



Research Article

Efficacy of thiamethoxam 30 FS against maize stem borers

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ABSTRACT

A field experiment was conducted at Maize Research Centre, ARI, Rajendranagar, Hyderabad during *Kharif* 2009 and *Rabi* 2009-10 to evaluate the different doses of Thiamethoxam 30FS as seed treatment chemical for controlling maize stem borers, *Chilo partellus* Swinhoe and *Sesamia inferens* Walker. Among the doses tested, higher dose of thiamethoxam 30FS (8ml/kg) proved superior resulting in 0.38 per cent dead hearts during *Kharif* and 6.43 per cent dead hearts during *Rabi* compared to 0.79 per cent and 14.76 per cent in untreated check. Thiamethoxam 30FS @ 8ml/kg resulted in higher grain yield of 5.4t/ha during *Rabi*. Phytotoxic effects like necrosis, vein clearing, epinasty etc. were not observed even at the highest dose of 16 ml/kg.

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INTRODUCTION

In India, maize ranks fifth in total area, fourth in production and third in productivity. Around 250 species of insect and mite species attack maize in field and storage conditions (Mathur, 1991). Among them, spotted stem borer, *Chilo partellus* (Swinhoe) is the most serious one during *Kharif* season causing 26.7-80.4 per cent yield losses in different agroclimatic regions of India (Panwar, 2005). Annual loss of 11.05 crores in *Rabi* is due to *Sesamia inferens* Walker (Siddiqui and Marwaha, 1993). Effectiveness of Endosulfan 35 EC spray and whorl application of Carbofuran 3G for controlling stem borers was reported by Sajjan (1983). However, no information on new molecules is available. One of the new molecules, Thiamethoxam is a neonicotinoid, systemic in action, mimic of acetylcholine, binding to Ach receptor site and damaging the insects nervous system resulting in death of the insect. Application of insecticide is independent of weather and amount of active ingredient used per unit area is less in case of seed treatment. Since stem borers attack maize in early whorl stage seed treatment would be effective upto initial 30 days age of the crop. Therefore, the present investigation was carried out during 2009 at Maize Research Centre, Hyderabad to evaluate the bio-efficacy of Thiamethoxam 30 FS as seed treatment against stem borers and its phytotoxic effect on maize plant.

MATERIALS AND METHODS

Field experiments were conducted at Maize Research Centre, ARI, Rajendranagar, Hyderabad for two seasons during *Kharif* 2009 and *Rabi* 2009-2010 in a randomized block design to assess the bio-efficacy of Thiamethoxam 30 FS on maize stem borers. Chemical was supplied by M/s Syngenta India Limited, Mumbai-20 under the trade name of Cruiser 30 FS. The experiment comprised of 7 treatments and 3 replications. DHM-117 seeds treated with five doses of Thiamethoxam 30 FS @ 3 ml/kg, 5 ml/kg, 7 ml/kg, 8 ml/kg and 16 ml/kg, Imidacloprid 600 FS @ 5 ml/kg and one untreated check were sown on 8.7.2009 during *Kharif* and on 26.11.2009 during *Rabi*. Each plot of size 24 sqm comprised of 7 rows of 4 m length. The seed treatment with 16.0 ml/kg was considered only for phytotoxicity but not for bio-efficacy study.

Infestation of stem borer was recorded from 10 randomly selected plants in each plot. Phytotoxicity symptoms like leaf injury, wilting, vein clearing, necrosis, epinasty and hyponasty on maize plants were observed on one, three, five, seven and ten days after germination. Maize grain yield was recorded at the time of harvest and expressed as tons per ha at 15 per cent moisture. Data were subjected to two way analysis after arc sin transformation for per cent values as suggested by (Gomez and Gomez, 1976).

RESULTS AND DISCUSSION

The results obtained from the present investigation have