PERFORMANCE OF PHYTOGEN® COTTON VARIETIES IN ON FARM INNOVATION TRIALS FROM THE NORTH AND SOUTH DELTA IN 2007

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On-farm trials conducted in 2007 demonstrated the high yield potential and good fiber quality of the PhytoGen® varieties PHY 370 WR, PHY 375 WRF, PHY 480 WR, and PHY 485 WRF in multiple environments. The WideStrike® Insect Protection trait expressed in these varieties provided high levels of control of tobacco budworm (*Heliothis virescens*[F.]), soybean looper (*Pseudoplusia includens),* cabbage looper (*Trichoplusia ni)*, southern armyworm (*Spodoptera eridania)* and fall armyworm (*Spodoptera frugiperda),* as well as good to excellent control of bollworm (*Helicoverpa zea* [Boddie]).

Large strip trials (1 - 10 acre blocks per variety) were conducted in 17 locations in LA, MS, TN, MO, AL, and AR to further characterize the agronomic performance of the WideStrike varieties. PHY 370 WR, PHY 375 WRF, PHY 480 WR, and PHY 485 WRF were included in most trials along with 3 to 4 competitive varieties. Cooperators scouted the fields on a regular basis for all insect pests, and insecticide applications were made as needed based on local recommendations. Data collected in the trials included vigor ratings, stand counts, date of first flower, first fruiting branch, total fruiting branches, total number of branches, plant height, node above cracked boll, lint yields and fiber quality (HVI analysis). Plots were picked with cooperator's commercial harvest equipment and weights were determined with load cell equipped boll buggies (15), pad scales beneath boll buggies (1), or with a yield monitor (1). Three random cottonseed grab samples weighing approximately 15 lbs/variety were collected for each trial and sent to University of Missouri for ginning. Ginned lint samples were forwarded to the International Textile Center in Lubbock for HVI classing.

PHY 370 WR and PHY 485 WRF showed very good vigor when compared to the market leading varieties ST 4554 B2RF and DP 445 BR (Table 2).

PhytoGen cottonseed varieties relative maturity are determined by multiple evaluations, including end of season mapping data (Table 3) which encompasses node above cracked boll and days to first bloom (Table 4). Based on DPL 445 BR being a standard early maturing variety, PHY 370 WR is characterized as an early maturing variety while PHY 480 WR and PHY 485 WRF are characterized as early to mid-season varieties (Tables 3 - 5).

Plant height, first fruiting node, total number of nodes, total number of fruiting nodes were very similar for PHY 370 WR and DP 445 BR as well as for PHY 485 WRF and ST 4554 B2RF (Table 3). Notable differences were the greater height of PHY 370 WR as compared to DP 445 BR and more fruiting branches available on PHY 485 WRF as compared to ST 4554 B2RF.

PhytoGen 485 WRF has shown high yield potential, very broad adaptability and very good fiber quality throughout the Delta (Table 6). Average yields of PHY 485 WRF and ST 4554 B2RF were 1189 lbs lint/A and 1,181 lbs lint/A, respectively.

PhytoGen PHY 370 WR was broadly adapted and offered high yield potential with very good fiber quality throughout the Delta. Average yields of PHY 370 WR and DP 445 BR were 1003 lbs lint/A and 973 lbs/A, respectively. (Table 9).

References

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Table 1. PhytoGen cotton seed varieties by location included in 2007 Innovation Plot data with DPL 445 BR and ST 4554 B2RF as comparative standards.

Locations	PHY 370 WR	PHY 480 WR	PHY 485 WR	PHY 375 WRF	DP 445 BR	ST 4554 B2RF	DP 117 B2RF	DP 164 B2RF
Chenneyville, LA	X	X	X		X	X		
Transylvania, LA	X	X	X	X	X	X	X	X
Portland, AR	X	X	X	X	X	X		X
Altheimer AR	X	X	X		X	X		
Belzoni, MS			X	X		X	X	X
Mer Rouge, LA			X	X		X	X	X
Greenwood, MS	X	X	X		X	X	X	X
Edwards, MS	X		X		X	X		
Tunica, MS			X			X		X
Baldwin, MS	X		X		X	X		
Belle Mina, AL	X		X		X	X		
Kennett, MO			X			X	X	
Oseola, MS			X			X		
Caraway, MS			X			X		
Marion, AR	X		X		X	X	X	
Cherry, TN	X		X		X	X	X	
Medina, TN	X		X		X	X	X	

Table 2. PhytoGen Innovation plot early season vigor ratings, averaged across all locations in which DP 445 BR and ST 4554 B2RF were used as standard variety comparisons. (1= excellent, 5= poor).

Varieties	Early Season Vigor Ratings
PHY 370 WR	2.1
DP 445 BR	2.5
PHY 485 WRF	2.0
ST 4554 B2RF	1.8

Table 3. PhytoGen Innovation plot end of season plant mapping data averaged across all locations in which DP 445 BR & ST 4554 B2RF were used as standard variety comparisons.

	PHY 370 WR	DP 445 BR	PHY 485 WRF	ST 4554 B2RF
Plant Height	52.3	47.8	48.0	49.0
Node of First Fruiting Branch	5.9	5.7	6.1	5.9
Node of Uppermost Cracked Boll	13.2	13.2	14.6	12.9
Node of Uppermost Harvestable Boll	15.7	15.0	17.4	15.1
Total Number of Nodes	21.1	21.0	21.4	21.6
Number of Fruiting branches	10.8	10.3	12.3	10.2
NACB	2.5	1.8	2.8	2.2

Table 4. Average of days to first bloom evaluations in PhytoGen Innovation plot in all locations in which DPL 445 BR and ST 4554 B2RF were used as standard variety comparisons.

Varieties	Days to First Flower
PHY 370 WR	57
DP 445 BR	55
PHY 485 WRF	56
ST 4554 B2RF	56

Table 5. PhytoGen varieties maturity chart.

Relative Maturities			
Early			Late
	PHY 375 WRF	PHY 480 WR	
	PHY 370 WR	PHY 485 WRF	
DP 444 BR	DP 445 BR		DP 555 BR

Table 6. PhytoGen Innovation plot variety yield comparison averages for PHY 485 WRF & ST 4554 B2RF across all locations.

Varieties	Yield / Acre Average
PHY 485 WRF	1,189
ST 4554 B2RF	1,181

Table 7. PhytoGen Innovation plot variety yield comparison averages for PHY 485 WRF & ST 4554 B2RF across North Delta Locations.

Varieties	Yield / Acre Average
PHY 485 WRF	1,015
ST 4554 B2RF	1,046

Table 8. PhytoGen Innovation plot variety yield comparison averages for PHY 485 WRF & ST 4554 B2RF across South Delta Locations.

Varieties	Yield / Acre Average
PHY 485 WRF	1,363
ST 4554 B2RF	1,316

Table 9. PhytoGen Innovation plot variety lint yield averages for PHY 370 WR and DP 445 BR across all locations.

Varieties	Yield / Acre Average
PHY 370 WR	1,003
DPL 445 BR	973

Table 10. PhytoGen Innovation plot variety lint yield averages for PHY 370 WR and DP 445 BR across North Delta locations.

Varieties	Yield / Acre Average
PHY 370 WR	932
DPL 445 BR	838

Table 11. PhytoGen Innovation plot variety lint yield averages for PHY 370 WR and DP 445 BR across South Delta locations.

Varieties	Yield / Acre Average
PHY 370 WR	1,073
DPL 445 BR	1,097