

(E56)

PEPPER (BELL): *Capsicum annuum* L., 'Boyington Bell'

Southern armyworm *Spodoptera eridania* (Cramer)

Beet armyworm *Spodoptera exigua* (Hübner)

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EFFICACY OF DIFFERENT COMBINATIONS OF BIORATIONAL INSECTICIDES ON SOUTHERN ARMYWORM AND BEET ARMYWORM ON BELL PEPPER, 1998:

This study tested the feasibility of using a botanical insecticide, a botanical IGR, alone and in combination with other biological insecticides. Greenhouse-raised 'Boyington Bell' pepper plants were transplanted on 16 Sep at 10-inch spacing in single rows on four drip-irrigated beds, 32 inches wide and 240 ft long on 6-ft centers. Beds had been fertilized by incorporating 800 lb/acre of 5-16-8 dry fertilizer and fertigated with an additional 175 N and K /acre through Netafim™ drip tape with 12-inch emitter spacing. Beds were fumigated when formed with a 67/33% mixture of methyl bromide/chloropicrin at a rate of 300 lbs/acre, and covered with white polyethylene film. Each pair of beds was separated by an additional bed of bell pepper planted on 16 Sep and left untreated to serve as a source of inoculum. Each bed was divided into plots 48 ft long to which 5 treatments were assigned in a RCB with four replications. Treatments were applied four times on 16, 20 Oct and 2, 17 Nov using a high clearance sprayer with two vertical and one horizontal boom, each fitted with one ceramic "yellow" Albuz™ hollow cone nozzle for a rate of 32 GPA at 200 psi. Kelthane MF was applied 23, 26 Oct and 23, 26 Nov at 1 pt per acre for the control of broad mites. An average 0.53 armyworm larva/plant (92% beet armyworm) were observed in a pre-treatment count of 25 plants/replication on 15 Oct. Five weekly evaluations were made beginning 19 Oct on 10 plants/plot. Total numbers of beet armyworms and southern armyworms per plant were recorded by size of larvae. An evaluation of plant damage was also made on the same plants, using a 0-5 scale: 0 = no damage, 1 = 1-2% damage, 2 = 2-5% damage, 3 = 6-10% damage, 4 = 11-30% damage, and 5 = > 30% plant damaged. Fruit from 30 feet of row (38 plants) was harvested, counted and weighed on 7 Dec and 21 Dec.

No beet armyworms were observed after the first post-treatment evaluation and southern armyworm counts were low throughout the trial (maximum weekly counts of 0.3 and 0.08 on control and treated plots respectively). Fewer small larvae were found on all treated plants compared with the untreated check except for those sprayed with Javelin only. Fewer medium and large larvae were found on all treated plants and the check compared with those sprayed with a half rate of Javelin plus Neemix or the half rate Javelin and Neemix rotation. There were no significant treatment effects in number or weight of marketable fruit but there were fewer fruit harvested from untreated plants than sprayed plants.

TABLE 1.

| Treatment/ formulation | Rate amt/acre | No. Larvae/plant | | | Damage rating |
|---|------------------|------------------|------------------|-----------------------|---------------|
| | | Small | Medium and large | All larvae (total) | |
| Javelin WG | 1.0 lb | 0.05ab | 0.00b | 0.05a | 0.66a |
| Javelin WG + Neemix 4.5 % | 0.5 lb 3.5 oz | 0.03b | 0.02ab | 0.05a | 0.56a |
| Javelin WG rotated with Neemix 4.5 EC | 0.5 lb 3.5 oz | 0.04b | 0.04a | 0.05a | 0.66a |
| Spod-X LC + Neemix 4.5 % | 2.0 oz 3.5 oz | 0.03b | 0.00b | 0.03a | 0.58a |
| Untreated check | | 0.09a | 0.00b | 0.09a | 0.65a |

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

TABLE 2.

| Treatment/ formulations | Rate amt /acre | No. and wt. pepper/38 plants ^a | | | |
|--|------------------|---|---------|--------------|---------|
| | | Marketable | | Unmarketable | |
| | | Number | Wt (lb) | Number | Wt (lb) |
| Javelin WG | 1.0 lb | 106.1a | 39.6a | 0.1b | 0.1b |
| Javelin WG + Neemix 4.5 % | 0.5 lb 3.5 oz | 103.0a | 38.1a | 0.4b | 0.2b |
| Javelin WG rotated with Neemix 4.5 % | 0.5 lb 3.5 oz | 110.5a | 41.3a | 0.1b | 0.1b |
| Spod-X LC + Neemix 4.5 % | 2.0 oz 3.5 oz | 109.5a | 40.6a | 0.5b | 0.2b |
| Untreated check | | 108.9a | 40.7a | 1.9a | 0.7a |

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

^a38 Plants per plot; 2 harvests