

SKIP-ROW COTTON RESPONSE ON A LEEPER SILTY CLAY LOAM SOIL

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ABSTRACT: Skip-row cotton offers reduced input cost over solid row cotton. A study was conducted in 2001 on a Leeper silty clay loam soil evaluating DP 458BR and PM 1218BG/RR cotton varieties in skip-row production. The study was conducted in 30 inch rows (solid-row cotton), two 30 inch rows with a 2 x 1 skip-row (2 rows of cotton and 1 row with no cotton) and one 30-inch row with a 1 x 1 skip-row, (1 row of cotton and 1 row with no cotton). There was no variety by row configuration interaction for lint percent, percent gin turnout, boll weight, and lint yield. Both varieties showed similar lint yield with PM 1218BG/RR having slightly greater percent lint gin turnout and boll weight than DP 458BR. Lint yield (averaged over varieties) on a land basis indicated the solid row cotton had a yield of 1066 lb/ac, 32 and 39% more than 2 x 1 skip-row and 1 x 1 skip-row treatments, respectively. The 2 x 1 and 1 x 1 skip-row showed no yield difference. However, using planted acres as the basis, the 2 x 1 and 1 x 1 skip-row treatments had 14 and 43% more lint yield than solid row cotton, respectively. The solid row cotton and 2 x 1 skip-row, however, showed no yield difference on a planted acre basis.

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MATERIALS AND METHODS: A study was conducted in 2001, to evaluate varietal yield response to skip-row cotton (planting designated rows in a consistent pattern across a field) production system. The study was conducted as a split plot with varieties (DP 458BR and PM 1218BG/RR) as main plots and skip-row pattern as subplots. Subplot treatment size was 8-row (30 inch) by 100 ft.

Fertilizer (P and K) nutrients were applied based on soil test recommendations. Soil test results indicated high level of P and medium K level. Potash at 200 lb/ac was applied broadcast to the soil surface over the entire study on 10/30/00. Liquid N (32% N) at 80 lb N/ac was applied sidedress (6 inches from the row and 2 inches deep) to cotton on 6/14/01. The skip rows (no cotton planted) in the 2 x 1 skip and 1 x 1 skip-row treatments did not receive any N fertilizer. Thus N/ac of land area applied in the 2 x 1 and 1 x 1 skip-row was reduced by 33 and 50%, respectively. Land preparation consisted of disking corn stubble 9/28/01; doalling 11/01/00; bedding 11/01/00, paratilling 11/02/00; bedding 11/03/00; and rebedding 4/23/01. The entire study was doalled prior to planting on 5/09/01.

Cotton was planted at 3 seed/ft of row on 5/09/01. Temik (aldicarb) and Ridomil (mefenoxam) at 0.5 and 0.88 lb ai/ac were applied in-furrow at planting. No in-furrow insecticides were applied in the skipped rows where no cotton was planted. Thus, in the 2 x 1 and 1 x 1 skip-row treatments Temik and Ridomil application rates on a land area basis were reduced by 33 and 50%, respectively.

Roundup Ultra Max (glyphosate) at 1.0 lb ai/ac was applied postemergence on 5/23/01 and repeated 6/12/01. Cotoran (meturon) + MSMA (monosodium methanearsonate) at 0.8 + 2.0 lb ai/ac was applied broadcast post direct on 6/26/01. Bladex (cyanazine) + MSMA at 1.0 + 2.0 lb ai/ac was applied as a layby application on 7/17/01.

Cotton insect pests were tarnish plant bug (*Lygus lineolaris*), bollworm (*Helicoverpa zea*), and bud worm (*Herotheris virescens*). The cotton was scouted twice a week and insecticide applications were made when scouting reports indicated that insect pests were at threshold or above threshold. All insecticides were applied at 5 gpa, with TXVS-4 nozzles, 40 psi boom pressure, and a 4 mph rate of travel. Bidrin (dicotophos) at 0.5 lb ai/ac was applied 6/12/01

and repeated 7/02/01 and 7/19/01. Pix (mepiquat chloride) at 0.022 lb ai/ac was applied 7/13/01 and repeated at 0.044 lb ai/ac on 8/14/01.

Cotton was defoliated 9/21/01 with Finish (ethephon + cyclanilide) + Free Fall (thidiazuron) at 1.0 + 0.125 + 0.083 lb ai/ac. One row in each plot was harvested with a spindle picker 10/10/01. Grab samples from each plot were taken and ginned with a sample gin to obtain gin turnout and calculate lint yield. One hundred boll samples in each plot were hand picked and then ginned with a sample gin to determine percent lint. All data were analyzed and means were separated using Fisher's Protected LSD and Duncan's Multiple Range Test at the 5% probability level.

RESULTS AND DISCUSSION: The environmental growing conditions were favorable for cotton, except for a 3-week dry period from mid July through early August. The results indicated both DP 458BR and PM 1218BG/RR showed no difference in lint yield response to skip-row cotton treatments. However, PM 1218BG/RR had greater boll size, lint percent and gin turnout than DP 458BR. On a land area basis (averaged over variety), the solid-row cotton produced 1066 lb/ac (averaged over variety), 32 and 39% more than 2 x 1 skip-row and 1 x 1 skip-row treatments, respectively. The 2 x 1 and 1 x 1 skip-rows showed no yield difference. Conversely, on a planted acre basis, the 2 x 1 and 1 x 1 skip-row treatments had 14 and 43% more lint yield than solid row cotton, respectively. The solid row and 2 x 1 skip-row cotton showed no yield difference on a planted acre basis.

Table 1. Means of two varieties and three row configurations for lint yield, boll size and lint fractions in 2001, Verona, MS.

Variable ¹	Lint percent	Gin turnout	Boll size	Lint yield land basis	Lint yield planted basis
Variety	%	%	Gm	lb/ac	lb/ac
DP458BR	40.2a ¹	34.7a	5.0a	870a	1251a
PM1218BG/RR	42.4b	36.5b	5.7b	887a	1282a
LSD _(0.05)	1.03	0.56	0.31	71	125
Row configuration					
30-Inch Solid	41.6 a	35.5 a	5.2 a	1066 a	1066 b
2x1 Skip Row	41.0 a	35.4 a	5.5 a	807 b	1211 b
1x1 Skip Row	41.2 a	35.8 a	5.4 a	762 b	1524 a
LSD _(0.05)	1.3	0.7	0.4	87	152
C.V.%	2.9	1.8	6.8	9.3	11.3
Mean	41.3	35.6	5.4	878	1267

¹ Means in columns with the same letter are not significantly different at the 5% probability level according to Duncan's Multiple Range Test.