

TOXICITY OF SULFOXIMINE ON SOME APHIDS

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Abstract

Sulfoximine is a neurotoxin which categorized under neonicotinoids. It proved its highly and fastly lethal effects against some aphids such as *Macrosiphum euphorbiae*, *Macrosiphum rosae*, *Myzus persicae*, *Myzus ascalionicus*, *Rhopalosiphum maidis*, *Chaetosiphon fragaefoli*, *Aphis gossypii* and *Hyalopterus pruni*. Laboratory evaluations showed that sulfoximine LC50's ranged between 22.62 ppm to 49.13 ppm against *M. euphorbiae* and *A. gossypii*, respectively. In the same trend, field evaluations showed that the highest general effect was against *M. euphorbiae* (96.43%) and the lowest was against *A. gossypii* (92.14%). Sulfoximine evaluation results were discussed depending on the mode of action and its total safety to mammals.

Key Words: Sulfoximine, *Macrosiphum euphorbiae*, *Macrosiphum rosae*, *Myzus persicae*, *Myzus ascalionicus*, *Rhopalosiphum maidis*, *Chaetosiphon fragaefoli*, *Aphis gossypii* and *Hyalopterus pruni*

INTRODUCTION

Neonicotinoid insecticides were used rapidly worldwide for controlling insects because of their high potency, low mammalian toxicity, broad insecticidal spectra, and good systemic properties. Neonicotinoids interacting with nicotinic acetylcholine receptors (nAChR), have a higher affinity for the insect receptor than for the mammalian (Nishimura *et al.* 1994, Mori *et al.* 2002), and are relatively safe toward mammals and aquatic life. The development of resistance to insecticide in insect populations is a well recognized phenomenon and there are well documented cases of resistance for the major classes of insecticides.

Although the neonicotinoids have proved relatively resilient to the development of resistance. Therefore, new insecticides that lack cross-resistance to currently available insecticides are imminently required. In recent years, *N*-substituted (pyridyl) alkyl sulfoximine derivatives (Wakita *et al.* 2000, Bai *et al.* 1991), were described by Dow AgroSciences (Loso *et al.* 2007, Loso *et al.* 2008, Zhu *et al.* 2008), beside synthesized sulfoximines (Yu *et al.* 2008). It has been reported that these compounds lack of cross-resistance on insect pests that have developed resistance to one or more classes of insecticides including imidacloprid and other neonicotinoids. Sulfoximines