

**PM 1215 BG/RR, PM 1218 BG/RR, AND
PM 1560 BG/RR; NEW COTTON VARIETIES**

**David W. Albers and Curtis Williams
Paymaster Cottonseed
Lubbock, TX
Stuttgart, AR**

Yield and Fiber Quality

Abstract

Paymaster Cottonseed is releasing 3 new stacked-gene BG/RR picker cotton varieties for the 1999 growing season. These varieties each contain both the Bollgard and Roundup Ready genes from Monsanto. PM 1215 BG/RR and PM 1218 BG/RR are both early maturing, semi-smooth leaf varieties that have performed equal or better than check varieties in 1998 field trials. PM 1560 BG/RR is a hairy-leaf, mid to full season variety with outstanding fiber qualities and has performed equal or better than check varieties in field tests in 1998. For the 1999 growing season, PM 1215 BG/RR will be available in limited to good quantities, while the availability of PM 1218 BG/RR and PM 1560 BG/RR will both be very limited.

Agronomic Traits

Paymaster PM 1215 BG/RR is an early maturing, fast fruiting, semi-smooth leaf (Rating 5.5 out of 9) variety that is adapted to short-season environments and responds to good management and fertility. Plant morphology is an open canopy for a medium-tall plant. PM 1215 BG/RR also exhibits high gossypol glandulosity and has a hairy stem. Bronze wilt symptoms have been observed in this variety. Based on 1998 trials, PM 1215 BG/RR has a large boll size that has superior storm resistance.

Paymaster PM 1218 BG/RR is an early maturing, high-yielding variety with excellent gin turnout. The plant has a uniform, open canopy with a medium plant height. PM 1218 BG/RR is a single-line selection out of PM 1220 BG/RR, and also has semi-smooth leaf (Rating 5 out of 9) and a near-smooth stem. Verticillium wilt ratings on PM 1218 BG/RR were similar to Suregrow 125 in 1998 University of Missouri tests. Bronze wilt symptoms have been observed in this variety. PM 1218 BG/RR also has a large boll size, superior storm resistance and excellent yield performance in Mid-South yield trials for 1998.

Paymaster PM 1560 BG/RR is a medium to full maturity variety with excellent fiber properties, hairy leaf and stem (Rating 7 out of 9). Preliminary tests indicate this variety has exhibited tolerance to root knot nematode. Based on 1998 trials, PM 1560 BG/RR has large boll size, excellent storm resistance, and excellent gin turnout.

Paymaster field trials in 1998 comparing early maturing BG/RR varieties show the outstanding yield performance of PM 1215 BG/RR and PM 1218 BG/RR (Table 1). PM 1218 BG/RR produced the highest average yield in the 8 location average, although not significantly higher than PM 1220 BG/RR, the check variety. PM 1218 BG/RR also had higher lint percent (hand ginned from a 50 boll sample) than PM 1220 BG/RR. PM 1215 BG/RR produced a crop of outstanding fiber properties when compared to the check variety, including greater fiber length, fiber strength, and lower micronaire. The earliest variety in the comparison is PM 1218 BG/RR, which had greater percent first pick than either PM 1220 BG/RR or PM 1215 BG/RR.

A comparison of the mid to full maturity transgenic varieties in 8 locations for 1998 indicated that PM 1560 BG/RR produced the highest lint yield, although not significantly greater than either check variety, PM 1560 BG or DP 458 BR (Table 2). The lint percent of the check varieties was 0.6 to 0.7% greater than PM 1560 BG/RR, although the fiber length of PM 1560 BG/RR significantly greater than PM 1560 BG and equal to DP 458 BR. Fiber strength of PM 1560 BG/RR was equal to DP458 BR and less than PM 1560 BG. PM 1560 BG/RR had micronaire of 4.5, which was 0.4 to 0.5 units lower than the check varieties. The percent 1st pick of PM 1560 BG/RR was the same as DP 458 BR and lower than PM 1560 BG, indicating that PM 1560 BG/RR has similar maturity to DP 458 BR and later than PM 1560 BG.

Plant Mapping

Fruiting patterns and plant morphology of the BG/RR varieties were compared through end-of -season plant maps, summarized in Table 3. PM 1218 BG/RR had the shortest plant height, lowest first fruiting branch, fewest fruiting nodes, and total nodes, indicating earlier maturity than the other varieties. The early maturity of PM 1218 BG/RR was also observed in the percent first pick data of Table 1. The later maturing nature of PM 1560 BG/RR is evidenced by the FFB of 7.8, almost 2 nodes later than the check variety, PM 1220 BG/RR. PM 1215 BG/RR began fruiting slightly later than PM 1220 BG/RR (6.7 vs. 6.1) and had the most fruiting and total nodes, indicating an indeterminate fruiting pattern. The height to node ratios (HNR) were nearly identical for all the varieties, which may indicate the mepiquat chloride management of the plots more than the genetic similarity of these varieties.

Summary

Paymaster PM 1215 BG/RR and PM 1218 BG/RR are early maturing varieties that contain both the Bollgard and Roundup Ready genes from Monsanto. These varieties performed very similar to PM 1220 BG/RR in lint yield and fiber properties. Field tests indicate that PM 1218 BG/RR

is earlier than PM 1220 BG/RR with a more uniform canopy, and PM 1215 BG/RR had improved fiber strength and fiber length. The mid to full maturing variety, PM 1560 BG/RR, also contains Monsanto's Bollgard and Roundup Ready genes, and produced yields similar to the check varieties in 1998 field trials, with improved micronaire.

Table 1. Paymaster 1998 Early Maturity BG/RR Field Trials at 8 locations.

Variety	Lint Yield	Lint %	Fiber Properties			Percent 1st Pick
			Length (in.)	Strength (g/tex)	Micro-naire	
PM 1215 BG/RR	1057	35.3	1.16	29.5	5.1	87.3
PM 1218 BG/RR	1147	39.1	1.10	28.5	5.3	92.4
PM 1220 BG/RR (ck.)	1091	38.2	1.12	27.4	5.3	89.0
LSD 0.05	61	0.43	0.02	0.65	0.14	1.3
R-squared	0.92	0.82	0.8	0.74	0.74	0.64

Table 2. Paymaster 1998 Mid to Full Maturity BG/RR Field Trials at 8 locations.

Variety	Lint Yield	Lint %	Fiber Properties			Percent 1st Pick
			Length (in.)	Strength (g/tex)	Micro-naire	
PM 1560 BG/RR	1066	37.6	1.16	28.7	4.5	80.3
PM 1560 BG (ck.)	1014	38.2	1.14	30.0	4.9	84.0
DP 458 BR (ck.)	1050	38.3	1.15	29.4	5.0	82.2
LSD 0.05	90	0.42	0.015	0.85	0.15	2.6
R-squared	0.86	0.88	0.84	0.75	0.84	0.76

Table 3. Paymaster new BG/RR varieties plant mapping comparison from 2 locations in 1998.

Variety	HT	FFB	Fruiting Nodes	Total Nodes	HNR
PM 1215 BG/RR	49.0	6.7	18.4	24.1	2.00
PM 1218 BG/RR	41.4	6.0	16.2	21.1	2.00
PM 1220 BG/RR (ck)	44.8	6.1	17.2	22.3	2.01
PM 1560 BG/RR	46.1	7.8	16.3	23.1	2.00
LSD 0.05	2.33	3.99	0.9	0.93	0.08
R-squared	0.77	0.71	0.64	0.64	0.81