

COTTON VARIETY RESPONSE TO SEEDING RATES

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ABSTRACT: A field study was conducted in 2001 on a Leeper silty clay loam soil at Verona, Mississippi to determine Paymaster 1218BG/RR and Suregrow 501BR cotton variety response to reduced seeding rates using a vacuum planter. Seeding rates ranged from 2 to 4 seeds/ft of row (26,000 to 52,000 seed/ac) in 38-inch rows. Plant population on 6/28/01 ranged from 17,200 plants/ac for 2 seeds/ft row to 32,500 plants/ac for the 4 seeds/ft of row. The environmental growing season had normal temperatures with highly variable rainfall. No significant rainfall occurred from July 13 to August 6. The dry conditions from mid July through early August reduced yield. Seedcotton yield results indicated 2217 to 2429 lb/ac of seedcotton. There was no yield difference between varieties and seeding rates. The 2 seeds/ft of row produced yield equivalent to 3 and 4 seeds/ft row for both varieties. PM 1218BG/RR had higher boll weight than SG 501BR and seeding rates had no effect on boll weight.

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MATERIALS AND METHODS: A field study was conducted during the 2001 growing season evaluating cotton variety response to seeding rates ranging from 2 to 4 seed/ft of row in 38-inch rows. The study was conducted as a split plot with varieties as main plots and seeding rates as subplots with four replications. Plot size was 4 rows by 600 ft long.

Fertilizer (P and K) nutrient applications were based on soil test recommendations. Soil test results indicated high levels of P and K. Potash (K₂O) at 200 lb/ac was applied broadcast to the soil surface over the entire study on 11/04/00. Fall land preparation consisted of subsoiling (11/30/01), disking (12/01/00), bedding (12/04/00), paratilling (12/05/00), and bedding with rollers (12/08/00). Beds were harrowed prior to planting 5/09/01. A burndown application of Glyphos (glyphosate) at 1.2 lb ai/ac was made 4/11/01. The cotton was planted 5/09/01 with a vacuum planter for more uniform seed spacing. Temik (aldicarb) at 0.5 lb ai/ac was applied in-furrow at planting. Gramoxone (paraquat) + surfactant at 0.375 lb ai/ac + 0.5 pt/ac was applied as a burndown after planting on 5/09/01. Post-directed broadcast applications of Roundup Ultra Max (glyphosate) at 1.0 lb ai/ac were made 6/11/01, 6/28/01, and 7/10/01. The cotton was scouted twice weekly and insecticides were applied when insect pests levels reached or exceeded threshold. Insecticide applications were made with TXVS-4 nozzles, 5 gpa spray volume, and a boom pressure of 40 psi. Bidrin (dicotophos) at 0.20 lb ai/ac was applied 5/30/01 and repeated at 0.5 lb ai/ac on 7/09/01. Pix (mepiquat chloride) growth regulator was applied at 0.022 lb ai/ac on 7/11/01 and repeated at 0.044 lb ai/ac on 8/14/01.

Cotton was defoliated with Finish (ethephon + cyclanilide) + Free Fall (thidiazuron) at 1.0 + 0.125 + 0.083 lb ai/ac on 9/21/01. The 2 center rows of each 4-row plot were harvested with a 2 row spindle picker. The seedcotton was weighed and large samples of seedcotton were taken as samples for ginning with a mini-gin (small scale state-of-art gin). Other data collected were plant population and 100 boll samples weight. Ten consecutive plants selected at random were also mapped for boll position, number of bolls, and plant height. All data were subjected to statistical analysis and means were separated using Fishers Protected LSD at the 5% probability level.

RESULTS AND DISCUSSION:

The environmental growing season of 2001 had normal temperatures with highly variable rainfall. The dry conditions (no rainfall) from mid-July through early August reduced yield. Plant populations 7 weeks (6/28/01)

after planting, ranged from 17,200 plants/ac for 2 seed/ft of row to 32,500 plants/ac for the 4 seed/ft of row. Seedcotton yield ranged from 2217 to 2429 lb/ac with no difference between varieties and seeding rates. Boll weight indicated that PM 1218BG/RR had higher boll weight than SG 501BR. Seeding rate had no effect on boll weight.

Table 1. Cotton response to seeding rates on a Leeper silty clay loam soil in 2001, Verona, MS.

Seed/ac x 1000	6/28/01 Plants/ac x 1000	Gm/boll	Seedcotton lb/ac
A. SG 501 BR			
1) 27.51	17.2	5.23	2217
2) 41.26	20.4	5.19	2431
3) 55.02	<u>26.0</u>	<u>5.03</u>	<u>2429</u>
Mean	21.2	5.15	2359
B. PM 1218BG/RR			
1) 27.51	17.6	5.65	2273
2) 41.26	23.8	5.20	2286
3) 55.02	<u>32.5</u>	<u>5.40</u>	<u>2344</u>
Mean	24.6	5.41	2301
Variety LSD.05	NS	0.24	NS
Seed Rate LSD.05	4.1	NS	NS
V x SR LSD.05	NS	NS	NS
% CV	16.3	4.85	8