796	3.74
PHY339 WRF	31 a	3815	42.7	1625	3.39
PHY333 WRF	5 de	4175	45.1	1880	3.92
PHY427 WRF	12 bcd	4002	42.5	1700	3.54
PX4444-13 WRF	3 de	3959	45.8	1814	3.78
PX3003-10 WRF	8 b-e	4076	45.2	1842	3.84
PX3122b-51 WRF	6 cde	4178	44.0	1841	3.84
PHY495 WRF	9 b-e	3906	45.0	1758	3.66
Dyna-Gro 2355 B2RF	11 b-e	4193	42.5	1780	3.71
Dyna-Gro CT13125	12 bcd	4155	44.5	1851	3.86
Dyna-Gro CT14515	2 e	3999	42.8	1717	3.58
<i>Mean</i>	<i>11</i>	<i>4064</i>	<i>44.1</i>	<i>1791</i>	<i>3.73</i>
<i>LSD</i>	<i>9.2</i>	<i>n.s.</i>	<i>n.s.</i>	<i>n.s.</i>	<i>n.s.</i>
<i>CV</i>	<i>61.0</i>	<i>8.66</i>	<i>3.87</i>	<i>9.37</i>	<i>9.37</i>
<i>P(F)</i>	<i>0.0001</i>	<i>0.845</i>	<i>0.111</i>	<i>0.677</i>	<i>0.677</i>

^y 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 ($P=0.05$).

Table 4. Effect of variety on cotton fiber quality and value.

Variety	Mic ^u	Fiber length ^v (in.)	Fiber strength ^w (g/tex)	Uniformity ^x (%)	HVI color ^y	Leaf grade ^z	Net loan price (¢/lb)	Lint value (\$/A)
NG 1511 B2RF	4.8 ab	1.12 gh	31.7 bcd	83.5 c-f	41-1	5.8	54.85	966
DP 1321 B2RF	4.9 a	1.16 cde	30.6 de	84.4 abc	41-2	5.0	54.75	961
DP 0912 B2RF	4.8 ab	1.10 h	29.8 e	83.3 ef	41-1	4.8	53.80	977
MON 12R224B2R2	4.4 cd	1.18 bcd	30.0 e	84.2 a-e	41-1	5.0	54.85	1047
PHY499 WRF	4.7 ab	1.14 efg	32.0 bcd	84.2 a-e	51-1	5.8	51.05	914
PHY339 WRF	4.3 de	1.19 b	31.9 bcd	83.9 b-e	41-2	5.8	55.00	887
PHY333 WRF	4.2 ef	1.20 b	32.4 abc	84.7 ab	41-1	6.3	55.20	1037
PHY427 WRF	4.3 de	1.16 cde	32.0 bcd	83.9 b-f	41-2	5.8	54.90	925
PX4444-13 WRF	3.8 g	1.25 a	33.8 a	84.8 ab	31-2	4.8	57.85	1050
PX3003-10 WRF	4.6 bc	1.13 fgh	31.7 bcd	82.9 f	41-2	5.8	54.75	1008
PX3122b-51 WRF	4.0 f	1.19 b	32.6 abc	84.0 a-e	41-2	6.0	55.20	1012
PHY495 WRF	4.6 bc	1.13 fgh	33.2 ab	83.5 c-f	41-2	5.0	54.85	963
Dyna-Gro 2355 B2RF	4.3 de	1.20 b	32.6 abc	85.0 a	41-1	5.3	55.15	973
Dyna-Gro CT13125	4.4 cde	1.18 bc	31.4 cde	84.4 a-d	41-1	5.5	55.05	1017
Dyna-Gro CT14515	4.6 bc	1.15 def	32.3 abc	83.4 def	41-1	4.8	54.90	936
<i>Mean</i>	<i>4.4</i>	<i>1.16</i>	<i>31.87</i>	<i>84.0</i>		<i>5.4</i>		
<i>LSD</i>	<i>0.26</i>	<i>0.03</i>	<i>1.65</i>	<i>1.0</i>		<i>n.s.</i>		
<i>CV</i>	<i>4.03</i>	<i>1.69</i>	<i>3.63</i>	<i>0.84</i>		<i>16.9</i>		
<i>P(F)</i>	<i>0.0001</i>	<i>0.0001</i>	<i>0.0008</i>	<i>0.0029</i>		<i>0.3115</i>		

^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 Auburn University and classed at the USDA Classing Office in Macon, GA.