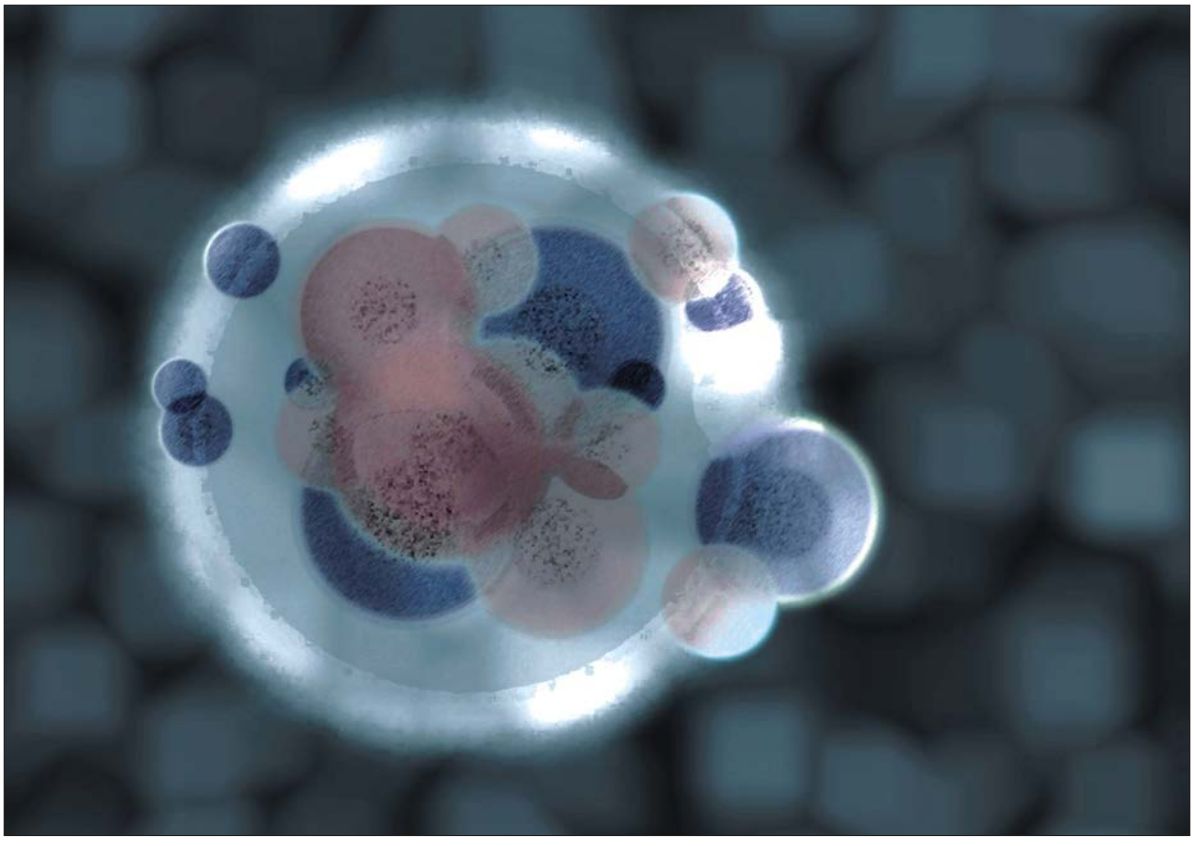

Journal of Biological Sciences

ISSN 1727-3048

science alert

ANSInet
an open access publisher
http://ansinet.com

OnLine Journal of Biological Sciences 1 (1): 38-39, 2001

New Synthetic and Bio-insecticides Against Maize Stem Borer, *Chilo partellus* (Swinhoe) on Golden Maize

Muhammad Amjad, Muhammad Afzal and Khalid Mehmood
Department of Agri-Entomology, University of Agriculture, Faisalabad, Pakistan

Abstract: Experiment was laid out for evaluating some new synthetic and bio-insecticides viz., Imicon 25WP + Neem seed kernel extract (imidacloprid + *Azadirachta indica* A. Juss.), Agree 50WP (*Bacillus thuringiensis*), Pride 25WP (buprofezin), Taofos 25EC (quinalphos), and Digital 20EC (fenpropathrin) against maize borer *Chilo partellus* Swinhoe. All the test insecticides were found to have significant effect on borer infestation, but lower per cent infestation (15.55%) of maize borer with Taofos 25EC (quinalphos) at 1000 ml/ac would suggest this insecticide to be more toxic to the pest compared with the others.

Key words: Efficiency, C*hilo partellus*, maize, imidacloprid, *Azadirachta indica*, *Bacillus thuringiensis*, buprofezin, quinalphos, fenpropathrin

Introduction

Maize, *Zea mays* L. is the third major crop in the world and is used as a staple food. It has both domestic and industrial usage. It is the most important ingredient of cattle fodder and poultry feed (Chaudhary, 1983). Several pests attack the crop among which maize stem borer, *Chilo partellus* (Swinhoe) (Singh *et al*., 1993) is the most destructive one. Almost 75% damage of the crop occurs due to attack of maize stem borer (Latif *et al*., 1960). So, keeping in view the importance of crop and pest problem, the present project is designed to study the efficiency of some new synthetic insecticides (imidacloprid, buprofezin, fenpropathrin, quinalphos) and bio-insecticides (Neem Seed Kernel Extract and *Bacillus thuringiensis*) against maize stem borer, *Chilo partellus* Swinhoe.

Materials and Methods

The insecticides used in the experiment and their respective doses are mentioned in Table 1. The experiment was conducted at Entomological Research Area, University of Agriculture, Faisalabad. Six treatments including a control were used in Randomized Complete Block Design. The percentage infestations of maize borer were recorded using different visible symptoms of whorl damage (Van den Berg *et al.,* 1997) and dead hearts (Ajala and Saxena, 1994) selecting 15 plants randomly from each treatment. The data was recorded 24 hours before 1st treatment, then 7 and 14 days after each
treatment. At the end of season, the data, however, were presented in the form of mean values and analyzed statistically by applying Analysis of Variance (ANOVA) technique and Duncan's Multiple Range Test (DMRT) after Steel and Torrie (1980). The comparative efficacy of the test insecticides was considered to be an indirect reflection of the percent infestation of maize borer *Chilo partellus* Swinhoe.

Results and Discussion

The data on the comparison of the mean percent infestation for maize borer *Chilo partellus* Swinhoe in different treatments are presented in Table 2.

Per cent infestation for the maize borer *Chilo partellus* Swinhoe in different treatments revealed that all of the test insecticides were found to be statistically equi-effective with minor differences on the basis of over all as well as individual sprays but all these treatments differed statistically from check. On numerical basis, however, lower per cent infestation (15.55%) for maize borer in T_4 Taofos 25EC (quinalphos) at 1000 ml/ac would suggest this insecticide to be more toxic to the pest compared with the others.

The present findings are not comparable with some of the previous workers, Singh *et al.* (1985) who suggested that carbaryl was the most effective ovicide, Singh *et al.* (1986) referred endosulfan as the most effective and Singh and Marwaha (1996) found that cypermethrin was the most effective against *Chilo partellus* Swinhoe. These findings are in also not agreement with that of Mustea (1981) who tested 11 different compounds and found that Ekalux (quinalphos) was the most effective one and Katti and Verma (1988) who declared that Quinalphos 5G and Endosulfan 4G gave good results only in granule form. The above findings showed that

Table 1: Details of Treatments and Spray Material Used

Treat.	Trade Name	Common Name	Dose (recommended)
T_1	Imicon 25WP + Neem Seed Kernal Extract	(Imidacloprid + *Azdirachta Indica* A. Juss)	at 500 gm/ac + 600 ml/ac
T_2	Agree 50 WP	*(Bacillus th-uringiensis)*	at 500 gm/ac
T_3	Pride 25 WP	(buprofezin)	at 600 ml/ac
T_4	Taofos 25 EC	(quinalphos)	at 1000 ml/ac
T_5	Digital 25 EC	(fenpropathrin)	at 300 ml/ac
T_6	Control		

Table 2: Comparison of the mean percent infestation for maize borer in different treatments

Treatments	Percent infestation for maize borer			
	1st Spray	2nd Spray	3rd Spray	Overall
T_1	25.83b	17.50a	6.67b	16.67b
T_2	30.00b	15.83a	12.05b	19.44b
T_3	28.33b	13.34a	9.17b	16.94b
T_4	30.00b	10.00a	6.67b	15.55b
T_5	25.00b	12.50a	11.67b	16.39b
T_6	45.00a	23.33a	37.50a	35.28a

quinalphos is equally effective also in emulsifiable concentrate form as well as granules form.

Thus on numerical basis Taofos 25EC (quinalphos) at 1000 ml/ac appeared to be the most effective in controlling the maize borer infestation.

References

Ajala, O.S. and N.K. Saxena, 1994. Interrelationship among *Chilo partellus* (SWINHOE) damage parameters and their contribution to grain yield reduction in maize (*Zea mays* L.). Applied Entomol. Zool., 29: 469-476.

Chaudhary, A.R., 1983. Maize in Pakistan. Co-ordination Board University Agriculture, Faisalabad, Pakistan, pp: 85-86.

Katti, G. and S. Verma, 1988. Efficacy of different formulations of quinalphos and endosulfan against sorghum stem borer *Chilo partellus* Swinhoe and midge *Contarinia sorghicola* Coquillett. Indian J. Plant Prot., 16: 211-215.

Latif, A., A. Qayyum and M.A. Piracha, 1960. Maize stem borer *Chilo zonellus* (Swinhoe) and its control. Agric. Pak., 11: 25-36.

Mustea, D., 1981. Elements for the estimation of the losses caused by *Ostrinia nubilalis* Hbn. in maize crops. Problems Plant Prot., 9: 349-357.

Singh, J.P. and K.K. Marwaha, 1996. Persistence and residual toxicity of insecticides on maize leaves/whorls against freshly hatched larvae of maize stalk borer, *Chilo partellus* (Swinhoe). Indian J. Entomol., 57: 213-218.

Singh, R., P. Sarup and R. Singh, 1985. Effect of insecticides on the eggs of maize stalk borer *Chilo partellus* (Swinhoe) reared on artificial diet and natural host plant maize. J. Entomol. Res., 9: 1-3.

Singh, R.R., S.M. Rizvi and S. Prasad, 1993. Observation on pest complex of maize crop. Bioved Department Entomol. N.D.U.A.T. Faizabad India, 4: 49-52.

Singh, S.P., J.P. Bhanot and A.N. Verma, 1986. Chemical control of spotted stem borer *Chilo partellus* (Swinhoe) in forage sorghum. Sorghum Newslett., 8: 61-64.

Steel, R.G.D. and J.H. Torrie, 1980. Principles and Procedures of Statistics. McGraw Hill Book Co. Inc., New York, pp: 232-251.

Van den Berg, J., G.D.J. van Rensburg and M.C. van der Westhuizen, 1997. Economic threshold levels for *Chilo partellus* (Lepidoptera: Pyralidae) control on resistant and susceptible sorghum plants. Bull. Entomol. Res., 87: 89-93.