

TWO YEAR STUDY OF MEPIQUAT CHLORIDE AND BACILLUS CEREUS

Joe Townsend

Townsend Agricultural Consulting, Inc.
Coahoma, MS

Abstract

Field studies were conducted in 1996 and 1997 to test experimental plant growth regulators on cotton. Townsend Agricultural Consulting, Inc. conducted the studies on the "Bess Place" farm of Mr. Stan Hayes in Coahoma County, Mississippi. The cotton varieties were Stoneville 474 in 1996 and Stoneville 4740 in 1997. The crops were both planted the first week of May in both years. The work done for this paper was supported by a grant from Micro Flo Company.

Application Methods and Treatments

The study included standard mepiquat chloride and mixtures of mepiquat chloride and *Bacillus cereus*. This very specific *Bacillus* has been patented by Micro Flo for its growth regulating affects. The treatments were applied in 5 applications in 1996 and 4 applications in 1997. Applications were made at 4 to 8 oz. per acre at 7 to 10 day intervals. The untreated plots received no mepiquat chloride

All treatments of the plant growth regulators were applied by back pack sprayer applying 15 gallons of finished spray per acre. The 1996 plots were 20 feet long by four rows, and configured in a five by five Latin Square design. Treatments in 1997 were in a randomized complete block design with four replicates of four rows.

Treatment dates for 1996 were June 19, 25, July 8, 13, and 18. Two ounces per acre of formulated product were used per acre on each application except for treatment five, which received eight ounces per application. Treatments were as follows: 1). Mepiquat chloride, 2). MFX 2294, 3). MFX 4294, 4). MFC 2494, and 5). MFX 2294 at a 2X rate. At the time of the first treatment the cotton was approximately 14 inches tall, and at main stem node 10 -11.

All treatments in 1997 were applied at 4 ounces per acre.

Data Collection

Data were taken weekly during the spray period on the spray dates. Four plants were chosen per plot of four rows by 20 feet from the two center rows and marked for the season. These plants were measured for main stem node production and plant height each time the test was sprayed.

After defoliation, yields were taken by hand picking five feet of row per plot. The number of bolls picked was also counted. In addition five plants from each plot were plant mapped. Node and position for each boll produced was recorded, as well as seed cotton weight per node.

Conclusion

In conclusion, the MFX compounds of Micro Flo Company generally produced more cotton, more main stem nodes and larger bolls than standard mepiquat chloride or the untreated control. The MFX compounds also produced a beneficial internode length similar that of the standard mepiquat chloride treatment. MFX 4294 was best or near the top of every data set collected. It is believed the cotton growers of the North Delta will benefit from the use of MFX 4294, now labeled as *MepPlus*.

Table Guide

Table 1 gives plant growth from June 19 until July 18, 1996. Mepiquat chloride produced the least growth of 14.4 inches, MFX 2294 at the 2X rate at 15.5 inches, MFX 2494 at 16.2 inches, MFX 2294 at 19.2 inches, and MFX 4294 at 19.4 inches.

Table 2 shows the mean number of main stem nodes producing bolls in 1996. MFX 2294 (2X) with 6.0, MFX 2294 at 6.1, mepiquat chloride and MFX 2494 at 6.2, and MFX 4294 at 7.2.

Table 3 shows the 1996 boll weights in grams of seed cotton per boll; mepiquat chloride, 4.3 grams; MFX 2294, 4.7grams; MFX 4294, 5.3 grams; MFX 2494, 4.7 grams and MFX 2294 (2X), 4.8 grams.

Table 4 shows yields estimated from hand picked seed cotton weights in 1996, and the per cent increase over the mepiquat chloride standard. Highest yield was with MFX 4294 yielding 1243 pounds of lint per acre, which was 35% greater than the mepiquat chloride standard.

Table 5 gives the 1997 plant height information. The untreated check was 36.2 inches tall; MFX 2494 was 33.6 inches; MFX 3294 was 28.3 inches; MFX 3394 was 28.8 inches; MFX 4294 was 27.1 inches, and the mepiquat chloride treatment was 25.2 inches tall.

Table 6 lists the grams of seed cotton per boll in the 1997 test. MFX4294 had an extremely high weight at 9.6 grams, the untreated check at 6.5 grams, and the mepiquat chloride at 5.3 grams per boll.

Table 7 gives the number of first position missing bolls on main stem nodes 9 through 15 on the 40 plants per treatment that were mapped. All treatments produced 7 to 23 % fewer missing positions than the untreated check.

Table 1. Cotton plant growth from June 19 to July 18, 1996

TREATMENT	PLANT GROWTH INCHES
Mepiquat chloride	14.4
MFX 2294	19.2
MFX 4294	19.4
MFX 2494	16.2
MFX 2294 (2X)	15.5

Table 2. Number of main stem nodes producing bolls 1996

TREATMENT	MSN PRODUCING BOLLS
Mepiquat chloride	6.2
MFX 2294	6.1
MFX 4294	7.2
MFX 2494	6.2
MFX 2294 (2X)	6.0

Table 3. Grams of seed cotton per boll produced 1996.

TREATMENT	GRAMS PER BOLL
Mepiquat chloride	4.3
MFX 2294	4.7
MFX 4294	5.3
MFX 2494	4.7
MFX 2294 (2X)	4.8

Table 4. Yield from hand picked samples, and percent change from mepiquat chloride standard 1996.

TREATMENT	ESTIMATED LINTYIELD	% OVER MEPIQUAT CHLORIDE
Mepiquat chloride	818	-
MFX 2294	911	10
MFX 4294	1243	35
MFX 2494	970	16
MFX 2294 (2X)	923	11

Table 5. Final plant height 1997.

TREATMENT	FINAL PLANT HEIGHT INCHES
Untreated	36.2
MFX 2494	33.6
MFX 3294	28.3
MFX 3394	28.8
MFX 4294	27.1
Mepiquat chloride	25.2

Table 6. Grams of seed cotton per boll 1997.

TREATMENT	GRAMS SEED COTTON PER BOLL
UNTREATED	6.5
MFX 2494	6.8
MFX 3294	6.5
MFX 3394	9.6
MFX 4294	6.9
Mepiquat chloride	5.3

Table 7. Missing first position bolls on main stem nodes 9-15, and percent decrease from untreated check

TREATMENT	MISSING 1 ST POS. Fruit	% LESS THAN CHECK
UNTREATED	10.3	-
MFX 2494	8.8	15
MFX 3294	8.3	20
MFX 3394	8.0	23
MFX 4294	8.5	18
Mepiquat chloride	9.3	7