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PEPPER (Jalapeño): *Capsicum annuum* (L.) 'Grande'

**INSECTICIDAL CONTROL OF PEPPER WEEVIL AND INCIDENCE OF GREEN
PEACH APHID ON JALAPEÑO PEPPER, 2003**

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Pepper weevil: *Anthonomus eugeni* (Cano)

Green Peach aphid: *Myzus persicae* (Sultzer)

Pepper weevil is the major pest of all pepper varieties in the southern parts of the US, due in part

to the impossibility of controlling the cryptic immature stages. Here we looked at new products, application timing, and rotational protocols to increase options and improve efficiency of older products for controlling this pest. Greenhouse-raised pepper plants were transplanted on 26 Feb at 10 inch spacing in single rows on 2 sets of 3 beds 240 ft in length and covered with polyethylene film mulch. Water and fertilizer were provided through Netafim® drip tape with 12-inch emitter spacing. The center bed in each set of 3 was left untreated to serve as a source of weevils. Each treated bed was divided into plots 33 ft long to which treatments were assigned in an RCB design with 4 replications. Peppers infected with weevil larvae were placed under the plants in the innoculum row on 25 Mar to introduce the pest into the trial area. A survey on 14 April showed that 6 out of 50 peppers collected from the innoculum rows contained larvae. No adults were found and no infested peppers were found in the treated rows. Prokil Cryolite 96 was tested as a deterrent prior to the detection of weevils with 6 weekly applications at 4 lb beginning on 12 Mar or 4 weekly applications at 6 lbs were beginning on 19 Mar. A high clearance sprayer was used operating at 200 psi with the spray delivered through two vertical booms, each fitted with 2 ceramic yellow Albuz® hollow cone nozzles for a total of 44 gpa. The regimen was changed 22 Mar to an Actara /Vydate rotation on detection of weevils, at which time remaining 4 weekly treatments were also initiated. Pepper weevil damage was monitored by collecting fallen fruit from both sides of 21 centrally located plants per plot on 21 and 28 Apr and 5, 12, and 19 May. An infestation of green peach aphid, *Myzus persicae*, first observed on 21 Apr was rated on 20 leaves per plot on 5, 12 and 19 May using the following system: 1 = no aphids, 2= 1-2 aphids per leaf, no significant plant damage and 3 = 10+ aphids per leaf causing significant plant stress. Mature peppers were harvested from 21 plants per plot on 21 April and the percentage of infected fruit was estimated by dissecting 50 peppers per plot for weevils or damage. On 20 May

all fruit 2.5 inches or more in length was harvested and weighed from the same 21 plants per plot harvested earlier. Weight of marketable fruit was estimated by dissecting a random sample of up to 50 harvested fruit per plot to obtain a percentage infested with weevils and adjusting the total weight accordingly.

A significantly lower proportion of fruit from plants treated with Cryolite was found infested at the first harvest indicating that Cryolite provided early protection since this was the only material applied to that point. Also, fewest fallen peppers overall were observed under plants treated initially with Cryolite followed by the Actara/Vydate rotation, although not significantly fewer than those treated only with Actara/Vydate or Actara/Warrior during the follow-up period. The remaining two treatments were not significantly different from the untreated check in this regard.

Aphids were significantly more abundant on plants treated with DPX-E2Y45 than all other treatments including the untreated check. This was attributed to a paucity of ladybeetles observed on plants treated with DPX-E2Y45, although no counts were made. All treated plants produced more peppers, fewer infested peppers and more marketable pepper than untreated plants except those receiving DPX-E2Y45. Thus, the rotational treatments used protected the crop from losses due to pepper weevil infestation.

Table 1

Spray dates and product or lb ai per acre

Treatments	Products	12 Mar	10 Apr	22 Apr	29 Apr	6 May	13 May
		19 Mar	17 Apr				
			27 Mar				
			3 Apr				
Rotation -A	Prokil Cryolite 96	Cryolite	Cryolite	Actara	Vydate	Actara	Vydate
	Actara 25 WG	4 lbs	4 lbs	4 oz	3 pts	4 oz	3 pts
	Vydate L						
Rotation - B	Prokil Cryolite 96		Cryolite	Actara	Vydate	Actara	Vydate
	Actara 25WG		6 lbs	4 oz	3 pts	4 oz	3 pts
	Vydate L						

Rotation - C	Actara 25 WG	Actara	Vydate	Actara	Vydate
	Vydate L	4 oz	3 pts	4 oz	3 pts
Rotation - D	Actara 25 WG	Actara	Warrior	Actara	Warrior
	Warrior Z 1CS	4 oz	0.03 lb ai	4 oz	0.03 lb ai
Rotation - E	Provado 1.6F	Provado	Provado	Provado	Vydate
	Vydate L	6 oz	6 oz	6 oz	3 pts
Treatment - F	DPX-E2Y45	DPX-	DPX-	DPX-	DPX-
	35 WG	E2Y45	E2Y45	E2Y45	E2Y45
		0.067 lb ai	0.067 lb ai	0.067 lb ai	0.067 lb ai
Check	Untreated				

Table 2

Treatments	First Harvest	Fallen Fruit (No.)	Aphid (rating)	Second harvest 20 May		
	Infested (%)	Mean 5 dates	Mean 3 dates	Total weight (lbs) ¹	Infested (%)	Market weight (lbs) ²
Cryolite(4)	2.3a	8.7c	1.0b	49.1a	1.0c	48.6a
Cryolite (6)	0.3a	7.6c	1.0b	44.4ab	2.5c	43.2a
Actara/Vydate		15.9bc	1.0b	51.2a	5.5bc	48.6a
Actara/Warrior		16.9bc	1.0b	47.9ab	9.0bc	43.5a
Provado/Vydate		43.1ab	1.0b	41.9abc	6.5bc	39.0a
DPX-E2Y45		46.7a	2.7a	33.0c	14.5ab	28.2b
Untreated	13.3b	66.5a	1.0b	37.2bc	22.5a	28.6b

Means in columns followed by the same letter are not significantly different (LSD, P<0.05)

¹Weight check of 100 pepper per plot no significant difference in weights

²Totals minus infected fruit for both harvest combined

³Mean per plot from 21 plants

Part II: Materials Tested for Arthropod Management

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Common name	Trade name/ Cultivar	Concentration/ Formulation	Chemical name/resistance	Manufacture/source
imidacloprid	Provado	1.6F	1-((6-Chloro-3pyridinyl)methyl)-N-nitro-2-imidazolidinimine	Bayer CropScience LP P.O. Box 12014 1 T.W. Alexander Drive Research Triangle Park, North Carolina 27709
lambda-cyhalothrin	Warrior Z	1CS	(1 α (5*),3 α (Z)-(±)-cyano-(3-phenoxyphenyl)methyl-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate	Syngenta Crop Protection P.O. Box 18300 Greensboro, NC 27419
oxamyl	Vydate L	2.0L	(Methyl N'N'-dimethyl-N-((methylcarbamoyloxy)-1-thiooxamimidate)	DuPont Company Stine-Haskell Research Center

				Dupont Crop Protection Newark, DE 19711
sodium aluminofluride	Prokil Cryolite 96	96W	sodium fluoaluminate	Gowan Company P.O. Box 5569 Yuma, AZ 85366
thiamethoxam	Actara	25WG	4H-1,3,5-Oxadiazin-4-imine,3-((2-chloro-5-thiazolyl)methyl)tetrahydro-5-methyl-N-nitro-	Syngenta Crop Protection P.O. Box 18300 Greensboro, NC 27419
unknown	DPX-E2Y45	35WG	unknown	DuPont Company Stine-Haskell Research Center Dupont Crop Protection Newark, DE 19711

