

DPX-MP062 (DuPont) Insecticide Efficacy in Broccoli Study

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Abstract

*DPX-MP062 (Dupont) insecticide was applied two times in broccoli for cabbage looper (*Trichoplusia ni*, CL) control and demonstrated efficacy comparable or superior to methomyl (Lannate®) or esfenvalerate (Asana®). DPX-MP062 0.025 to 0.065 lb AI/A alone or in combination with Lannate significantly reduced the number of medium to large sized CL larvae relative to the untreated broccoli following each application.*

Introduction

DPX-MP062 (Dupont) insecticide is a newly introduced compound that may have potential to be integrated as a tool for lepidopterous insect pest management in vegetable crop production systems. It has been only investigated on a very limited basis in desert southwest vegetable production systems of lettuce, cole crops, or other leafy vegetables. The introduction of DPX-MP062 insecticide offers another product that will benefit vegetable growers by providing additional alternatives for pest management schemes. This field test was conducted to evaluate and determine efficacy of DPX-MP062 insecticide against cabbage looper in broccoli during the fall season in the desert.

Materials and Methods

A small plot field test was conducted at the University of Arizona Maricopa Agricultural Center, Maricopa, AZ. Broccoli cv. Captain was direct-seeded into double rows on 40-inch beds on 12 Sep 1996 and furrow irrigated. Each treatment plot consisted of two beds measuring 40 feet long with two beds planted between each plot to provide a buffer. The test was established as a randomized complete block design with four replicates. All foliar applications were applied using a hand-held boom with four TX-10 hollow-cone nozzle tips spaced 20-inches apart and delivered in 21 gpa water pressurized with a CO₂ backpack sprayer at 45 psi. An adjuvant, Latron CS-7 at 0.25% v/v was added to all treatments. Initial treatments were applied on 23 Oct when broccoli was at the 5- to 6-leaf stage and precounts of CL in the untreated check averaged 0.7 small larvae/plant and 0.2 medium- to large-sized larvae/plant. The temperature was 78°F, skies were clear, and there was no wind. The second applications were made on 05 Nov when broccoli was at the 8- to 10-leaf stage and temperatures were 70°F, with clear skies, and a slight breeze. Evaluations were made at about weekly intervals following each application by randomly selecting ten cabbage plants per replicate and counting all living small (1st and 2nd instars), medium (3rd instar), and large (>4th instar) larvae of CL.

Results and Discussion

At each rating date following applications of DPX-MP062, the total number of small and medium to large sized CL larvae observed in the untreated broccoli was greater than 1.0 larvae/plant except the final rating date at 27 days after treatment (DAT) of the second application (Table). At 7 DAT of the first application, no larger-sized CL larvae were observed for DPX-MP062 treatments alone at 0.045 and 0.065 lb AI/A or when combined with Lannate. DPX-MP062 at 0.025 lb AI/A alone was comparable to Lannate and Asana in reducing larger sized CL. At 12 to 20 DAT of each of the applications of DPX-MP062, no larger sized CL larvae were observed. Small larvae were detected in the treated broccoli but significantly fewer were observed compared to the untreated. Almost no small sized larvae were observed at 14, 20, or 27 DAT of the second application of DPX-MP062 when CL populations began to decline. The combination of DPX-MP062 plus Lannate at the rates tested did not appear to enhance CL control compared to either applied alone. Separation of DPX-MP062 at 0.045 and 0.065 lb AI/A did not occur in this test.

Table 1. Dupont DPX-MP062 insecticide efficacy in broccoli study at MAC. (Umeda, Stewart, and Murrieta)

| Treatment | Rate (lb AI/A) | 23 Oct | | 30 Oct | | 4 Nov | | 12 Nov | | 19 Nov | | 26 Nov | | 3 Dec | |
|---------------------|-------------------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | egg | sm med | sm med/lg | sm med/lg | sm med/lg | sm med/lg | sm med/lg | sm med/lg | sm med/lg | sm med/lg | sm med/lg | sm med/lg | sm med/lg | sm med/lg |
| Untreated check | | 1.4 | 0.7 | 0.2 | 0.7 | 0.3 | 1.6 | 0.1 | 0.6 | 0.8 | 0.4 | 0.9 | 0.1 | 1.1 | 0.7 |
| DPX-MP062 | 0.025 | | | | 0.3 | 0.1 | 1.1 | 0.0 | 0.3 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 |
| DPX-MP062 | 0.045 | | | | 0.4 | 0.0 | 0.7 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| DPX-MP062 | 0.065 | | | | 0.5 | 0.0 | 0.6 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| DPX-MP062 + Lannate | 0.025+0.45 | | | | 0.2 | 0.0 | 0.7 | 0.1 | 0.3 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 |
| Lannate | 0.9 | | | | 0.2 | 0.1 | 1.0 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 |
| Asana | 0.05 | | | | 0.5 | 0.1 | 0.4 | 0.1 | 0.1 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.1 |
| LSD (p=0.05) | | | | | 0.4 | 0.1 | 0.5 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.1 | 0.4 | 0.1 |

Treatments applied on 23 Oct and 5 Nov 1996.