

## Evaluation of Imidan Formulations for Sweet Potato Insect Control

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**Methods:** Plots were planted to the sweet potato variety Beauregard, on a Commerce silt loam soil on 17 Jun. Plot size was four rows (40 inch centers) by 20 feet. Treatments were replicated four times in a randomized complete block design. Treatments were applied on 10 Aug in Test 1 and on 1, 10, and 17 Aug in Test 2 with a tractor mounted boom and CO<sub>2</sub> charged spray system calibrated to deliver 10 gpa through Teejet 80015 flat fan nozzles (2/row). Treatment efficacy was determined by sampling a center row of each plots with a 15 in sweep net (10 sweeps) on 12, 15, 19 and 22 Aug in Test 1 and on 3, 10, 12, 15, 19, and 22 Aug in Test 2. In each test, one center row of each plot was harvested on 19 Oct. The yield from each plot was partitioned into grades, # 1s, canners, and jumbos, and the weights for each grade were recorded. In each test, random selection of #1's from each plot was examined for damage from soil insects on 27 Oct.

**Comments:** In Test 1, there were no significant differences among treatments for numbers of spotted cucumber beetle or banded cucumber beetle. There were no significant differences among treatments for # 1's, canners, marketable yield, early season root damage, mid root season damage, late root season damage, or total root damage. All of the insecticide treated plots had significantly fewer loopers and armyworms compared to the non-treated plots.

In Test 2, there were no significant differences among treatments for numbers of loopers, spotted cucumber beetle, or banded cucumber beetle. There were no significant differences among treatments for # 1's, early season root damage, mid root season damage, or total root damage. Plots treated with Imidan 2.5EC (0.7 lb AI/acre), Imidan 70WP (1.4 lb AI/acre), and the non-treated plots had significantly fewer armyworms compared to plots treated with Imidan 2.5EC (0.94 lb AI/acre) or Imidan 70WP (0.7 lb AI/acre). Plots treated with Imidan 70WP (0.7 lb AI/acre) or Imidan 70WP (0.91 lb AI/acre) produced significantly more canners compared to plots treated with Imidan 2.5EC (0.94 lb AI/acre), Imidan 2.5EC (1.41 lb AI/acre), or Imidan 70WP (1.4 lb AI/acre). Plots treated with Imidan 70WP (0.7 lb AI/acre) produced significantly more marketable yield compared to plots treated with Imidan 2.5EC (0.94 lb AI/acre), Imidan 2.5EC (1.41 lb AI/acre), or Imidan 70WP (1.4 lb AI/acre). Plots treated with Imidan 70WP (1.4 lb AI/acre) had significantly more late season root damage compared to the other insecticide treated plots and the non-treated plots.

Table 1. Efficacy against loopers, armyworms, spotted cucumber beetle, and banded cucumber beetle (Test 1).

Treatment/form.	Rate/acre lb/AI	Means Across Sample Dates, No./10 Sweeps			
		Loopers	Armyworms	Spotted Cucumber Beetle	Banded Cucumber Beetle
Imidan 2.5EC	0.70	0.2b	4.0b	0.0	0.5
Imidan 2.5EC	0.94	0.1b	5.3b	0.1	0.5
Imidan 2.5EC	1.41	0.1b	5.1b	0.1	0.5
Imidan 70WP	0.70	0.0b	3.9b	0.0	0.3
Imidan 70WP	0.91	0.3b	2.6b	0.0	0.6
Imidan 70WP	1.40	0.2b	5.3b	0.0	0.5
Non-Treated	-	1.6a	9.6a	0.1	1.0
<i>P&gt;F</i>		<0.01	0.01	0.66	0.45

Means within columns followed by a common letter are not significantly different (FPLSD, P=0.05).

Table 2. Impact on sweet potato yield (Test 1).

Treatment/form.	Rate/acre		# 1's bu/acre	Canners bu/acre	Marketable Yield bu/acre
	lb/AI				
Imidan 2.5EC	0.70		216.7	172.5	388.8
Imidan 2.5EC	0.94		195.0	269.4	463.9
Imidan 2.5EC	1.41		190.9	231.9	422.4
Imidan 70WP	0.70		221.8	233.7	455.0
Imidan 70WP	0.91		158.2	238.4	396.2
Imidan 70WP	1.40		208.1	212.3	420.0
Non-Treated	-		155.2	177.8	332.7
<i>P&gt;F</i>			0.69	0.31	0.55

Means within columns followed by a common letter are not significantly different (FPLSD, P=0.05).

Table 3. Impact on root injury from soil insects (Test 1).

Treatment/form.	Rate/acre		Damage/10 Roots			Total
	lb/AI		Early Season	Mid Season	Late Season	
Imidan 2.5EC	0.70		31.5	51.8	3.3	86.5
Imidan 2.5EC	0.94		21.8	38.0	1.3	61.0
Imidan 2.5EC	1.41		25.8	27.0	1.5	54.3
Imidan 70WP	0.70		23.3	39.3	1.3	63.8
Imidan 70WP	0.91		22.8	53.8	3.0	79.5
Imidan 70WP	1.40		28.8	37.8	5.5	72.0
Non-Treated	-		25.8	44.5	0.8	71.0
<i>P&gt;F</i>			0.59	0.83	0.36	0.76

Means within columns followed by a common letter are not significantly different (FPLSD, P=0.05).

Table 4. Efficacy against loopers, armyworms, spotted cucumber beetle, and banded cucumber beetle (Test 2).

Treatment/form.	Rate/acre		Means Across Sample Dates, No./10 Sweeps			
	lb/AI		Loopers	Armyworms	Spotted Cucumber Beetle	Banded Cucumber Beetle
Imidan 2.5EC	0.70		0.7	7.1cd	0.0	0.3
Imidan 2.5EC	0.94		0.5	8.9ab	0.1	0.5
Imidan 2.5EC	1.41		0.4	8.6abc	0.0	0.3
Imidan 70WP	0.70		0.8	9.4a	0.0	0.2
Imidan 70WP	0.91		0.6	7.2bcd	0.1	0.2
Imidan 70WP	1.40		0.3	6.4d	0.0	0.2
Non-Treated	-		1.0	6.8d	0.1	0.4
<i>P&gt;F</i>			0.43	<0.01	0.12	0.62

Means within columns followed by a common letter are not significantly different (FPLSD, P=0.05).

Table 5. Impact on sweet potato yield (Test 2).

Treatment/form.	Rate/acre		# 1's bu/acre	Canners bu/acre	Marketable Yield bu/acre
	lb/AI				
Imidan 2.5EC	0.70		195.6	209.3ab	404.5ab
Imidan 2.5EC	0.94		154.0	176.0b	329.7bc
Imidan 2.5EC	1.41		161.8	160.6b	322.0bc
Imidan 70WP	0.70		187.9	250.3a	437.8a
Imidan 70WP	0.91		164.7	250.9a	415.2ab
Imidan 70WP	1.40		127.3	155.8b	282.7c
Non-Treated	-		209.9	202.8ab	412.2ab
<i>P&gt;F</i>			0.34	0.02	0.03

Means within columns followed by a common letter are not significantly different (FPLSD, P=0.05).

Table 6. Impact on root injury from soil insects (Test 2).

Treatment/form.	Rate/acre		Damage/10 Roots			Total
	lb/AI		Early Season	Mid Season	Late Season	
Imidan 2.5EC	0.70		18.3	48.8	6.0b	73.0
Imidan 2.5EC	0.94		26.0	26.3	1.5b	53.8
Imidan 2.5EC	1.41		28.0	39.8	2.3b	70.0
Imidan 70WP	0.70		25.8	35.5	4.0b	65.3
Imidan 70WP	0.91		21.3	43.8	2.3b	67.3
Imidan 70WP	1.40		23.5	45.5	13.0a	82.0
Non-Treated	-		16.3	39.0	2.0b	57.3
<i>P&gt;F</i>			0.57	0.59	<0.01	0.52

Means within columns followed by a common letter are not significantly different (FPLSD, P=0.05).