

THE EFFECTS OF VARIOUS NUTRIENT AND CHEMICAL AMENDMENTS ON PEPPER YIELD AND QUALITY

William Terry Kelley
Extension Horticulturist
University of Georgia
P.O. Box 1209
Tifton, GA 31793
wtkelley@uga.edu

Introduction

Bell pepper was produced on over 6,000 acres with a value of over \$60 million in 2004. Some of the common problems associated with bell pepper production are blossom end rot and small fruit size. Horizon Ag Products and Helena Chemical Company have three new products with potential to increase bell pepper yield and reduce blossom end rot. Hydra-Hume is a humic acid product which is purported to have the ability to increase uptake of micronutrients. Es-Cal-Eight is a low pH material with 5% nitrogen and 8% calcium. QHP is a mixture of amino acids, organic acids and carbohydrates. These materials alone and in combination were tested to determine their effects on yield and quality of bell pepper. Percentage of blossom end rot and the firmness of the fruit wall were also parameters of interest.

Methods

Bell pepper plants (variety “Stiletto”, Syngenta Seed Co.) were produced in a greenhouse by a commercial transplant grower. Plots were established at the Coastal Plain Experiment Station Tifton Vegetable Park (elev. 382 feet) in Tifton, GA. Plot land was deep turned and disced. Beds were laid off and 800 lb/A 10-10-10 was applied and incorporated. Methyl bromide was applied (134 lb. a.i./acre) when black plastic mulch and drip tape were installed.

Pepper were transplanted on April 12, 2005 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 25 feet long and were replicated four times. The experiment was arranged in a Randomized Complete Block Design.

Hydra-Hume was injected at one gallon per acre shortly after planting. Es-Cal-Eight was injected at one gallon per acre one week prior to bloom and approximately every three weeks thereafter. Those treatments occurred on May 12, June 7 and June 28, 2005. QHP was injected at 1.5 pounds per application beginning at first flower and approximately every four weeks thereafter. Those treatments were applied on May 19 and June 21, 2005. Additional fertilizer was applied through the drip irrigation system. A total of 200 pounds N was applied, 80 pounds of P and approximately 120 pounds of K. Peppers were harvested on June 26, July 8, July 12 and July 18, 2005 and data collected

on yield and quality. Other than soil amendments, normal cultural and pest control practices were used. Penetrometer readings were taken on five fruit per plot at harvest and recorded. Data was analyzed using the Statistical Analysis System and means separated using Least Significant Difference.

Results and Discussion

Results are presented in Table 1. There were very few differences that were significant at the 5% level. However, there are several trends worth noting. The Es-Cal-Eight alone, Hydra-Hume alone and the three way treatment of Es-Cal-Eight, Hydra-Hume and QHP produced the greatest yield of extra large fruit in that order. All treatments performed better than the untreated check for yield of extra large fruit. Those trends among treatments were virtually the same for total yield of marketable fruit. There were no significant differences among treatments for the incidence of blossom end rot. Fruit from Hydra-Hume treated plots gave the highest penetrometer readings and those from the Hydra-Hume + QHP plots were significantly lower. All treatments with QHP produced the lowest penetrometer readings although only the one mentioned above was the only significant difference. Although all of the treatments yielded better than the untreated check, it appears that using Es-Cal-Eight or Hydra Hume alone produces the greatest increase in yield.

Table 1. Yield per acre of large and extra large fruit, total yield, average fruit weight, fruit penetrometer measurements and percent blossom end rot of bell pepper treated with various combinations of Hydra-Hume, QHP and Es-Cal-8 and untreated peppers at Tifton, Georgia in 2005.

Treatment	Large	Extra Large	Total	Average Fruit Weight	Percent Blossom End Rot	Penetrometer Readings
	28-pound boxes/A			(grams)	%	(lbs pressure)
Untreated	151.0 ab	559.2 a	710.2 a	214.2 a	2.93 a	3.2 ab
Hydra-Hume	170.6 ab	1077.8 a	1248.4 a	241.2 a	1.98 a	3.4 a
Es-Cal-8	186.4 ab	1121.9 a	1308.3 a	197.2 a	3.48 a	3.2 ab
HH + EC8	228.5 ab	677.9 a	906.4 a	216.4 a	2.68 a	3.2 ab
QHP	56.3 b	893.4 a	949.6 a	210.2 a	1.10 a	3.2 ab
HH + QHP	71.5 b	822.0 a	893.5 a	216.1 a	2.75 a	2.9 b
QHP + EC8	254.7 a	564.7 a	819.3 a	201.7 a	3.28 a	3.1 ab
HH + QHP + EC8	159.4 ab	973.2 a	1132.6 a	218.1 a	4.20 a	3.1 ab
Mean of Test	159.8	836.2	996.0	214.4	2.79	3.17
L.S.D. (0.05)	173.5	741.7	784.3	57.09	3.96	0.38
C.V. (%)	73.8	60.3	53.5	18.1	96.3	8.20

Plots consisted of a single bed with two rows per bed and 25 plants per row spaced 12 inches apart.