

## EVALUATION OF HGW86 INSECTICIDE TREATMENTS IN SQUASH 2007

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### **Introduction**

Summer squash is heavily targeted in the fall growing seasons in southern Georgia by the b-strain sweetpotato whitefly, *Bemisia tabaci* (Gennadius) or silverleaf whitefly. This experiment evaluated various drip injection control options for this pest in 2007.

### **Materials and Methods**

Yellow squash, Hyb. Liberator III, was direct seeded into 2 rows per 6-ft plastic mulched beds on 20 July and maintained with standard methyl-bromide fumigated plastic-cultural practices at the Tifton Vegetable Park, Georgia Coastal Plain Experiment Station at Tifton. A total of 500 lbs/a of 10-10-10 was applied at planting to Tift sandy clay loam field plots followed by four 20-20-20 soluble fertilizer injection applications of 7 lbs/a. Irrigation was applied weekly with a 12-inch emitter spaced drip system. Injection treatments were made initially as the seed was germinating using 3 liters of water per all four reps of 50 ft row plots on 24 July. The drip injection protocol was based on 14,520 linear ft of bed per acre and 200 ft per treatment (50 x 4 reps). We estimated 0.5 gallons per minute per 100 ft overall water usage for standard 12" tape. The system was calibrated with water soluble dye before treatment injection. The drip line was filled with water first for 8 min and then we injected one treatment at the time (all 4 plots hooked up at once with cap at end of each plot locked). We mixed 3 liters of treatment volume and injected over 1 hour (approximately 30-40 min after all product is gone from the injection bottle, flushing the line until the dye cleared). We used 20 psi in the mixing tank and a #41 orifice in injector coupling. We also used 2.6 ml of buffer to a pH of 5.0. Five foliar applications of fungicide using 61 gallons/a, 60 psi, and 3 TX18 hollow cone tips per row were made on a weekly basis through the first harvest. Scouting was initiated on 5 September and continued weekly until harvest. One sample of 5 plants, with one leaf per plant for whitefly and aphid counts, was scouted per plot after weekly applications. Silver-leaf ratings were done on ten plants per plot with a rating of 0=dark green to 3=severely silvered leaves (maximum damage value of 30). A plant vigor rating was given for the entire plot from 0=severely stunted or dead to 3=apparent normal growth. Squash was harvested from 40 ft of 2 rows on 27 September and 2, and 5 October. Fruit were categorized as marketable, pickleworm damaged, or virus damaged and the average weight was measured. Squash fruit color ratings for whitefly induced whitening were also reported with 0=no fruit harvested, 1=all white fruit, 2= mixed white and yellow fruit, and 3=normal yellow colored fruit and summed over 11 harvests (maximum value of 33, or 3 x 11 harvests). Data was analyzed using GLM and LSD tests for separation of means (SAS Institute 1990).

## **Results and Discussion**

The effective treatments in terms of silverleaf control were HGW86 and E2Y45, but there was no rate response detected in the nymph count. Also, there was not a detectable rate response in terms of number of fruit and weight of squash produced even though the highest rate of HGW86 did have the highest number of clean fruit. The only detectable rate response was relative to silver-leaf rating and squash fruit color where color increased in normal yellow color with the higher rates of HGW86. The relationship of whitefly nymphs to silver leaf symptoms and yield was not adequately assessed with the sampling method used. We need to increase the leaf sample number and possibly target only leaves with later instar nymphs in future evaluations.

Treatment - rate per acre (type of application was drip injection for all treatments)	Silverleaf rating on 28 Aug 0 to 30 (silvered)	Silverleaf rating averaged 0 to 30 (silvered)	Whitefly eggs	Whitefly small nymphs	Whitefly large nymphs
1. HGW86 200SC 0.066 lb ai/acre	26 b*	27 b	124 a	7 b**	0.3 a
2. HGW86 200SC 0.088 lb ai/acre	17 c	22 c	122 a	23 ab	3.0 a
3. HGW86 200SC 0.134 lb ai/acre	14 c	17 d	110 a	19 ab	6.6 a
4. E2Y45 200SC 0.044 lb ai/a	17 c	21 c	112 a	10 b	0.8 a
5. Untreated Check.	30 a	30 a	168 a	44 a	5.8 a

\* Means within columns followed by the same letter are not significantly different (LSD, <0.05).

\*\* Means within this one column followed by the same letter are not significantly different LSD, P<0.1).

Treatment - rate per acre (type of application was drip injection for all treatments)	Silverleaf rating on 13 Sep 0 to 30 (silvered)	Fruit Color rating 0 to 9 (normal yellow)	Number of clean market-able fruit	Weight lb of clean market-able fruit
1. HGW86 200SC 0.066 lb ai/acre	27 ab	16.5 c	194 a	35 a
2. HGW86 200SC 0.088 lb ai/acre	27 ab	17.3 bc	182 a	34 a
3. HGW86 200SC 0.134 lb ai/acre	20 c	22.0 a	216 a	53 a
4. E2Y45 200SC 0.044 lb ai/a	25 b	19.3 b	181 a	43 a
5. Untreated Check.	30 a	5.5 d	36 b	6 b

\* Means within columns followed by the same letter are not significantly different (LSD, <0.05).

\*\* Means within this one column followed by the same letter are not significantly different LSD, P<0.1).