EFFECTIVE USE OF CYLINDERIZED ULV INSECTICIDES

Ed Hosoda
Cardinal Professional Products

Since the Global Food Safety Initiative (GFSI), and the recent Food Safety Modernization Act (FSMA), many food processing facilities have changed their pest management perspective to be proactive versus reactive, causing managers to review their pest management practices to focus more on sanitation, insect population monitoring and low-impact pesticide applications versus scheduling facility fumigations as they have in the past. ULV treatments, insect growth regulators, mating disruption pheromones (CIDETRAK®), and targeted residual insecticide or spot fumigant applications are now the primary focus for many food facility managers.

DDVP has emerged as a primary tool for food facilities to consider using due to its cost-effectiveness, especially when used in the cylinderized form. Cardinal Professional Products received EPA approval for VAP-X™ in 2013, which utilizes an 8% dichlorvos formulation which is pressurized with liquid carbon dioxide. The vaporization of carbon dioxide carries dichlorvos throughout the treatment area within seconds resulting in 100% control of Tribolium confusum adult bioassays placed prior to release of VAP-X™. Extensive field testing has shown that a dose of 0.5 grams/1,000 ft^3 (25% of the label maximum dose) is adequate for 100% control of all bioassays in all of the trials recently performed. See Table 1 for results.

Cardinal Professional Products recently received approval for Pyre-X™ Insecticide at EPA in 2015, which incorporates a 1% pyrethrin, 5% piperonyl butoxide formulation pressurized with liquid carbon dioxide. After performing many field trials with Pyre-X™ either alone or in combination with methoprene (Diacon IGR®) at the labeled rate of 0.3 ml/1,000 ft^3, we have received excellent control of Plodia interpunctella adults and larvae, and excellent to fair control of Tribolium confusum adults and larvae depending upon Pyre-X™ dose. Refer to Table 2 and 3 for trial results.

In future trials, we will be testing the effectiveness of the combination of VAP-X™ and Diacon IGR in hopes of methoprene adding residual control of the pre-adult stages of stored product insects that are exposed to the combination treatment.

Having various effective pest management tools gives facility managers more options where fumigation was once the resolution. Combinations of increased

sanitation, ULV treatments, intense pheromone monitoring and targeted insecticide and spot fumigant treatments are increasing trends in the industry and help the food professional to be in compliance with the new food safety laws.

Table 1

Trial	Dose	Control Tribolium Adults	Control Tribolium Larvae
VAP-X™	0.25 oz/1,000 ft^3	100%	Not Tested
VAP-X™	0.50 oz/1,000 ft^3	100%	Not Tested
VAP-X™	1.0 oz/1,000 ft^3	100%	100%

Table 2

Trial	Dose	Control Tribolium* Adults	Control Tribolium* Larvae
Pyre-X™ Alone	0.25 oz/1,000 ft^3	50%	0%
Pyre-X™ Alone	0.5 oz/1,000 ft^3	60%	0%
Pyre-X™ Alone	1.0 oz/1,000 ft^3	100%	0%
Pyre-X™ + Diacon IGR	0.5 oz/1,000 ft^3 0.3 ml/1,000 ft^3	70%	100%

Table 3

Trial	Dose	Control Plodia** Adults	Control Plodia** Larvae
Pyre-X™ Alone	0.25 oz/Mft^3	100%	0%
Pyre-X™ Alone	0.5 oz/Mft^3	100%	0%
Pyre-X™ Alone	1.0 oz/Mft^3	100%	0%
Pyre-X™ + Diacon IGR	0.5 oz/Mft^3 0.3 ml/Mft^3	100%	100%

*Tribolium confusum (Confused flour beetle)
**Plodia interpunctella (Indian mealmoth)