

# FRUITING PATTERNS, MATURITY, AND YIELD OF BOLLGARD AND ROUNDUP READY COTTON VARIETIES.

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## Abstract

Paymaster Cottonseed tested fourteen new transgenic varieties during the 1996 growing season, along with the five associated recurrent parents. The varieties all received identical management inputs. Yields and fiber properties were measured at ten locations, while plant fruiting and development traits were measured at two locations. In general, the transgenic varieties had very similar growth, fruiting, and yield characteristics. The Bollgard varieties tended to be slightly shorter than the parent varieties. Bollgard, Roundup Ready and varieties with both genes tended to exhibit slightly earlier maturity, while they began fruiting at the same node as the parent variety. The transgenic varieties yielded equal or greater than the parent variety.

## Materials and Methods

The varietal evaluations were carried out at ten locations in the Mid South and Texas each with four replications. All plots were managed identically for insect control (sprayed to control lepidopteran pests) and weed control (no Roundup used). Standard management practices were used for the location of each test. The bollgard varieties tested included PM 1215 BG, PM 1220 BG, PM 1244 BG, PM 1330 BG, and PM 1560 BG. The Roundup Ready varieties tested include PM 1215 RR, PM 1220 RR, PM 1244 RR, PM 1330 RR, and PM 1560 RR. The varieties with both Bollgard and Roundup Ready gene were: PM 1220 BG/RR, PM 1244 BG/RR, PM 1330 BG/RR, and PM 1560 BG/RR. The recurrent parent varieties H 1215, H 1220, H 1244, H 1330, H 1560, and the check varieties DP 50 and ST LA887 were also tested.

## Results and Discussion

Bollgard (BG) varieties were found to be slightly shorter and earlier maturing (fewer fruiting nodes) than the parent variety (Table 1); however, the node of the first fruiting branch was identical to the parent variety. Yield levels for the BG varieties was typically equal or greater than the parent variety, possibly due to either the presence of the BG gene or selection of a superior yielding variety.

Roundup Ready (RR) varieties had plant height and first fruiting branch node similar to the parent variety, while they had fewer fruiting nodes and earlier maturity (Table 2). Yield levels of the Roundup Ready varieties were similar to the parent variety, except for PM 1215 RR, which yielded 70 lbs/acre lint greater than its parent variety H 1215.

The BG/RR varieties had fewer fruiting nodes (i.e. earlier maturity), identical node of first fruiting branch, but differing plant height response (Table 3). PM 1220 BG/RR and PM 1560 BG/RR were both shorter than their parent varieties, while PM 1244 BG/RR and PM 1330 BG/RR were slightly later than their parent varieties. Regardless of differences in growth pattern, both PM 1220 BG/RR and PM 1244 BG/RR out yielded their parent varieties by approximately 70 lbs lint/acre.

## Summary

The Paymaster transgenic varieties tested in 1996 were found to have similar growth and fruiting patterns. The only consistent difference across the genes and varieties was that the BG, RR, and BG/RR varieties were slightly earlier maturing than the parent varieties. The yields of the transgenic varieties were equal to or greater than the parent varieties. This combination of characteristics should provide growers with new BG, RR, and BG/RR varieties that are both early maturing, high yielding and similar to varieties that they are currently growing.

Table 1. Paymaster Bollgard final plant development, 1996.

Variety	HT	FFB	Fruiting Nodes	Lint Yield	HNR
PM 1215 BG	38.6	5.9	16.2	1352	1.82
H1215	39.3	5.7	16.4	1340	1.86
PM 1220 BG	37.9	5.8	15.1	1484	1.90
H1220	40.1	6.1	15.7	1373	1.92
PM 1244 BG	37.5	6.2	15.2	1415	1.84
H1244	39.7	6.1	16.0	1376	1.88
PM 1330 BG	36.0	5.8	14.8	1316	1.84
H1330	36.1	5.4	15.8	1241	1.79
PM 1560 BG	39.2	6.6	14.8	1385	1.91
H1560	41.2	7.4	15.7	1322	1.86
DP50	37.4	5.5	16.4	1276	1.79
LA 887	39.0	6.7	14.5	1210	1.93

HT - Final Plant Height (inches)

FFB - node of the first fruiting branch

Fruiting Nodes - number of mainstem nodes with fruiting branches

HNR - Height to Node ratio (inches / node)

Table 2. Paymaster Roundup Ready final plant development, 1996.

Variety	HT	FFB	Fruiting Nodes	Lint Yield	HNR
PM 1215 RR	41.2	5.7	16.0	1402	1.99
H1215	40.3	5.8	16.8	1343	1.87
PM 1220 RR	41.1	6.1	15.5	1411	1.99
H1220	41.1	6.0	16.5	1385	1.90
PM 1244 RR	39.2	6.0	15.4	1391	1.91
H1244	39.6	6.1	16.0	1394	1.86
PM 1330 RR	39.1	5.7	15.6	1242	1.91
H1330	37.8	6.0	16.4	1246	1.76
PM 1560 RR	40.4	6.6	15.4	1209	1.92
H1560	44.6	7.8	15.2	1367	2.01
DP50	39.0	6.1	16.0	1271	1.85
LA 887	39.4	6.6	16.1	1241	1.81

HT - Final Plant Height (inches)

FFB - node of the first fruiting branch

Fruiting Nodes - number of mainstem nodes with fruiting branches

HNR - Height to Node ratio (inches / node)

Table 3. Paymaster Bollgard/Roundup Ready final plant development, 1996.

Variety	HT	FFB	Fruiting nodes	Lint Yield	HNR
PM 1220 BG/RR	38.75	5.93	14.95	1462	1.94
H1220	40.55	6.05	16.08	1385	1.91
PM 1244 BG/RR	41.65	5.43	15.90	1462	2.05
H1244	39.60	6.08	16.00	1394	1.87
PM 1330 BG/RR	38.08	6.03	15.13	1241	1.88
H1330	36.90	5.65	16.05	1246	1.78
PM 1560 BG/RR	40.65	6.98	15.38	1180	1.89
H1560	42.88	7.58	15.45	1367	1.94
DP50	38.18	5.75	16.15	1271	1.82
LA 887	39.15	6.63	15.25	1241	1.87

HT - Final Plant Height (inches)

FFB - node of the first fruiting branch

Fruiting Nodes - number of mainstem nodes with fruiting branches

HNR - Height to Node ratio (inches / node)