

NITROGEN RATES AND MEPIQUAT CHLORIDE EFFECTS ON COTTON LINT YIELD AND QUALITY

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OBJECTIVES



- Determine the effect of nitrogen rate and plant growth regulator (mepiquat chloride) on lint cotton yield.
- Determine the effects of the two factors on lint fiber quality.
- Examine the treatment effects by plant mapping to evaluate differences in plant growth characteristics and fruit distribution.

**ALL EXPERIMENTS WERE CONDUCTED
AT THE
DELTA RESEARCH AND EXTENSION CENTER
MISSISSIPPI STATE UNIVERSITY
STONEVILLE, MISSISSIPPI
1992-1995**



SOIL TYPE: Bosket vf sandy loam/Dubbs silt loam

CLASSIFICATION: Mollic Hapludalfs/Typic Hapludalfs

NITROGEN SOURCE: Urea-Ammonium Nitrate Solution

EXPERIMENTAL DESIGN: Randomized Complete Block



Materials and Methods - Treatments

NITROGEN MANAGEMENT:

Nitrogen Rates: 90, 120, 150, 180 lb N/A

Application: (1992) 100% Preplant (PP)
(1993-1995) 50% PP + 50% SD

PLANT GROWTH REGULATOR MANAGEMENT:

Untreated Control (UTC)

- Mepiquat chloride (2 oz/A 4X)
- Mepiquat chloride (4 oz/A 4X)
- Mepiquat chloride (Variable)



Table 1. Main effects lint yield from an interaction of N rates and mepiquat chloride rates -- 1992

N Rate lb N/acre	Lint yield, lb/acre		
	First	Second	Total
90	979	126 c	1105 b
120	1006	154 b	1160 a
150	986	182 a	1168 a
180	975	197 a	1172 a
LSD (0.05)	26 ns	20 **	27 **

Means across PGR rates (n=16)



Table 2. Main effects lint yield from an interaction of N rates and mepiquat chloride rates -- 1993

N Rate Ib N/acre	Lint yield, lb/acre		
	First	Second	Total
90	763 b	64 c	827 b
120	813 a	77 b	890 a
150	834 a	88 a	921 a
180	830 a	90 a	920 a
LSD (0.05)	32 **	8 **	34 **

Means across PGR rates (n=16)



Table 3. Main effects lint yield from an interaction of N rates and mepiquat chloride rates -- 1994

N Rate lb N/acre	Lint yield, lb/acre		
	First	Second	Total
90	1025 b	37	1062 b
120	1060 a	39	1099 a
150	1038 ab	39	1077 ab
180	1020 b	37	1057 a
LSD (0.05)	28 *	3 ns	28 *

Means across PGR rates (n=16)



Table 4. Main effects lint yield from an interaction of N rates and mepiquat chloride rates -- 1995

N Rate lb N/acre	Lint yield, lb/acre		
	First	Second	Total
90	859 b	55 c	914 b
120	915 a	60 b	974 a
150	926 a	63 ab	988 a
180	910 a	64 a	974 a
LSD (0.05)	32 **	4 **	32 **

Means across PGR rates (n=16)



Table 1S. Main effects lint yield from an interaction of N rates and mepiquat chloride rates - 1992-1995

N Rate lb N/acre	Lint yield, lb/acre		
	First	Second	Total
90	907 b	71 c	977 b
120	948 a	83 b	1031 a
150	946 a	93 a	1039 a
180	934 a	97 a	1031 a
LSD (0.05)	18 **	7 **	20 **

Means across PGR rates and years (n=64)



Table 5. Main effects lint yield from an interaction of N rates and mepiquat chloride rates -- 1992

Pix System	Lint yield, lb/acre		
	First	Second	Total
Check - UTC	949 c	190 a	1139
2 oz/A (4X)	1005 a	156 b	1161
4 oz/A (4X)	1016 a	152 b	1168
Variable	975 b	162 b	1137
LSD (0.05)	26 **	20 **	27 ns

Means across N rates (n=16)



Table 6. Main effects lint yield from an interaction of N rates and mepiquat chloride rates -- 1993

Pix System	Lint yield, lb/acre		
	First	Second	Total
Check - UTC	780 b	89 c	869
2 oz/A (4X)	829 a	79 b	908
4 oz/A (4X)	817 a	74 a	890
Variable	814 a	78 a	892
LSD (0.05)	32 **	8 **	34 ns

Means across N rates (n=16)



Table 7. Main effects lint yield from an interaction of N rates and mepiquat chloride rates -- 1994

Pix System	Lint yield, lb/acre		
	First	Second	Total
Check - UTC	1018	39	1057
2 oz/A (4X)	1038	38	1076
4 oz/A (4X)	1034	38	1073
Variable	1054	37	1090
LSD (0.05)	28 ns	3 ns	28 ns

Means across N rates (n=16)

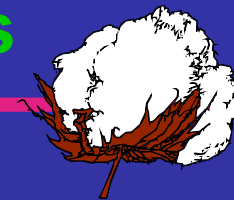


Table 8. Main effects lint yield from an interaction of N rates and mepiquat chloride rates -- 1995

Pix System	Lint yield, lb/acre		
	First	Second	Total
Check - UTC	878 b	59	937 c
2 oz/A (4X)	925 a	62	987 a
4 oz/A (4X)	912 a	60	972 ab
Variable	895 ab	60	955 bc
LSD (0.05)	32 *	4 ns	32 *

Means across N rates (n=16)



Table 2S. Main effects lint yield from an interaction of N rates and mepiquat chloride rates - 1992-1995

Pix System	Lint yield, lb/acre		
	First	Second	Total
Check - UTC	906 b	94 a	1001 b
2 oz/A (4X)	949 a	84 b	1033 a
4 oz/A (4X)	945 a	81 b	1026 a
Variable	934 a	84 b	1018 ab
LSD (0.05)	18 **	7 **	20 *

Means across N rates and years (n=64)





SUMMARY



- The addition of N above recommended level did not significantly increase lint yields.
- Increasing N rates up to 150 to 180 lb/A delayed maturity in some years.
- Applications of 8 oz/A (2 oz/A applied 4 times) did increase total lint yield by 32 lb/A (3.2%). However, a significant response was measured in only one of four years.