

EVALUATION OF FOLIAR-APPLIED INSECTICIDES FOR CONTROL OF SWEET POTATO FLEA BEETLE IN CHICKASAW CO., MISS. 2004

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ABSTRACT: An insecticide evaluation trial was completed in a commercial sweet potato (*Ipomoea batatas*) field in Chickasaw County for the purpose of determining insecticide efficacy of various compounds against sweet potato flea beetle (*Chaetocnema confinis*). Capture (bifenthrin), Imidan (phosmet) (applied with a buffer), Phaser (endosulfan) and Provado (imidacloprid) were sprayed 8/11/04 and results were evaluated on 8/14/04 and 8/18/04. All compounds reduced flea beetles well below that of the untreated check on the first sample date. Only Capture and Provado retained efficacy below that of the untreated check on eight days following treatment. Flea beetle numbers increased in most plots and doubled in the untreated plots by the second sample date.

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KEY WORDS: Sweet potato, insecticide, foliar, sweet potato flea beetle.

MATERIALS AND METHODS: Plots six rows wide by 50 ft long were established in a commercial sweet potato field farmed by Keith Pettit in Chickasaw Co., Miss. The statistical design was randomized complete block with three replications. Samples taken from the field near the test area on 8/9/04 ranged from 4 to 14 flea beetles per sample and samples made between the plots on 8/11/04 were similar. Plots were sprayed under completely calm conditions at 10 gal per ac with a high clearance spray tractor equipped with Green Leaf 8001 air injection nozzles. Compounds and rates are presented in Table 1. Imidan was buffered to a pH of 5.0 immediately prior to spraying according to manufacturer recommendations. Treatments were evaluated by sampling the two center rows of each plot for a total of 60 row-ft with a motorized vacuum sampler. Data were analyzed with Statistica software (Statsoft Inc., Tulsa, Okla.), using a general linear (mixed) procedure with replicates set as a random variable.

RESULTS AND DISCUSSION: All compounds reduced flea beetles well below that of the untreated check on the first sample date (Table 2) Flea beetle numbers increased in most plots and doubled in the untreated plots by the second sample date. Only Capture and Provado retained efficacy below that of the untreated check on eight days following treatment. This test was applied in a 12-row strip at the edge of the field. Flea beetle numbers were high in the main field area and probably caused migration of flea beetles into the test area. Note that Imidan was the only treatment buffered to a pH of 5.0 before application because it is subject to more rapid breakdown if applied at a higher pH.

Table 1. Treatments and rates.

Treatment	Lb ai per ac
Capture 2EC	0.05
Imidan 5EC	0.63
Imidan 5EC	0.93
Imidan 5EC	1.4
Phaser 3EC	0.5
Provado 6F	0.04
Untreated	

Table 2. Mean flea beetles per sample three and seven days after application.

Treatment	Rate (lb ai per ac)	Aug-14-04	Aug-18-04
Capture	0.05	0.47 b	0.51 b
Imidan	0.63	0.26 b	1.57 ab
Imidan	0.93	0.26 b	3.07 ab
Imidan	1.4	0.12 b	1.74 ab
Phaser	0.5	0.26 b	1.82 ab
Provado	0.04	0.91 b	0.91 b
Untreated		3.75 a	8.09 a
Treatment Prob(F)		0.0302	0.0866

Means within a column followed by the same letter do not differ significantly. Significance level of 0.05 using Student-Newman-Keuls.

Mean separation based on log (x) transformed data.