

EVALUATION OF SYSTEMIC INSECTICIDES FOR CONTROL OF PESTS IN SWEET POTATO 2004

Michael Williams¹, Jack T. Reed¹, Dung Bao¹, David Willers¹, and L. Adams²

¹ Dept. of Entomology and Plant Pathology, Mississippi State University, Mississippi State, Miss. 39762

²USDA ARS, SIMRU, Stoneville, Miss. 38766

ABSTRACT: The purpose of this trial was to evaluate two methods of application of systemic insecticides for the management of sweet potato flea beetles (primarily) and other sucking pests such as aphids and thrips. In one treatment, about three inches of the cut-ends of slips were treated with insecticide and allowed to dry for 12 h prior to planting, and in the other treatment method, the slips were sprayed with a spray tractor within one week after planting. The primary targeted pest was sweet potato flea beetle, a pest that occurred in very low numbers resulting in virtually no potato damage by that species. Other insect pests also occurred only in very low numbers throughout this trial. Consequently, there was insufficient damage to separate treatments by counts of insects vacuumed from foliage or by evaluation of insect damaged potatoes, and results of insecticide treatments could not be shown to vary from that of the untreated check plots.

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KEY WORDS: Sweet potato, insecticides, systemic, flea beetle.

MATERIALS AND METHODS: Slips, variety Beauregard, obtained from CC farms in Calhoun Co. were planted at the USDA Research Station, Stoneville, Miss. 5/27/04, with a 2 row planter, in 8, 40-in rows per plot. Plots were 40 feet long. Insecticide treatments were applied by two methods, pre-plant basal spray and post-plant foliar spray, in a randomized complete block design. The basal spray was treated by mixing an insecticide mixture equivalent to that which would be applied per acre for in-furrow treatment, and applying it to day-old slips that were tightly grouped and turned upside down. The insecticide was sprayed on the bottom of the plants until the amount required for the number of acres that the number of slips would plant was applied. Foliar spray was applied on 6/3/04. Rates are listed in Table 1. No foliar insecticides were applied to the plots during the remaining portion of the season. The test was scouted approximately once a week with a motorized vacuum device by vacuuming 40 row feet of one of the 2 center rows. Plots were harvested 8/17 to 18/04 by digging 15 row-feet from one of the 2 center rows of each plot with a shovel. Potatoes were then washed and evaluated for insect damage by examining each potato. This research was funded by a grant from USDA/ARS. Results were analyzed with Statistica software (Statsoft Inc., Tulsa, Oklahoma), using a general linear (mixed) procedure with replicates set as a random

effect. Variables with few data points were not analyzed but are summarized in the tables.

RESULTS AND DISCUSSION: There were no statistically significant differences between treatments for means summarized for the growing season for insects counted in vacuum samples (Table 2) or for damage evaluated on potatoes after harvest (Table 3). Insects species collected in very low numbers were not included in analyses. There were no differences between treatments in pounds of sweet potatoes, or in the pounds of number ones, canners, culls or jumbo sweet potatoes (Fig.1). Damage among the different sizes of sweet potatoes did not differ between treatments. Lack of differentiation between treatments is probably related to a very low insect population during early spring and summer.

Table 1. Treatments and Rates of application.

Treatment	Formulation	Rate	Application Method
Actara	25 G	1.5 Oz/ac	Spray
Admire	2 F	1.3 Fl oz/1000 row ft	Dip
Platinum	2 FS	2.2 Fl oz/1000 row ft	Dip
Provado	1.6 F	3.5 Fl oz/ac	Spray
Untreated			

Table 2. Mean number of insects per sample (summary of all sample dates).

Table 2. Mean insects per sample dip trial 2004. Summary of all dates.

Treatment	Sweet Potato Flea Beetle	Other Flea Beetles *	Spotted Cucumber Beetle	Tortoise Beetle Adult	Looper	Yellow Striped Army Worm	Fall Army Worm	Thrips Damage
Actara Spray	0.894	0.447	0.315	0.078	0.263	0.026	0.000	0.105
Admire Dip	0.578	0.552	0.157	0.052	0.263	0.078	0.000	0.105
Platinum Dip	0.368	0.263	0.157	0.026	0.342	0.078	0.000	0.000
Provado Spray	0.552	0.526	0.157	0.026	0.210	0.052	0.052	0.131
Untreated	0.447	0.526	0.052	0.026	0.105	0.026	0.078	0.105
Probability of F	0.257	0.727	0.190	-----	-----	-----	-----	-----

* Primarily *Systema* Species.

Table 3. Mean number of holes and percent damaged potatoes related soil insects.

Treatment	Cucumber Beetle Holes	Percent Cucumber Beetle Damaged Potatoes	Wire Worm Holes	Percent Wire Worm Damaged Potatoes	Systema Holes	Percent Systema Sp. Damaged Potatoes	Sweet Potato Flea Beetle Damage Rating
Actara Spray	1.21	2.05	0.57	5.50	8.14	21.44	0.00
Admire Dip	1.14	5.50	1.29	4.47	6.07	15.02	0.07
Platinum Dip	1.54	1.72	0.85	2.01	6.46	24.21	0.00
Provado Spray	0.85	2.64	0.62	2.75	6.00	17.79	0.00
Untreated	0.92	2.38	1.38	1.98	7.62	14.80	0.00
Probability of F	0.945	0.304	0.575	0.639	0.865	0.653	---

Figure 1. Mean weight (lbs) of sweet potatoes from 15 row feet.

Error bars represent 95% confidence intervals.

