2015 Evaluation of Non-Irrigated Early-Maturing Cotton Varieties, Jay, Florida

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This report includes the summary of the 2015 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. Americot NexGen NG3405 B2XF
2. Americot NexGen NG3406 B2XF
3. Deltapine DP 1518 B2XF
4. Deltapine DP 1522 B2XF
5. Deltapine DP 1612 B2XF
6. Deltapine MON 15R513B2XF
7. Deltapine DP 1614 B2XF
8. Phytogen PHY333WRF
9. Phytogen PHY444WRF
10. Phytogen PHY487WRF
11. Phytogen PHY495W3RF
12. Phytogen PHY499WRF
13. Phytogen PHY222WRF
14. Phytogen PHY312WRF
15. Phytogen PHY427WRF

2015 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 2014. Nitrogen fertilizer was applied 15 June (115 lb/A ESN slow release N + 115 lb/A urea + 50 lb/A ammonium sulfate + 0.0 lb/A B + 0.2 lb/A Cu). Each cotton variety was planted on 5 May 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. Prowl H_2O 1.8 pt/A + Roundup 22 oz/A + Direx 1 qt/A were applied on 7 May for burndown and preemergence weed control. Roundup at 22 oz/A was applied 20 May, 22 June

and 14 July for postemergence weed control. Sherpa insecticide was applied at 3.8 oz/A 2 July. Twinline fungicide was applied at 8 oz/A 27 July. The plant growth regulator Potenza was applied at 12 oz/A on 2 July and 1 pt/A on 13 and 27 July. Cotton was harvested with a conventional spindle picker on 6 October and samples were sent to a commercial lab for fiber analysis.

Rainfall in May, June, August and September was 1.85, 3.10, 2.16 and 2.02 in. below normal, respectively; rainfall in July was 1.11 in. above normal. Rainfall during the cotton growing season totaled 24.69 in., which was 8.02 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 55 years of records (Table 1).

Table 1. Weather conditions during 2015 cotton trial.

Month	Total Rainfall (in)	Average minimum air temperature (°F)	Average maximum air temperature (°F)
May	2.65 (1.85 below normal)	49.6	90.7
June	4.30 (3.10 below normal)	67.2	98.0
July	9.16 (1.11 above normal)	66.5	98.2
August	4.36 (2.16 below normal)	62.1	96.4
September	4.22 (2.02 below normal)	53.0	97.1

Summary

Stand count for all varieties ranged from 2.9 to 3.5 plants/ft (41,800 to 51,100 plants/A) (Table 2). All varieties except NG 3405, DP 1614, and PHY495 had plant populations higher than 45,000 plants/A.

There were no differences detected for seed cotton yield, however there were differences among varieties in gin turnout and lint yield (Table 3). DP 1614, PHY333, PHY444, PHY495 and PHY499 all had gin turnout in excess of 40%. Cotton lint yield ranged from 1,319 to 1,861 lb/A. DP 1614, PHY333, PHY499 and PHY312 all yielded more than 1,650 lb lint/A while NG3406 and PHY222 yielded less than 1,350 lb/A.

Fiber analysis data is listed in Table 4 along with value of lint based on lint yield and lint quality. The six highest lint value/A (which included premiums and discounts for fiber quality) were (highest to lowest) PHY499, PHY312, PHY333, DP1614, PHY444 and PHY495.

Table 2. Effect of cotton variety on plant population.

Variety	Plants/ft[1] (8 June)	Plants/A[1] (8 June)
NG3405 B2XF	3.1 cd	44,939 cd
NG3406 B2XF	3.2 bc	46,537 bc
DP 1518 B2XF	3.3 abc	47,263 abc
DP 1522 B2XF	3.4 ab	49,150 ab
DP 1612 B2XF	3.5 a	51,110 a
MON 15R513B2XF	3.2 bcd	45,738 bcd
DP 1614 B2XF	3.1 cd	44,359 cd
PHY333WRF	3.2 bc	46,537 bc
PHY444WRF	3.2 bc	46,101 bc
PHY487WRF	3.4 ab	48,932 ab
PHY495W3RF	2.9 d	41,818 d
PHY499WRF	3.2 bc	46,101 bc
PHY222WRF	3.4 ab	48,932 ab
PHY312WRF	3.2 bc	46,972 bc
PHY427WRF	3.1 bcd	45,448 bcd
LSD	*0.27*	*3,958*
CV	*5.94*	*5.94*
P(F)	*0.007*	*0.007*

[1]Determined from counts of two, 25-ft rows per plot. Planted 4 seed/row ft = 58,000 seed/A.

Table 3. Effect of variety on gin turnout and yield of cotton.

Variety	Yield			
	Seed Cotton[w] (lb/A)	Gin Turnout[x] (%)	Lint Yield (lb/A)	Bales/A[y]
NG3405 B2XF	3,935	39.1 cde	1,534 bcd	3.2 bcd
NG3406 B2XF	3,528	37.4 fgh	1,319 e	2.7 e
DP 1518 B2XF	4,167	38.0 efg	1,583 bc	3.3 bc
DP 1522 B2XF	4,037	37.8 e-h	1,524 b-e	3.2 b-e
DP 1612 B2XF	4,341	36.4 hi	1,580 bc	3.3 bc
MON 15R513B2XF	4,138	38.0 efg	1,575 bc	3.3 bc
DP 1614 B2XF	4,458	41.7 a	1,861 a	3.9 a
PHY333WRF	4,225	40.1 bcd	1,694 ab	3.5 ab
PHY444WRF	3,978	40.6 ab	1,618 bc	3.4 bc
PHY487WRF	4,269	37.7 e-h	1,605 bc	3.3 bc
PHY495W3RF	3,993	40.3 abc	1,609 bc	3.4 bc
PHY499WRF	4,138	40.6 ab	1,680 ab	3.5 ab
PHY222WRF	3,761	35.9 i	1,349 de	2.8 de
PHY312WRF	4,312	38.7 def	1,672 ab	3.5 ab
PHY427WRF	3,935	37.2 ghi	1,460 cde	3.0 cde
LSD	*n.s.*	*1.46*	*211.3*	*0.44*
CV	*9.31*	*2.65*	*9.39*	*9.39*
P(F)	*0.122*	*0.0001*	*0.0013*	*0.0013*

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

[x] Gin Turnout = lint/seed cotton.

[y] Bales/A are weight of lint only at 480 lb/bale

Plots were harvested on 6 October.

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

Variety	Mic[u]	Fiber length[v] (in.)	Fiber strength[w] (g/tex)	Uniform.[x] (%)	Lint Yield (lb/A)	Net loan price[y] (¢/lb)	Lint value[y] ($/A)
NG3405 B2XF	4.6 cde	1.14 i	29.5 d	83.2	1,534 bcd	51.40	788
NG3406 B2XF	4.5 de	1.15 hi	31.4 c	83.9	1,319 e	54.55	720
DP 1518 B2XF	4.2 fg	1.21 cd	32.0 bc	83.5	1,583 bc	48.20	763
DP 1522 B2XF	4.7 bcd	1.18 fgh	31.5 c	84.8	1,524 b-e	49.75	758
DP 1612 B2XF	4.5 de	1.19 def	33.2 ab	84.7	1,580 bc	48.35	764
MON 15R513B2XF	4.8 bc	1.24 b	33.2 ab	84.6	1,575 bc	48.20	759
DP 1614 B2XF	5.1a	1.22 bc	31.8 c	84.7	1,861 a	47.30	880
PHY333WRF	4.4 ef	1.19 def	33.7 a	83.5	1,694 ab	52.20	884
PHY444WRF	3.9 h	1.28 a	33.9 a	84.2	1,618 bc	52.75	853
PHY487WRF	4.8 bc	1.17 f-i	32.7 abc	83.9	1,605 bc	51.75	831
PHY495W3RF	4.5 cde	1.17 f-i	34.0 a	84.4	1,609 bc	51.90	835
PHY499WRF	4.9 ab	1.16 ghi	34.0 a	84.5	1,680 ab	54.70	919
PHY222WRF	4.6cde	1.18 efg	32.2 bc	84.0	1,349 de	51.85	699
PHY312WRF	4.1 gh	1.21 cde	33.8 a	84.0	1,672 ab	54.25	907
PHY427WRF	4.5 cde	1.17 fgh	32.1 bc	84.3	1,460 cde	49.90	729
LSD	*0.27*	*0.027*	*1.39*	*n.s.*	*211.3*		
CV	*4.21*	*1.62*	*2.99*	*0.98*	*9.39*		
P(F)	*0.0001*	*0.0001*	*0.0001*	*0.205*	*0.0013*		

[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] Entries are listed according to lint value in $/Acre based on $0.52/lb +/- premium/discounts. Samples ginned at University of Tennessee and classed at the USDA Classing Office in Memphis, TN.