

EARLY AND MID-SEASON COTTON VARIETY TRIAL RESPONSE IN 2004

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ABSTRACT: The growing season was highly variable with 114 and 153% of normal rainfall in May and June followed by a four-week dry period from July 20 through August 20. However, yields were above average. In the early maturity study, lint yields ranged from 1154 to 1746 lb/ac with an overall mean yield of 1370 lb/ac. OAX-303 had the highest yield of 1746 lb/ac and was higher than all other varieties. FM 960BR, ST 5242BR, SG 521R, FM 958LL, FM 960RR, DPLX O2X39BR were equal to ST 5599BR yield of 1602 lb/ac, the second highest yielding variety. These varieties' percent lint turnout ranged from 40.0% to 42.3%. OAX 303 had the highest percent lint turnout (45.7%) of all varieties. The mid-maturity varieties lint yields ranged from 983 to 1544 lb/ac with an overall mean yield of 1315 lb/ac. Lint yield for the mid-maturity study indicated DP 494RR had the highest yield of 1544 lb/ac. ST 5599BR, DPLX O2T57R, DP 493, DP 491, and DP 555BG/RR lint yields were equal to DP 494RR. Lint percent turnout ranged from 38.3 to 44.6%. DP 555 BG/RR had the highest turnout of 44.6%. Based on the data, variety selection has the potential to increase lint yield by as much as 500 lb/ac. Therefore, appropriate variety selection for high yield potential is essential for a successful cotton production system.

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KEYWORDS: Cotton, variety trial

MATERIALS AND METHODS: Two cotton variety studies (early and mid-maturity) were conducted on a Leeper fine sandy loam soil during the 2004 growing season at the Northeast Branch Experiment Station, Verona, MS. Both studies were conducted as randomized complete block designs with 4 replications. Plot size was 2-row (38-inch) by 40 ft long. Fertilizers (N, P, and K) were applied based on soil test recommendations for a cotton yield potential of 2 bale/ac. Potash (K₂O) fertilizer at 200 lb/ac, phosphorous (P₂O₅) at 100 lb/ac and zinc sulfate at 10 lb/ac as a blend mixture was applied surface broadcast on 10/07/03. Liquid fertilizer (32% nitrogen) at 90 lb N/ac was applied sidedress 2 inches deep and 6 inches from the row when cotton was at the 4 to 5 leaf stage of growth on 6/10/04.

Fall land preparation consisted of disking twice, bed-rolling, paratilling and rebedding. All plots were do-alled (row conditioner) prior to planting on 5/03/04. Temik 15G (aldicarb) and Ridomil 11G (mefenoxam) at 0.52 + 0.80 lb ai/ac were applied in-furrow at planting. The early maturity variety trial was planted on 5/03/04. The mid maturity trial was planted 5/04/04. The seeding rates for all varieties, were adjusted to 4 viable seed/ft row and were based on laboratory seed germination test of each variety.

Roundup WEATHERMAX (glyphosate)+ Clarity (dicamba) at 1.0 + 0.25 lb ai/ac was applied as a burndown on 3/15/04. Roundup WEATHERMAX at 0.75 lb ai/ac was applied as a second burndown on 4/27/04. Cotoran (fluometuron) + Dual (metolachlor) at 1.0 + 1.0 lb ai/ac was applied preemergence on 5/06/04. Assure II (quizalofop) + Staple (pyrothiobac) at 0.0688 lb ai/ac + 1.0 oz ai/ac was applied postemergence on 6/10/04. Suprend (prometryn + trifloxysulfuron) + MSMA (monosodium acid methanearsonate) at 1.0 + 2.0 lb ai/ac was applied as a post directed broadcast layby application with a hooded sprayer on 7/6/04.

Pentia (mepiquat pentaborate) at .066 lb ai/ac was applied to both early and mid-maturity studies on 7/06/04 and repeated at 0.080 lb ai/ac on 7/16/04. CoRoN (10-0-10, 0.5% B) at 1 gpa was applied as a foliar nutrient application at bloom on 7/20/04 and repeated 7/30/04.

Insecticides were applied based on twice weekly scouting reports for the conventional varieties. Tarnished plant bug (*Lygus lineolaris*), bollworm (*Helicoverpa zea*), and budworm (*Heliothis virescens*) were major cotton pests with light to moderate infestation in the 2004 growing season. Pesticide applications were made when insect pests in the non-BT cotton varieties were at threshold or exceeded threshold levels, based on a twice a week scouting program. The following insecticides were applied at 5 gpa with TXVS-4 nozzles at 4 mph rate of travel and 40 psi boom pressure. Bidrin (dicotophos) at 0.25 lb ai/ac was applied on 6/15/04 for plant bug control. Karate-Z (cyhalothrin) at 0.04 lb ai/ac was applied on 7/16/04 for budworm/bollworm control. Tracer (spinosad) at 0.09 lb ai/ac was applied for budworm/bollworm control on 7/19/04, and repeated at 0.09 lb ai/ac on 8/5/04. Centric (thiamethoxam) at 0.05 lb ai/ac was also applied for tarnish plant bug control on 8/2/04.

Both studies were defoliated with an application of Finish (ethephon + cyclanilide) + Folex (phosphorotrithioate) + Dropp (thidiazuron) at 1.0 + 0.1825 + 0.75 + 0.06 lb ai/ac on 9/23/04. The early and mid-maturity varieties were harvested 10/06/04 with a spindle picker modified for plot harvest. Seed cotton plot weights were recorded. Fifty boll samples were taken at random from each plot prior to harvest. These samples were ginned through a laboratory micro-gin to determine percent lint turnout and subjected to HVI fiber analysis. The HVI data were not available at the time of this report. Data were subjected to Analysis of Variance and the treatment means in each study were separated using Fisher's protected LSD at 0.05% significance level.

RESULTS AND DISCUSSION: The temperature during the cotton growing season ranged from normal in early season to about 5 to 10 degrees below normal from mid-August through September. Rainfall was highly variable with 114 and 153% of normal for May and June, respectively. This was followed by a four-week dry period from July 20 through August 20. However, yields were above average.

The early maturity variety lint yields ranged from 1154 lb/ac for DP 449 BG/RR to 1746 lb/ac for Delta Pine OAX 303 (Table 1). OAX 303 yield was higher than all other varieties in the study. FM 960BR, ST 5242BR, SG 521R, FM 958LL, FM 960RR, and DPLX O2X39BR lint yields ranged from 1472 to 1586 lb/ac and were equal to ST 5599BR, the second highest yield of 1601 lb/ac. These varieties had lint percent turnout that ranged from 40.0% to 42.3%. OAX 303 also had the highest lint percent turnout of 45.7%. The mid-maturity variety lint yield ranged from 983 lb/ac for STX 5454B2R to 1544 lb/ac for DP 494RR (Table 2). ST 5599BR, DPLX 02T57R, DP 493, DP 491 and DP 555BG/RR lint yields were equal to DP 494RR. Lint percent

ranged from 38.3 to 44.6%. DP 555BG/RR had the highest turnout of 44.6%. These results indicated varieties varied by as much as 500 lb/ac of lint yield. Therefore, variety selection for high yield potential is essential for a successful cotton production system.

COOPERATORS: None

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Table 1. Early maturity cotton variety trial yield and gin turnout on a Leeper fine sandy loam soil planted on May 3, 2004, Verona, MS.

Variety	Brand	Lint yield lb/ac	Lint % turnout
OAX 303	Delta Pine	1746	45.7
ST 5599BR	Stoneville	1602	42.3
ST 5242BR	Stoneville	1586	42.3
FM 960BR	FiberMax	1514	40.2
FM 960RR	FiberMax	1506	41.3
FM 958LL	FiberMax	1497	40.8
DPLX02X39BR	Delta Pine	1479	42.6
SG 521R	Sure-Grow	1472	40.0
FM 966LL	FiberMax	1456	40.0
DPLX 00W12	Delta Pine	1453	40.6
PM 1218BG/RR	Paymaster	1440	41.0
FM 960B2R	FiberMax	1399	40.3
PHY 410R	Phytogen	1377	39.5
STX 4575BR	Stoneville	1362	40.5
PSC 355	Phytogen	1359	40.7
DP 432RR	Delta Pine	1351	40.3
STX 4686R	Stoneville	1342	40.0
BCG 28R	Beltwide Cotton Genetics	1331	41.0
ST 4793R	Stoneville	1320	41.8
DES 810	-----	1316	38.2
DP 434RR	Delta Pine	1314	41.3
DP 444BG/RR	Delta Pine	1305	40.9
SG 747	Sure-Grow	1298	40.2
DPLX 01W93BR	Delta Pine	1288	41.4
DES 816		1277	40.8
DP 451BG/RR	Delta Pine	1265	37.7
ST 4892BR	Stoneville	1257	41.6
DP 424BGII/RR	Delta Pine	1216	37.9
DP 436RR	Delta Pine	1189	36.4
STX 3636B2R	Stoneville	1187	41.0
ST 4646B2R	Stoneville	1186	37.2
DP 449BG/RR	Delta Pine	1154	39.1
LSD (P=.05)		138	1.4
CV		7	2.5
Grand Mean		1370	40.0

The shaded value is equal to the highest value.

Table 2. Mid-maturity cotton variety trial yield and gin turnout on a Leeper fine sandy loam soil planted on May 4, 2004, Verona, MS.

Variety	Brand	Lint yield lb/ac	Lint % turnout
DP 494RR	Delta Pine	1544	42.9
ST 5599BR	Stoneville	1534	42.5
DP 493	Delta Pine	1479	43.6
DP 555BG/RR	Delta Pine	1455	44.6
DP 491	Delta Pine	1449	43.6
DPLX 02T57R	Delta Pine	1406	40.1
ST 5242BR	Stoneville	1362	42.6
STX 6636BR	Stoneville	1348	39.3
FM 991B2R	FiberMax	1347	37.9
DP 488BG/RR	Delta Pine	1345	42.2
PSC 355	Phytogen	1339	40.2
FM 800RR	Fiber Max	1336	41.7
DP 5415RR	Delta Pine	1303	39.6
ST 5303R	Stoneville	1301	40.6
DPLX 01W93BR	Delta Pine	1283	41.5
STX 6848R	Stoneville	1268	39.2
FM 832LL	FiberMax	1263	40.5
FM 800BR	FiberMax	1242	41.5
DPLX 03Q301DR	Delta Pine	1234	41.0
DPLX 02X39BR	Delta Pine	1204	43.0
DP 449BG/RR	Delta Pine	1202	39.6
SG 747	Sure Grow	1195	40.4
FM 800B2R	FiberMax	1134	40.5
STX 5454B2R	Stoneville	983	38.3
LSD (P=.05)		179	1.0
CV		10	1.7
Grand Mean		1315	0.0

The shaded values are equal to the highest value.