EFFECTS OF EXPERIMENTAL LIQUID SOIL AMMENDMENTS ON FALL BELL PEPPER

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Introduction

Almost half of Georgia's Bell pepper crop is produced in the fall season. Small fruit size can still be a problem with the crop, however. Horizon Ag Products and Helena Chemical Company have several new liquid products with potential to increase bell pepper yield and quality. These are all numbered experimental compounds. These materials were applied weekly and biweekly beginning just before first bloom. to determine their effects on yield and quality of bell pepper. The effect of these products on fruit firmness was also a parameter of interest.

Methods

Bell pepper plants (variety "Heritage", Harris Moran Seed Co.) were produced in black plastic trays in a university greenhouse. Plots were established at the Coastal Plain Experiment Station Tifton Vegetable Park (elev. 382 feet) in Tifton, GA. Plot land was deep turned and disked. Beds were laid off and 800 lb/A 10-10-10 was applied and incorporated. Methyl bromide was applied (134 lb. a.i./acre) and white plastic mulch and drip tape were installed on August 23, 2006.

Pepper were transplanted on August 29, 2006 into a Tifton sandy loam (fine-loamy siliceous thermic Plinthic Kandiudults) soil. Plots consisted of two rows of pepper (~14 inches between rows) planted on raised beds that were spaced six feet apart (from center to center). In-row spacing was 12 inches per plant. Plots were each 20 feet long and were replicated four times. The experiment was arranged in a Randomized Complete Block Design.

HM 0402 and HM 9947 were injected through the drip irrigation system at 1.0 gallons per acre beginning one week before first flower and continuing weekly. HM 0506 was injected at the same timing at 1.5 pounds per acre. HM 0402 and HM 9947 were also injected at a 2.0 pound rate beginning one week prior to flower and continuing at two week intervals. HM 0506 was applied at the same timing at 3.0 pounds per acre. A combination treatment of 1.0 gallon of HM 0402 plus 1.5 pounds of HM 0506 was applied at the two-week interval timing as well. These were compared to an untreated check.

Additional fertilizer was applied through the drip irrigation system approximately weekly from September 13 to November 29, 2006. A total of 353 pounds N was applied, 80 pounds of P and approximately 353 pounds of K. Peppers were harvested on November 2, November 15, November 29 and December 7, 2006 and data collected on yield and quality. Other than soil amendments, normal cultural and pest control practices were used. Penetrometer readings were taken on ten fruit per plot at harvest and recorded. Data was analyzed using the Statistical Analysis System and means separated using Least Significant Difference.

Results

Results are presented in Table 1. Average fruit weights were not significantly greater in treated plots compared to the check. There was no difference for fruit firmness among treatments. HM 9947 produced more extra large fruit and combined large and extra large fruit than the check. The low rate of HM 0402 produced more combined large and extra large fruit than the untreated check. There were no differences among medium fruit since there was such a small number of this size. No treatment produced significantly more large size fruit than the check.

Table 1. Total, extra large, large, medium and extra large plus large marketable yield, average fruit weight of extra large and large fruit and average fruit firmness of bell pepper produced with seven different liquid soil amendments and one control at Tifton, GA in Fall, 2006.

Product	Rate	Avg Fruit Firmness	Avg Wt Lg Fruit (g)	Avg Wt XL Fruit (g)	Total Marketable Boxes/A (23 lbs)	Total XL Boxes/A (23 lbs)	Total Lg Boxes/A (23 lbs)	Total Med Boxes/A (23 lbs)	Total XL+L Boxes/A (23 lbs)
Untreated		5.05 a	198.2 ab	267.1 ab	1290.0 cd	744.1 b	495.6 abc	50.3 a	1239.7 b
HM 0402	1.0 g/A	5.20 a	188.9 b	259.6 bc	1507.4 a	861.8 ab	577.3 a	68.5 a	1439.0 a
HM 9947	1.0 g/A	5.17 a	205.4 a	264.9 abc	1418.1 abc	929.4 a	462.8 c	25.9 a	1392.3 a
HM 0506	1.5 lbs/A	5.07 a	205.9 a	266.2 ab	1379.2 abcd	786.4 ab	563.2 ab	29.6 a	1349.6 ab
HM 0402	2.0 g/A	5.21 a	201.9 ab	266.2 ab	1327.5 bcd	832.1 ab	476.4 bc	19.0 a	1308.6 ab
HM 9947	2.0 g/A	5.17 a	201.7 ab	272.8 a	1466.2 ab	935.5 a	506.0 abc	24.7 a	1441.6 a
HM 0506	3.0 lbs/A	5.14 a	202.2 ab	262.3 abc	1258.7 d	726.6 b	510.4 abc	21.7 a	1237.0 b
HM 0402 + HM 0506	1.0 g/A 1.5 lbs/A	5.07 a	195.6 ab	254.0 c	1456.5 ab	873.2 ab	563.5 ab	19.9 a	1436.6 a
Mean of Test		5.13	199.9	264.1	1388.0	836.1	519.4	32.4	1355.5
L.S.D. (0.05)		0.24	14.2	11.4	156.5	164.1	88.8	66.6	151.5
C.V. (%)		3.11	4.84	2.93	7.67	13.34	11.63	139.6	7.60