

**DELTA AND PINE LAND COMPANY'S NEW
ROUNDUP READY COTTON VARIETIES FOR 2001:
SURE-GROW 521R AND PAYMASTER PM 1199RR**

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Abstract

Delta and Pine Land Company is releasing two new early maturing Roundup Ready cotton varieties for the 2001 growing season: Sure-Grow 521R and Paymaster PM 1199RR. Sure-Grow 521R was developed at D&PL's Research facility in Leland, MS by Dr. Bob Bridge and was a selection of 2 lines selected from Sure-Grow 125R. Sure-Grow 521R has good disease tolerance and outstanding yield performance. PM 1199RR was developed by the backcrossing procedure with the recurrent parent H1330. PM 1199RR has a very good fiber quality package and outstanding yield potential. Bronze Wilt has been observed in PM 1199RR. Analysis of yield data from 2000, indicate that PM 1199RR and Sure-Grow 521R are the top-yielding early-maturing Roundup-Ready varieties on the market today.

Discussion

Sure-Grow 521 R

Sure-Grow 521R is an early maturing, hairy-leaf, Roundup Ready variety that will be released in excellent seed supply in 2001. This new variety was selected from SG 125R, and two similar lines were bulked together. SG 521R has medium to tall plant height and seed size generally ranging from 4300 to 4600 seed per pound (Table 1). Seedling vigor has been observed as excellent and storm resistance of open bolls is rated as very good. Fiber properties are: micronaire 4.38; fiber strength 26.8 g/tex; staple (32's of an inch) 33.4; and length uniformity 81.6 (Table 1). Gin turnout has averaged 35.6%.

Disease reaction of Sure-Grow 521R shows good tolerance to both Fusarium Wilt and Verticillium wilt, and a moderate rating of 2.5 on a scale of 5 for Root Knot Nematode galling (Table 1). Bronze wilt has not been observed in this variety. The growth and development of SG 521 R is typical of a early maturing variety with its first fruiting branch node measured at 5.4, which is similar to other early maturing varieties such as SG 747, and PM 1218 BG/RR. The earliness of Sure-Grow 521 R is also expressed in the total number of fruiting branches of 14.2, and the final height to node ratio was 1.6 inches per node, averaged across all the locations where plant mapping data was collected (Table 2).

Yield performance of Sure-Grow 521R has been assessed during 1999 and 2000 in both D&PL tests and university OVT's. The 2000 D&PL tests are summarized in Tables 4, and 5. Sure-Grow 521R has produced yields 14 lb. / acre greater than DP 436RR when averaged across all 32 locations; and 33 lb. / acre greater than DP 436RR for the 16 northern Cotton Belt locations in N. AR, N. MS, TN, N. AL, NC, and VA. When compared to a competitor variety, Stoneville 4793RR, a yield advantage of 18 lb. / acre were observed for SG521 R over a combined 35 locations of university OVT's and D&PL test locations (Table 6).

Paymaster PM 1199RR

PM 1199RR is a very early maturing, medium to short-statured, hairy-leaf Roundup Ready variety that will be released in limited seed quantities for the 2001 growing season. PM 1199RR was tested as DPLX 99S01R in 2000 and PMX 31746R in 1998 and 1999. This variety was developed as a BC4 (H1330) x (DES119 x Coker312RR). The seedling vigor of PM

1199RR is very good and has a seed size ranging between 4600 and 5300 seed per pound. The storm resistance of PM 1199RR open bolls is rated as fair (Table 1).

PM 1199RR has a very good fiber quality package (Table 1), with gin turnout of 36.7%, micronaire of 4.35, staple of 34.5 (32's inch), strength of 27.9 g/tex, and uniformity of 82.4. Verticillium wilt tolerance has been observed as good and Bronze Wilt has been observed in this variety (Table 1). The earliness of this variety is indicated by the plant mapping parameters for PM 1199RR (Table 2). The first fruiting branch of PM 1199RR was measured at 5.6, with 14 total fruiting branches and a height to node ratio of 1.7 inches / node. The plant map measurements are consistent with field observations that PM 1199RR is a compact plant with determinate fruiting habit.

The yield performance of PM 1199RR has been outstanding throughout its testing, particularly in the Northern Cotton Belt. When compared to conventional and transgenic varieties at 17 locations across the Cotton Belt, PM 1199R out-yielded ST 474 by 57 lb./acre and DP 436 RR by 111 lb./acre (Table 3). In yield tests of early maturing Roundup Ready varieties, PM 1199RR out-yielded DP 436RR by 29 lb./acre across the 32 Beltwide locations, and by 56 lb./acre in the 16 locations in the Northern Cotton Belt (N. AR, N. MS, TN, N. AL, NC, and VA). When compared to a competitor Roundup Ready variety, ST 4793RR, a yield advantage of 20 lb./acre was found when a combined 18 locations of university OVT tests and D&PL test were analyzed. When considering the early, determinate growth habit and the strong yield performance in the northern Cotton Belt, PM 1199RR appears to be best adapted to the short-season growing environments of the northern Cotton Belt.

Table 1. General Characteristics, Fiber properties, and disease reaction of Sure-Grow 521R and PM 1199 RR.

Characteristic	Sure-Grow 521 R	PM 1199RR
Maturity	Early	Very Early
Height	Med. - Tall	Medium - Short
Leaf Pubescence	Hairy	Hairy
Seedling Vigor	Excellent	Very Good
Seed Size (seed / lb.)	4300 - 4600	4600 - 5300
Storm Resistance	Very Good	Fair
Gin Turnout (%)	35.6	36.7
Micronaire	4.38	4.35
Staple (32's)	33.4	34.7
Fiber Strength (g/tex)	26.8	27.9
Uniformity	81.6	82.4
Fusarium Wilt*	Good	N/A
Verticillium Wilt**	Good	Good
Root Knot Nematode*	Moderate	N/A
	(2.5 / 5.0 scale)	
Bronze Wilt	Not Observed	Observed

* Data from LSU OVT 2000.

** Data from Univ. of TN - 2000.

Table 2. Plant Map Summary of Sure-Grow 521R and PM 1199 RR.

Growth Parameter	Sure-Grow 521 R	PM 1199RR
Node First Fruiting Branch	5.4	5.6
Total Number of Fruiting Branches	14.2	14
Final HNR (inches / node)	1.6	1.7

Table 3. Yield Performance of PM 1199RR during 2000 season.

Variety	Lint Yield	Turn-out	Staple	Micro-naire	Strength	Uniformity
PM 1199RR	1,068	36.5	35.0	4.36	28.2	82.7
SG747	1,047	36.6	34.8	4.45	27.6	82.5
ST474	1,011	36.3	34.4	4.43	27.4	82.0
DP436R	957	33.4	34.9	4.28	27.1	82.1

D&PL Stage 4 test - 17 locations - 2000.

Table 4. Yield performance of Sure-Grow 521 R and PM 1199 RR during 2000 growing season.

Variety	Lint Yield	Turn-out	Staple	Micro-naire	Strength	Uniformity
PM 1199RR	720	36.7	34.3	4.32	27.3	82.0
SG 521R	705	35.6	33.2	4.14	26.5	81.0
DP 436R	691	33.4	34.5	4.13	26.6	81.5

D&PL Stage 5/6 tests - 32 locations - 2000.

Table 5. Yield performance of Sure-Grow 521 R and PM 1199 RR in the northern Cotton Belt during 2000 growing season.

Variety	Lint Yield	Turn-out	Staple	Micro-naire	Strength	Uniformity
PM1199 RR	764	36.9	34.0	4.02	26.5	81.5
SG521R	745	36.1	33.0	3.86	26.1	80.5
DP436 RR	708	33.6	34.4	3.79	26.2	80.8

D&PL Stage 5/6 tests - 16 locations -Northern cotton Belt - 2000.

Table 6. Yield performance of Sure-Grow 521R and PM 1199 RR versus a competitor Roundup Ready variety.

Variety	Lint Yield	Variety	Lint Yield
SG521R	873	PM1199R	878
ST4793R	858	ST4793R	858
Locations	35	Locations	18

Combination of Univ. OVT and D&PL AST plots - 2000.