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INFLUENCES OF WEATHER PARAMETERS ON PHEROMONE TRAP CATCHES AGAINST SHOOT AND FRUIT BORER, *Earias vittella* Fab.

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ABSTRACT

Catches of *Earias vittella* male moths indicated that the activity during 2018 of male moth trap catches was observed during 32th MSW and it was continued up to 42th MSW where the population ranging from 4.14 to 13.71 moths/trap/week and showed seven peaks activity of male moths of *E. vittella* was observed. The maximum number of moths 13.71moths/trap/week in 37th MSW. During next year the activity of male moth observed during 32th MSW and it was continued up to 42th MSW where the population ranging from 3.71 to 12.71 moths/trap/week and showed seven peaks activity of male moths of *E. vittella* was observed. The maximum number of moths 12.71moths/trap/week in 37th MSW.

Keywords: Okra, *Earias vittella* and Pheromone trap.

Introduction

Okra *Abelmoschus esculentus* (L.) Moench, a native of South-Africa and commonly known as 'Bhindi', is an annual malvaceous vegetable crop, especially grown in tropical and subtropical climates zone. Its tender green fruits are very nutritious. Among, several biotic and abiotic factors, the incidence of insect pests are one of the major factors reducing the yield of okra. Twenty different insect species are known to attack okra, inflicting qualitative and quantitative production losses (Butani and Verma, 1976). Nayar *et al.* (1976) reported more than three dozen insect pests are attacking okra.

Among insect pests infesting okra, shoot and fruit borer *Earias vittella* (Fabricius) is one of the serious pests causing 40-50 per cent damage to okra fruits during both season (Srinivashan and Gowder, 1960). Okra is grown during the Rabi and Kharif seasons. In, India first ranks in the world with 6,950 MT of the total production of the bhendi (Anon, 2017-18). In Rajasthan, the crop occupies 3619 ha with the production of 18152 MT in the state (Anon, 2018-19).

Material and Methods

The research work was carried out at field of Department of Entomology, Faculty of Agriculture Sciences, Bhagwant University, Ajmer during kharif season 2018 and 2019. The climate of this region is typically semi-arid, characterized by extremes of temperature both during the summer and winter with low rainfall and moderate humidity. Maximum temperature in summer reaches as high as 47^oC and minimum temperature in winter falls down below 0^oC. The average annual rainfall of locality varies from 400-500

mm occurring mostly from the last week of June to September.

A green colour funnel type of pheromone traps along with lure for *E. vittella* (Ervit lure) obtained from Pest Control Private Limited (PCI) office, Jaipur for the male moth evaluation in the field. The trap was installed @15/ha on the bhendi field at early morning/evening time. The height of trap was one feet above the crop level and ervit lure were replaced in 15 days intervals (Pazhanisamy and Deshmukh, 2012). The number of male moths of *E. vittella* trapped in the pheromone traps kill before counted at weekly intervals and data on moth catches were correlated with weather parameter as per the Comez and Comez 1984.

Result and Discussion

Peak activity periods of *E. vittella* on bhendi during kharif season 2018 and 2019

The result of pheromone trap catches of *E. vittella* male moths indicated that the activity during 2018 of male moth trap catches was observed during 32th MSW and it was continued up to 42th MSW where the population ranging from 4.14 to 13.71 moths/trap/week and showed seven peaks activity of male moths of *E. vittella* was observed. The maximum number of moths 13.71moths/trap/week in 37th MSW (Fig. 1). During 2019 the activity of male moth observed during 32th MSW and it was continued up to 42th MSW where the population ranging from 3.71 to 12.71 moths/trap/week and showed seven peaks activity of male moths of *E. vittella* was observed. The maximum number of moths 12.71moths/trap/week in 37th MSW (Fig. 2). The present investigation is in support of Pazhanisamy and Deshmukh (2012) who observed the peak activity of *E.*

vittella was observed from 39th to 45th MSW where the population was in the range of 8.15 to 11.15 moths/trap/week. Similarly, Kaur *et al.* (2016) observed that peak activity during 40th MSW and maximum collection of male moths was recorded in 44th MSW. The maximum moths of *E. vittella* were trapped between 45th and 46th MSW during the kharif season as reported by Jyothi *et al.* (2014).

Correlation between weather parameters and pheromone traps catches of *E. vittella* on bhendi during kharif 2018 and 2019

The results of correlation studies revealed that trap catches of *E. vittella* exerted negative correlation with

minimum and maximum temperature (-0.501, -0.124) during first year and positive correlation with minimum and maximum temperature (0.619, 0.702) during second year (2019). The negative correlation with minimum and maximum relative humidity during both year and sunshine hours ($r=0.395$, $r=0.276$). The present supported with Shivanna (2012) reported pheromone trap catches of *E. vittella* exerted significant negative correlation with relative humidity. Patel *et al.* (2014) observed evening relative humidity had significantly positive correlation and the maximum temperature negative correlation with number of moth catches of *E. vittella* on okra.

Table 1 : Weekly observation on pheromone trap catches of *E. vittella* on Okra

Month	MSW	Trap catches of male moth <i>E. vittella</i>	
		Kharif 2018	Kharif 2019
		Mean of <i>E. vittella</i> trapped/trap/week	Mean of <i>E. vittella</i> trapped/trap/week
Aug	32	0.00	0.00
	33	4.14	3.71
	34	5.28	4.71
	35	9.28	8.00
Sep	36	9.85	8.71
	37	13.71	12.71
	38	12.72	11.57
	39	10.71	10.85
Oct	40	7.71	5.57
	41	10.57	6.85
	42	8.71	6.71

Table 2 : Simple correlation matrix of trap catches of *E. vittella* with weather parameters in Okra

	Kharif 2018	Kharif 2019
	Mean of <i>E. vittella</i> trapped/trap/week	Mean of <i>E. vittella</i> trapped/trap/week
Min. Temp	-0.501	0.619*
Max. Temp	-0.124	0.702*
Min. RH	-0.286	-0.245
Max. RH	-0.157	-0.312
Rainfall	-0.294	-0.664*
Sun shine	0.395	0.276

*Significant P- 0.05

Table 3 : Multiple regression analysis of pheromone trap catches of *E. vittella* and weather parameters in Okra during Kharif season 2018

	Coefficients	Standard Error	t Stat	r ²
Intercept	9.745	62.177	0.157	0.798
Min. Temp	-2.107	1.595	-1.321	
Max. Temp	-0.225	1.743	-0.129	
Min. RH	0.454	0.377	1.204	
Max. RH	0.210	0.345	0.610	
Rainfall	-0.010	0.089	-0.117	
Sun shine	1.804	1.038	1.738	

Table 4 : Multiple regression analysis of pheromone trap catches of *E. vittella* and weather parameters in Okra during Kharif season 2019.

	Coefficients	Standard Error	t Stat	r ²
Intercept	-42.646	27.779	-1.535	0.848
Min. Temp	0.854	0.409	2.086	
Max. Temp	1.047	0.670	1.563	
Min. RH	0.124	0.090	1.380	
Max. RH	-0.191	0.190	-1.006	
Rainfall	-0.012	0.041	-0.293	
Sun shine	1.030	0.684	1.506	

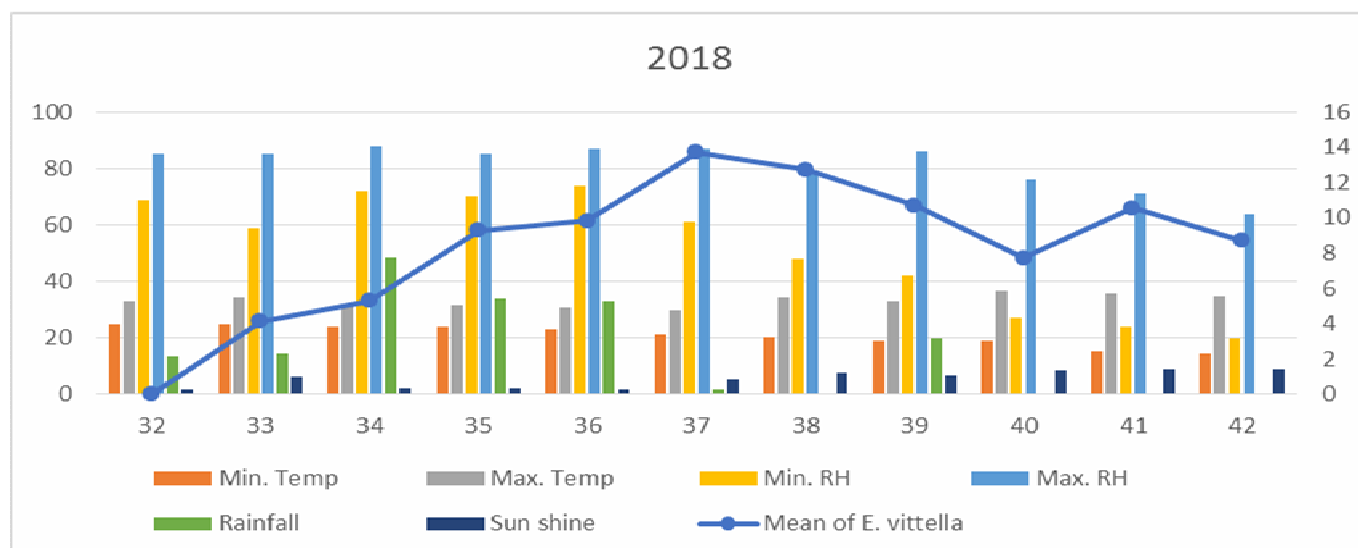


Fig. 1 : Pheromone traps catches of *E. vittella* on Okra during Kharif season 2018.

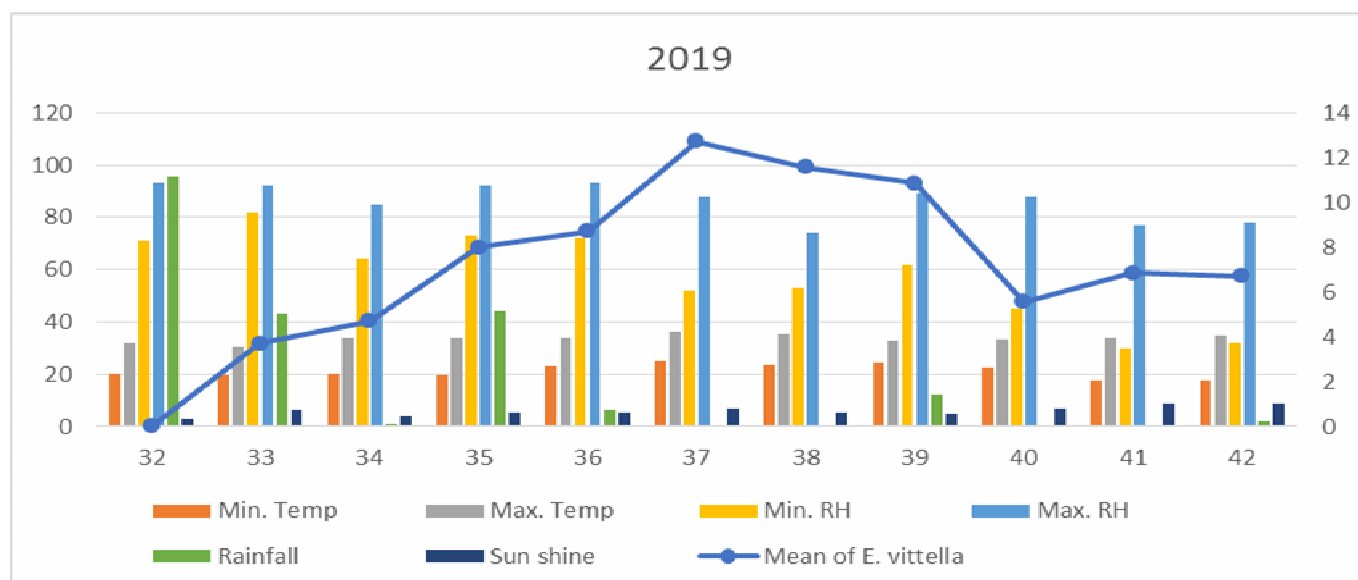


Fig. 2 : Pheromone traps catches of *E. vittella* on Okra during Kharif season 2019.

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