



## **Population Dynamic of Shoot And Fruit Borer *Earias vittella* (Fab.) In okra Along With Meteorological Parameter**

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### **ABSTRACT**

The Field experiment was carried out on Population dynamics of shoot and fruit borer *Earias vittella* (Fab.) in okra during kharif, 2013 at Crop Research Centre, Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut. The population of *Earias vittella* recorded on third week of July and continued till first week of October. Highest population of the pest (25 per cent shoot damage) recorded during last week of August. When average temperature and relative humidity were 30.15°C and 83.20 per cent, respectively.

**Keywords:** Population dynamics, *Earias vittella*, Meteorological parameter

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### **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. Since both cotton and okra belong to family Malvaceae, nineteen insect pests have been reported on okra [1] of which the fruit borer complex create loss by causing both quantitative and qualitative damage to the crop. 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 [2, 5] reported more than three dozen insect pests are attacking okra. The spotted bollworm of cotton or okra fruit and shoot borer, *E. vittella* (Lepidoptera: Noctuidae) is a widely distributed pest. *Earias*.Spp alone causes damage ranging from 52.33 to 70.75 per cent [6]. Whereas in general the overall damage due to insect pest amounts to 48.97 per cent loss in pod yield [3, 4].

### **MATERIAL AND METHOD**

The population dynamics of fruit and shoot borer, the Field experiment was conducted during Kharif 2013 at crop research center, Sardar Vallabhbhai Patel university of agriculture and technology Meerut. An okra variety ArkaAnamika@ 8 kg/ha was sown on 21<sup>st</sup> June 2013. The experiment was laid out in randomized block design with three replications. There were total nine treatments including control. The plot size for each treatment was kept 5 x 3 m<sup>2</sup> Spacing between rows and plants were kept 45 and 30 cm, respectively. Ten plants from central rows were tagged randomly much before the appearance of the shoot and fruit borer on the crop. These plants were observed regularly at weekly interval as soon as it started infesting shoot/fruits and continued till the removal of crop. The damage on shoot was recorded by counting the number of plants having damaged shoot from all the 10 tagged plants, whereas damage to fruit was recorded on the basis of number of healthy and infested fruits at each picking from all the tagged plants and finally the average percentage of damage was worked out. The data on the pest infestation were correlated with the prevailing temperatures, relative humidity and rainfall with the corresponding period of a week before recorded each of the observations

## RESULTS AND DISCUSSION

The result indicated infestation of shoot and fruits of okra crop along with meteorological observations for *kharif* 2013 crop season has been presented in (table 1). Data showed that the activity of shoot and fruit borer, *E. vittella* Fab. on shoot started from third week of July on four weeks old crop and continued till first week of October on fifteen weeks old crop during *kharif* 2013 .

**Table 1: Population Dynamics of *Earias vittella* Fab. Infestation on okra in relation to abiotic factors**

S. No.	Standard week	Damage (%)		Temperature (°C)			Relative Humidity (%)			Total Rain fall (mm)
		Shoots	Fruits	Max.	Min.	Mean	Morning	Evening	Mean	
1	26	–	–	34.60	23.20	28.90	89.10	69.60	79.35	75.50
2	27	–	–	32.50	23.30	27.90	90.30	72.30	81.30	04.30
3	28	–	–	33.80	23.20	28.50	90.90	76.70	83.80	77.30
4	29	18.14	–	32.50	22.20	27.35	89.10	85.70	87.40	70.10
5	30	12.35	–	33.30	23.40	28.35	94.20	78.00	86.10	101.10
6	31	22.40	15.00	33.70	20.60	27.15	92.70	81.30	87.00	13.40
7	32	12.50	16.40	31.70	23.50	27.60	94.20	85.80	90.00	160.30
8	33	16.60	18.30	32.10	24.60	28.35	94.80	76.60	85.70	55.70
9	34	25.40	20.55	35.10	25.20	30.15	91.30	75.10	83.20	20.40
10	35	21.80	22.60	32.00	24.80	28.40	89.60	82.20	85.90	64.50
11	36	12.40	23.75	33.70	24.50	29.10	85.00	65.60	75.30	01.40
12	37	11.20	28.65	34.80	24.30	29.55	88.40	68.70	78.55	00.60
13	38	3.10	32.15	34.20	22.80	28.50	88.90	67.30	78.10	19.50
14	39	8.50	36.50	33.80	23.10	28.45	90.10	69.20	79.65	03.20
15	40	3.60	43.85	31.90	20.90	26.40	89.20	66.60	77.90	00.40

The shoot infestation was at its peak (12.40 to 25.40 per cent) during 29<sup>th</sup> to 36<sup>th</sup> standard week, when mean temperature and relative humidity ranged from 27.6 to 30.15 °C and 73.3 to 90.0 per cent with an average of 28.9°C and 81.65 per cent, respectively. During 37<sup>th</sup> to 40<sup>th</sup> meteorological week the infestation declined (11.20 to 3.10 Per cent) substantially. During this period, the temperature ranged from 28.45 °C to 29.55 °C with an average of 29.0 °C, while relative humidity ranged from 77.9 to 79.65 per cent with an average of 78.77 per cent. Similarly 19.5 mm average rainfall recorded during this period. Maximum infestation of shoot recorded in the absence of rains. The activity of *Earias vittella* Fab. on okra fruits was started from the first week of August on six weeks old okra crop and continued till harvest of crop during the year 2013 . The intensity of fruit damage varied from 26.6 per cent (first week of August) to 3.85 per cent (first week of October). The pest infestation was suppressed (20.55 per cent) in 34<sup>th</sup> meteorological week (fourth week of August) and increased (22.6 to 43.85 per cent) during 35<sup>th</sup> week to 40<sup>th</sup> meteorological week. The temperature in the range of 26.40 to 29.55 °C coupled with less than 80 per cent R.H. was observed to be the most congenial condition for infestation of the pest.

## CONCLUSION

The activity of shoot and fruit borer, *Earias vittella* infestation on okra under Meerut conditions revealed that its activity started from four and five weeks old crop and remained in accelerated mode till harvest of crop. The higher infestation was recorded when mean temperature and relative humidity ranged from 27.15 to 30.15 °C and 75.3 to 87.0 per cent with an average of 28.65 °C and 81.15 per cent, respectively. The pest population declined during the rainfall. The rains observed to dislodge sum of the eggs and neonate larvae. The pest population was high in the absence of rains. A positive correlation between population of *E. vittella* and temperature was recorded whereas relative humidity showed negative correlation with population.

## REFERENCE

1. Anonymous, (2009). Economic intelligence service, centre for monitoring Indian economy Pvt. Ltd. monthly bulletin, p.306.
2. Butani, D.K. and Verma, S. (1976). Insect pests of vegetables and their control-*Lady's finger*. *Pesticides*; 10 (7): 31-70.
3. Dhamdhare, S.V., Bahadur, J. and Misra, U.S. (1984). Studies on occurrence and succession of pests of okra at Gwalior. *Indian J. Pl. Prot.*, 12 : 9-12

4. Gupta, A., Rao, J.V. and Srinivas, K. (1981).Response of okra to date of sowing and plant spacing. Veg. Sci. 8 (2) : 69-74.
5. Nayar K.K., Annthakrishnan, T.N. and David, B.V. (1976).*General and Applied Entomoloty*. Tata Mc. Graw Hill Publ. Co. Ltd., New Delhi, 489p.
6. Pareek, B.L. and Bhargva, M.C., (2003).Estimation of avoidable losses in vegetable crops caused by borers under semi-arid conditions of Rajasthan.*Insect Environment*; 9: 59-60.

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