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INTEGRATED MANAEMENT OF BRINJAL SHOOT AND FRUIT BORER, *LEUCINODES ORBONALLIS GUEN*.

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ABSTRACT

Among different IPM modules tested against shoot and fruit bore, *Leucinodes orbonallis Guen*, modules M4 using spinosad + Metarhizium anisoplae + Chelating agent Fe-EDTA+ cartap hydrochloride was found most effective causing minimum shoot infestation (7.47%) and fruit infestation of 23.21%, 21.09% and 23.60% at 3rd, 7th and 11th days after spraying respectively and giving highest yield (81.82q/ha).

KEY WORDS : Shoot and fruit borer, IPM brinjal, *Leucinode orbonallis*.

INTRODUCTION

Brinjal or egg plant has wide spectrum of use for maintaining the human health and essentially a source for building economic trading for farmers. Among the several insect pests that infest brinjal crop. Shoot and fruit borer, *Luecinodes orbonallis Guen*, is most important, noxious and cosmopolitan pest causing serious damage to shoots of seedling at vegetative stage and fruits at the times bearing until the harvest of fruits. The pest accounts for 44.11% and 55.40% fo shoot infestation and 62.50% and 55.40% of fruit infestation of number and weight basis, respectively (TRIPATHI et al. 1996). while SINGH et al. (2001) reported 48.30% losses in yield of brinjal fruits considering importance of the pest, different harmful chemical insecticides have been used, which has caused environmental pollution upsetting nature's balance, pest resurgence, residual toxicity and human health hazards However, one can not avoid the use of chemical insecticides Therefore, it is necessary to use only safer, selective, economical and ecofriendly formulations We evaluated different manager practices integrating cultural mechanical and microbiological components in different combinations as modules to find an effective, economic and sustainable management of *L. orbonalis.*

An experiment was conducted with a view to test the efficacy of different IPM modules against L. *orbonalis* in Kharif, 2008-2009 in the field of Department of Zoology, Dr. Shahid, Haldwani DIBER. laboratory, Variety Varuna was sown by using Randomized Block Design and replicated four times with a spacing of 60 x 60 cm. There were six IPM modules tested along with controls (Table) Evaluation of different modules was undertaken by recording per cent shoot and fruit infestation and yield. Frequent field visits were made to ascertain the level of infestation. The treatment application were initiated on attaining ETL (5% infestation) and later spraying was done at and interval of fifteen days. Per cent fruit infestation was recorded on 3rd, 7th and 11th days after spraying (DAS) for which five plants per plot were selected and labelled (JOTWANI and SARUP, 1963), Per cent shoot infestation was also recorded.

Per cent shoot infestation was comparatively lower in module M4 (spinosad + M.anisoplae + Fe- EDTA + cartap hydrochioride) (7.47) followed by M5 (9.40) and M1 (6.65) which were at par with each other (Table).

Figures in parenthesis are sine transformed value M1= (weekly removal of affected shoot + spinsad@ 0.005) + Bik 1kg/ha + cartap hydrochloride 50 SP @ 0.5%): M2= (spinsad + 45 EC @ 0.05% + sunhemp as a barrien crop + FE- EDTA 0.05% + garlic and chrysanthemum extract 1% + cartap hydrochloride 50 SP @ 0.1); M4= (spinsad + 45 EC @ 0.01% + Manisoplae 205 kg/ha + 45 FE-EDTA 0.5% + cartap hydrochioride 50 SP @ 0.5); M5= (Coriander intercropping spinsad + 45 EC (1:1) @ 0.01% + Garlic and chrysanthemum extract 1% + FE- EDTA 0.5% + endosulan 35 EC @ 0.05%;) M6 = (confider 17.8 SL @ 0.01 + endosulfan 35 EC @ 0.05% monocrotophpos 36 WSC @ 0.05 + cypermethrin 25 EC @ 0.005); M7 = Untreated control.

As regards fruits infestation on 3rd, 7th, and 11th DAS, module M4 was found Superior recording minimum fruit infestation of 23.21%, 21.09% and 23.62% respectively followed by M1 (weekly removal of affected shoots + spinosad + Btk + cartap hydrochioride) having 25.97%, 24.47%, and 26.11%, respectively Earlier,

Modules	%shoot infestation	Percent fruit infestation			Yield q/ha
		3DAS	7DAS	11DAS	
M1	9.65(18.06)	25.97(30.54)	24.47(29.33)	26.11(30.65)	65.55
M2	13.59(21.54)	30.58(33.54)	31.47(34.26)	21.18(34.54)	71.74
M3	15.55(23.13)	35.30(36.39)	34.96(36.21)	35.23(36.31)	57.14
M4	7.47(15.77)	23.21(28.76)	21.09(29.22)	23.62(28.89)	81.82
M5	9.40(17.82)	28.61(32.18)	30.81(33.71)	30.25(33.33)	66.58
M6	22.28(28.14)	41.22(39.87)	41.15(39.85)	38.55(33.33)	46.58
M7	35.45(36.54)	50.40()45.25	53.56(47.14)	58.74(50.05)	21.34
F test	Sig.	Sig.	Sig.	Sig	
SE	1.24	1.45	2.24	1.12	
CD at 5%	2.45	4.08	4.71	3.33	
CV%	7.60	8.25	8.95	6.18	

Table : Effect of different IPM modules on shoot & fruit infestation and yield in brinjal (mean values).

BYLEMONS and SCHOONEJIANS (2000) reported the effectiveness of spinosad because of its contact, stomach and systemic action with long residual effect it was also true with cartap hydrochioride (NAITAM and MALI, 2002) *M. anisoplae* was effective against *L. orbonalis* by deforming the larvae (RAJ and SATPATHY, 1996) while DADMAL (2003) reported affectivity of chelating agent due to its antibiotic effect on larvae and by causing sterility, There were also significant differences in the yield recorded in different modules, being highest in module M4 (81.82q/ha) thus module M4 proved to be most economical and effective.

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