SHORT COMMUNICATION

EVALUATE THE EFFICACY OF SOME NOVEL CHEMICAL INSECTICIDES ON NATURAL ENEMIES IN MAIZE

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Abstract: For present studies entitled "To evaluate the effect of novel insecticides on natural enemies in Maize", were conducted in randomized block design with three replications of seven treatments for years *i.e.* "*kharif*, 2011 at crop research centre, chirori, Sardar Vallabhbhai Patel University of Agriculture & Technology, Meerut (U.P.) 250110. The coccinellids population decreased markedly due to application of different insecticides. The effect of different treatments on coccinellids population was recorded at 15, 30, and 45 days after sowing the maize crop. The minimum population of coccinellids (2.4, 3.13 and 3.87) was recorded in chlorantraniliprole 18.5 sc@4ml/kg seed or 350ml/ha. The highest population (14.68, 10.81 and 11.67) was recorded in untreated control.

Keywords: Population, Chemical insecticides, Maize

INTRODUCTION

Maize (*Zea mays)* is a plant belonging to the family of *gramineae*. It is cultivated globally being one of the most important cereal crops worldwide. Maize grain contains about 10 percent protein, 4 percent oil, 70 percent carbohydrate, 2-3 percent crude fiber, 10.4 percent albuminoids, 1.4 percent ash. Maize protein 'zein' is deficient in trypotophaneand lysine, the two essential amino acids. Maize grain has significant quantities of vitamin A, nicotinic acid, riboflavin and vitamin E. Maize is low in calcium, fairly high in phosphorus. Globally, maize is known as queen of cereals because it has the highest genetic yield potential among the cereals**.**

Maize is the third most important food grain in India after wheat and rice. In India, about 28% of maize produced is used for food purpose, about 11% as livestock feed, 48% as poultry feed, 12% in wet industry (for example starch and oil production) and 1% as seed (AICRP on Maize, 2007).

Insect-pests are the major factors responsible for low productivity of maize in India. The high yield in maize could not be released due to large number of insect pest attacking maize right sowing till harvest. Maize is attacked over 130 species of insect and pest of these four tissue borers viz. Maize stem borer, *Chilo partellus* (Swinhoe), Pink stem borer (*Sesamia inferens)*, Shoot fly (*Antherigona soccata*) and Asiatic Corn borer (*ostrinia furnacalis Guenes)* are regular and Serious pest for maize (Panwar (1995).

Potential losses due to insect pest on global basisis estimated to be in the order of 14-18%**.** Maize stem borer, *Chilo partellus* (Swinhoe) is a serious pest of maize (*Zea mays* L.) in India and distributed throughout the country.

Maize and its pest complex form maize ecosystem which also include natural enemies living on this pest. The predatory pest like spider and coccinellids feed on the larvae of stem borer of maize. The population of both, pest and natural enemies is influenced by the various a biotic factors like temperature, relative humidity, rain fall and sunshine etc. These natural enemies and abiotic factor are of major importance to affect the population of this pest.

METHOD AND MATERIAL

The present study was carried out at crop research centre of Sardar Vallabhbhai Patel University of Agriculture & Technology, Meerut (U.P.). Trails were conducted in randomized block design with three replications of seven treatments during *Kharif*, 2011. The maize variety 'DeKalb 900 M Gold' was sown with row to row distance of 60 cm and plant to plant distance was 15 cm and plots size 5 x 3 mt^2. The find experiment was conducted to study the relative efficacy of different chemical insecticide against natural enemies. The two application methods i.e. seed treatment and sprays were adopted to check out the efficacy of different chemical insecticide against *Chilopartellus* (Swinhoe). under different treatments, six chemical insecticides used for seed treatment*viz.,*Thiamethoxam 25 FS@4g/kg, chlorantraniliprole18.5 SC@4ml/kg seed, chloropyrephos 20 EC@4ml/kg seed, Fipronil 5 SC@4ml/kg seed, Imidacloprid 70 FS@ 4g/kg seed andThiodicarb 75 WP@4g/kg seed, and also these six chemical insecticide used is spray with respective dose*viz.,* Thiamethoxam 25WG@ 250g/ha, chlorantraniliprole18.5 SC@350ml/ha, chloropyrephos 20 EC@1lit/hect, Fipronil 5 SC@625ml/ha, Imidacloprid 70 WG@75grm/ha and Thiodicarb 75 WP@625grm/ha. Single foliar applications of all the treatments were made with the help of a knap-sack sprayer, after 20 days of sowing.

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Population of lady bird beetles were recorded per plant at 15, 30 and 45 DAS on 5 randomly selected plants per plot.

RESULT AND DISCUSSION

Effect of different treatments on coccinellids population

The data on coccinellids were taken at 15, 30 and 45 DAS and are presented in table.

Coccinellids Population at 15 DAS

The results presented in table 4.5 and shown in fig showed that coccinellids population ranged 2.4 to 14.68. The lowest population of coccinellids was recorded in treatment with chlorantrainliprolae18.5Sc @4ml/kg seed or 350ml/ha and was followed by Fipronil 5Sc @4ml/kg seed or 625 ml/ha, imidachloprid 70 Fs or 70 wg@ 4g/kg seed or 75g/ha, Thiamethoxam25 Fs or 25 WG@ 4g/kg seed or 250 g/ha, Thiodicarb 70 wp@ 4g/kg seed or 625g/ha and cloropyrephos20EC@ 4ml/kg seed or 1 lit/ha in which the population of coccinelids found was 2.4, 3.67, 5.07, 5.73, 6.67 and 7.73 respectively. The highest population 14.67 was recorded in untreated control.

Coccinellids population at 30 DAS

The results presented in table 4.5 and shown in fig. showed that coccinellids population ranged from 3.13 to 10.81. The lowest population of coccinellids(3.13) was recorded in Chlorantraniliprole 18.5 Sc@ 4ml/kg seed or 350ml/ha followed by Fipronill 5SC@4ml/kg seed or 625 ml/ha, Thiodicarb 70WG@ 4g/kg seed or 625g/ha, Imidachloprid70Fs or 70Wg@ 4g/kg seed or 75g/ha, Thiomethoxim 25 FS or 25WG@4g/kg seed or 250g/ha, and chloropyrephos 20 Ec@4ml/kg seed or 1 lit/ha with population of 3.27, 4.53, 4.80, 5.13 and 5.87 respectively. The highest population (10.81) was recorded in untreated control.

Coccinellids Population at 45 DAS

The data recorded on coccinellids population at 45 DAS ranged from 3.87 to 11.67. The highest population (11.67) was recorded in untreated control. The lowest population of coccinellids(3.87) was recorded in chlorantrainlipralae18.5 Sc@ 4ml/kg seed or 350ml/ha followed by Fipronil 5Sc@ 4ml/kg seed or 625 ml/ha, thiodicarb70wp@ 4g/kg seed or 75g/ha, Thiamethoxam25FS or 25wg@ 4g/kg seed or 250g/ha, chloropyrephos 20Ec@ 4ml/kg seed or 1lit/ha, imidachloprid 70Fs or 70wg@ 4g/kg seed or 75g/ha with population 4,4.6, 6.07, 6.33 and 6.40 respectively.

CONCLUSION

The effect of different treatments on coccinellids population was recorded at 15, 30,and 45 days after sowing the maize crop. The minimum population of coccinellids (2.4, 3.13 and 3.87) was recorded in chlorantraniliprole 18.5 sc@4ml/kg seed or 350ml/ha. The highest population (14.68, 10.81 and 11.67) was recorded in untreated control.

Table. Effect of different treatment on coccinellids population in maize during Kharif 2011.

Treatment No.	Name of treatment	Dose	Population of coccinellids /5 plant		
			15 DAS	30 DAS	45 DAS
T_1	Thiamethoxam 25 FS	4g/kg seed	5.73	5.13	6.07
T_2	Chlorantraniliprole 18.5 SC	4ml/kg seed	2.4	3.13	3.87
T_3	Chlorpyriphos 20 EC	4ml/kg seed	7.73	5.87	6.33
T_4	Fipronil 5 SC	4ml/kg seed	3.67	3.27	4
T_5	Imidacloprid 75 FS	4g/kg seed	5.07	4.80	6.40
T_6	Thiodicarb75 WP	4g/kg seed	6.67	4.53	4.6
T_7	Control	-	14.68	10.81	11.67
SEM ± **CD at 5%**			**0.53** **1.65**	**0.419** **1.306**	**0.44** **1.39**

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