

SOIL AMENDMENT EFFECTS ON WATERMELON YIELD AND QUALITY

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Introduction

Watermelons are annually Georgia's largest vegetable commodity based on acreage. Production usually exceeds 30,000 acres and in 2004 the crop had a farm gate value of over \$85 million. Development of a good canopy to protect fruit and overall yield of high quality melons are primary concerns of Georgia watermelon growers. Horizon Ag Products and Helena Chemical Company have three new products with potential to increase watermelon yield. 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 combination of amino acids, organic acids and carbohydrates that "works by shifting the energy priority to the fruiting side of the vegetative/fruit demand balance". These materials alone and in combination were tested to determine their effects on yield and quality of watermelon.

Methods

Watermelon plants (variety "Tri-X 313", 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 and 600 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.

Watermelons were transplanted on April 19, 2005 into a Tifton sandy loam (fine-loamy siliceous thermic Plinthic Kandiudults) soil. Plots consisted of one row of watermelons planted on raised beds spaced six feet apart (from center to center). In-row spacing was 48 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 every three weeks thereafter. Injection dates for Es-Cal-Eight were May 24, June 14 and July 6, 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 31 and June 28, 2005. A total of 150 pounds N was applied, 60 pounds of P and approximately 100 pounds of K. All but the pre-plant fertilizer was applied through the drip irrigation system. Watermelons were harvested on July 7, July 12 and July 19, 2005 and data collected on yield and quality. Other than fertilizers, normal cultural and pest control practices were

used. Data were analyzed with the Statistical Analysis System and means separated with Least Significant Difference.

Results and Discussion

Results are presented in Table 1. There were no significant differences among treatments for fruit number or fruit weight per acre. Plots treated with Hydra-Hume had a tendency to produce more fruit than the untreated or any other treatment. Only the two-way combinations with Hydra-Hume and the other two chemicals produced greater fruit weight than the untreated check. It might also be worth noting that the tissue analysis for Ca revealed that the highest Ca levels were seen where either Hydra-Hume or Es-Cal-Eight was used. There were no meaningful significant differences in this test. While some treatments appeared to be better than the untreated, others were not. In this particular test it is reasonable to conclude that none of the treatments had any remarkable effect on marketable yield of watermelons over the untreated check.

Table 1. Fruit number per acre, yield per acre, average fruit weight and tissue analysis results combined across replications for watermelons treated with various combinations of Hydra-Hume, QHP and Es-Cal-8 and untreated watermelons at Tifton, Georgia in 2005.

Treatment	Fruit/A	Weight/A	Avg Fruit	N	P	K	Mg	Ca	S	B	Zn	Mn	Fe	Cu
	(No.)	(Lbs.)	(Lbs.)	(%)						(ppm)				
Untreated	1286 a	25486 a	20.0a	2.87	0.23	1.22	0.64	4.07	0.22	54	22	117	65	7
Hydra-Hume	1362 a	23814 a	17.4abc	2.76	0.17	1.18	0.73	4.91	0.20	73	19	132	55	7
Es-Cal-8	1286 a	20646 a	15.9c	2.77	0.21	1.21	0.74	4.72	0.30	86	24	161	61	8
HH + EC8	1437 a	27036 a	19.1ab	2.49	0.20	1.18	0.86	6.00	0.21	87	25	164	68	7
QHP	1135 a	18838 a	16.7bc	2.87	0.23	1.16	0.66	3.88	0.23	71	23	132	73	7
HH + QHP	1664 a	32353 a	19.1ab	3.01	0.24	1.24	0.67	4.24	0.25	61	24	167	58	11
QHP + EC8	1135 a	19557 a	17.9abc	2.90	0.25	1.07	0.70	4.57	0.22	72	24	163	56	9
HH + QHP + EC8	1211 a	21985 a	18.3abc	2.35	0.19	1.23	0.68	4.75	0.20	73	21	156	54	8
Mean of Test	1314	23714	18.0											
L.S.D. (0.05)	925.4	16373	2.8											
C.V. (%)	47.9	47.0	10.5											

Plots consisted of a single row with one row per bed and six plants per row spaced 48 inches apart.