

COMPARATIVE VALUE PER ACRE BY FRUITING SITE FOR TWO PLANT GROWTH REGULATORS

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Abstract

A new plant growth regulator is shown to increase yield an average of \$67.65 per acre when compared to the industry standard. The increase is partitioned by fruiting site.

Introduction

During 1994, 95 and 96 tests were conducted at 4 locations in Mississippi and one in Tennessee resulting in 10 comparisons between mepiquate chloride and a new plant growth regulator (PGR). This report compares value per acre by fruiting site (FS) for the two PGRs.

Treatments

The treatments investigated were:

MC - A 4.2% solution of Mepiquate chloride, i.e. PIX or
MEPICHOR PILL.

MFMB94: where:

MFX - Micro Flo Experimental

M - rate of MC

B - rate of new active or additive-*Bacillus Cereus* (BC)

94 - first year studied

Specifically:

MF2294 - (22) - A 2.1% solution of MC plus 2.0 grams of BC.

MF2494 - (24) - A 2.1% solution of MC plus 4.0 grams of BC

The new formulations, 22 and 24 contained a half rate of MC.

MFMB94 was formulated such that it could be applied ounce for ounce in the same manner as the standard treatment, MC. The 1994 and 95 tests compared 22 to MC. In 1996 a third treatment, 24, was included.

Results

The new formulations, MFMB94 consistently outyielded MC. The performances between 22 v. 24 was mixed and yield differences were not significant.

Yields

Average yields are reported in Table 1. Yields that are significantly different (5%) are denoted by *.

Value by Fruiting Site

During 1995 and 96, 100 plants per treatment were hand harvested by FS to estimate size and frequency of open

bolts. Boll size was estimated as average grams of seed cotton per boll. Frequency was measured as number of open bolls per 100 plants.

1995 size and frequency. Normally boll size and frequency follow a rigid or expected pattern. Boll size increases up the plant, reaches a maximum, and declines. Size decreases out the branches. Frequency usually tracks size. 1995 was a drought year and these expectations did not materialize. For example, Table 2 reports the number of position 1 open bolls at the size and frequency study location in 1995.

Similar problems occurred with number of bolls at positions 2 and 3, and with boll size at all positions. Additionally, boll size was small, approximately 70-75%, of normal at most FS. It was decided to repeat this study in 1996 with the expectations that 1996 results might more accurately estimate the average differences between treatments.

At Mayersville in 1995 the estimated yields were 797 (Lbs. of Lint/a.) for MC and 933 for 22, an increase of 17.06%. Summary boll numbers are reported in Table 3. Wider includes position 3 and larger. VB denotes vegetation branches. Some open bolls were located on secondary branches (vegetative) originating from the same mainstem node (MSN) as the dominate or primary fruiting branch (FB). These fruit were labeled "Extra" (E).

Yield is a function of size and number of bolls. The majority of yield is located on Position 1. Hence, the percent increase vector in Table 3 is consistent with the observed yield increase of approximately 17%.

1996 value by fruiting site. In the South Mississippi Delta, 1996 can be classified as a "normal" growing season followed by excellent weather during harvest. The 1996 size and frequency study compared 24 v MC. At Onward, in 1996, the estimated yields were 1,049 (Lbs. of Lint/a.) for MC and 1,145 for 24, an increase of 9.15%.

Estimates of size and frequency for both treatments were consistent with expectations. None of the estimates were "smoothed". Estimates of size and frequency were employed to calculate the percent of yield by FS and category (wider, VB, E).

It was assumed that 1.55 Lbs. of seed were associated with each lb. of lint, price or lint =65¢/lb. and price or seed = 5¢/lb.

Yields were set to 934 for MC and 1,027 for MF2494 (Table 1). The results are summarized in Tables 4 and 5.

MF2494 enhanced value per acre in the middle of the plant (MSN 10-14) on position 1, (MSN 5-14) on position 2, and on the periphery (position 3 and VB). The average increase over MC was \$67.65 per acre.

Table 1. Average yields, MFXAB94 v. MC, PGR tests, 1994-96.

	# obs.	MC	MFX	% increase
22 v. MC	7	905	1006*	11.16
24 v. MC	3	1001	1077	7.59
Pooled	10	934	1027*	9.95

Table 2. Number of position 1 open bolls per 100 plants, Mayersville location, PGR Test, MS, 1995.

MSN	MFX2294	MC
5	7	10
6	43	29
7	60	36
8	70	49
9	60	64
10	67	49
11	63	66
12	71	65
13	70	67
14	50	52
15	60	59
16	40	38
17	20	14
18	5	0.00
Σ	686	598

Table 3. Number of open bolls per 100 plants, Mayersville location, PGR Test, MS, 1995.

	MFX2294	MC	% 1
Position 1	686	598	14.7
Position 2	525	422	24.4
Wider	157	142	10.5
VB	479	374	28.1
Extra	65	30	116.7

Table 4. Value per acre by fruiting site, Onward location, PGR Test, MS, 1996.

	MFX	MC	Diff.
Position 1	-----	\$/a.-----	-----
MSN 5	10.75	16.64	-5.89
6	27.75	24.72	3.03
7	31.9	32.46	-0.56
8	36.51	33.66	2.85
9	38.14	36.53	1.61
10	41.1	39.84	1.26
11	43.33	41.44	1.89
12	45.97	41.94	4.03
13	44.08	43.78	0.3
14	35.78	30.52	5.26
15	34.06	28.91	5.15
16	25.37	26.54	-1.17
17	8.46	16.48	-8.02
18	2.62	5.88	-3.26
19	1.49	1.54	-0.05
20	0.00	1.07	-1.07
Position 2			
MSN 5	5.42	9.72	-4.3
6	16.7	14.2	2.5
7	21.87	16.58	5.29
8	24.49	21.56	2.93
9	26.5	22.73	3.77
10	30.65	23.18	7.47
11	27.59	20.71	6.88
12	19.41	19.6	-0.19
13	16.71	17.39	-0.68
14	9.78	15.8	-6.02
15	5.44	5.85	-0.41
16	1.14	2.09	-0.95
17	0.51	1.39	-0.88
18	0.00	0.48	-0.48
Other			
Wider	50.98	35.27	15.71
VB	52.79	23.83	28.96
E	9.85	7.16	2.69
Σ	747.14	679.49	67.65

Table 5. Difference in value per acre, selected grouping of fruiting sites, Onward location, PGR Test, MS, 1996.

	Difference	Rank	Rank
Position 1	\$/a.		
MSN 5-9	1.04	7	
MSN 10-14	12.74	3	
MSN 15-20	-8.42	9	
Σ	5.36		4
Position 2			
MSN 5-9	10.19	4	
MSN 10-14	7.46	5	
MSN 15-18	-2.72	8	
Σ	14.93		3
Other			
Wider	15.71	2	2
VB	28.96	1	1
E	2.69	6	5
Σ	67.65		