

RESEARCH NOTE

Population dynamics of *Earias vittella* through pheromone trap and correlation co-efficient between moth catches with weather parameters

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ABSTRACT

Studies were carried out on population dynamics of *Earias vittella* through pheromone trap on okra [*Abelmoschus esculentus* (L.) Moench] at Regional Horticultural Research Station Farm, NAU, Navsari during 2011-12. The results revealed that earliest catch of *E. vittella* males was recorded from 2nd WAT (9 male moth catch/trap/week) i.e. 48 standard week of 2011 and population reached its peak at 5th WAT i.e. 51th standard week of 2011 (38 male moth catch/trap/week). Among various weather parameters, maximum temperature had significant negative and evening relative humidity had significantly positive influence on shoot and fruit borer population.

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The spotted bollworm of cotton or okra fruit and shoot borer, *Earias vittella* (F.) (Lepidoptera: Noctuidae) is a widely distributed insect pest, and it is estimated about 69 per cent loss in marketable yield occurs on okra (Rawat and Saha, 1973). Radke and Undirwade (1981) observed the appearance of *Earias* spp. with the initiation of fruiting. The infestation increased and reached its peak up to 100 per cent after 12 weeks of sowing with an average larval population of 1.3 per fruit. Similarly, Agrawal (1993) recorded the incidence at first picking that remained till 5th picking (10 weeks after germination) and the resultant loss in yield was 60.0 and 63.3 per cent during *Kharif* 1991 and 1992, respectively. However, the peak incidence in okra was observed in the last week of August with 34 to 45 per cent damage to fruits (Rana, 1983); 67.7 per cent in October (Dhawan and Sidhu, 1984); and 25.9 to 40.9 per cent (Dhamdhare *et al.*, 1984). Hence, an attempt was made to study the population dynamics of okra fruit and shoot

borer in relation to prevailing weather conditions in the Udaipur region of Rajasthan.

The studies on incidence and seasonal abundance of shoot and fruit borer were conducted during the year 2011-12 on okra at Regional Horticultural Research Station Farm, NAU, Navsari. A pheromone trap was installed in the field of okra. The septa was recharged at four week interval. The number of moths of *Earias vittella* caught in the pheromone trap was counted at weekly intervals and data on moth catches were correlated with weather parameters.

The results showed that the earliest catch of *E. vittella* males was recorded from 2nd WAT (a male moth catch/ trap/ week) i.e. 48 standard week of 2011 and population reached its peak at 5th WAT i.e. 51th standard week of 2011 (38 male moth catch/ trap/ week). The adult activity declined thereafter and, continued fluctuating till the third week of March and then reached to disappear (Table 1). Similarly, Yadvendu (2001)

Table 1 : Population dynamics of *Earias vittella* on okra through pheromone trap during September 2011- February 2012

SW	WAT	Moth catch/ trap/ week	Max. temp.	Min. temp.	Ave. temp.	Mor. RH	Eve. RH	Ave. RH	SSH	WV
47	1	0	34.4	17.3	25.9	81.0	33.0	57.0	9.5	2.7
48	2	9	34.6	20.5	27.6	71.0	36.0	53.5	7.5	1.4
49	3	11	33.9	17.2	25.6	82.0	33.0	57.5	8.5	1.3
50	4	15	32.1	14.3	23.2	75.0	19.0	47.0	8.2	1.0
51	5	38	32.6	15.2	23.9	76.0	30.0	53.0	7.6	0.6
52	6	34	30.4	11.5	21.0	85.0	28.0	56.5	8.0	1.9
1	7	32	29.2	12.2	20.7	82.5	40.4	61.4	6.5	2.6
2	8	30	28.0	11.9	20.0	72.8	51.0	61.9	9.0	4.4
3	9	26	28.1	11.6	19.9	85.5	63.7	74.6	9.4	2.1
4	10	24	29.7	13.0	21.3	82.6	74.8	78.7	8.9	3.3
5	11	10	30.6	14.5	22.5	72.2	31.9	52.1	9.1	5.1
6	12	6	28.0	12.0	20.0	59.5	23.9	41.7	9.5	5.6
7	13	3	30.4	12.9	21.6	76.1	27.7	51.9	9.4	3.1
8	14	2	35.1	15.1	25.1	69.9	23.5	46.7	9.4	3.3
9	15	2	32.4	14.3	23.3	84.2	33.4	58.8	9.1	2.9
10	16	1	31.5	15.7	23.6	82.3	40.4	61.3	8.2	3.6
11	17	1	35.5	15.6	25.6	70.8	18.0	44.4	8.9	3.4
12	18	0	37.6	15.9	26.7	73.2	16.5	44.8	8.6	3.7
13	19	0	37.3	20.2	28.8	84.4	30.3	57.4	8.0	3.9

Table 2 Correlation co-efficient of no. of moth catches with weather parameters

"r"	Max. temp.	Min. temp.	Ave. temp.	Morn. RH	Eve. RH	Ave. RH	SSH	WV
No. of moth catch/week	-0.5874*	-0.5348	-0.5875	0.2488	0.4580*	0.4486	-0.4364	-0.3897

* indicate significance of values at P=0.05, respectively

reported that pest population attained its peak of 86.5 and 72.5 larvae/5 plants during first and fourth week of September, respectively. Dangi (2004) also reported peak population (10.3 larvae/5 plants) in first week of October.

The results showed that the maximum temperature ($r=-0.5874$) had significantly negative correlation while minimum temperature ($r=-0.5348$), average temperature ($r=-0.5875$), sunshine hour ($r=0.4364$) and wind velocity ($r=0.3897$) had non-significant negative correlation with number of moth catches of *E. vittella*. Whereas, evening RH ($r=0.4580$) had significant positive and morning relative humidity ($r=0.2488$) and average relative humidity ($r=0.4486$) correlation with moth catches (Table 2). Devraj and Kumar (1987) and Pareek *et al.* (2001) observed that minimum temperature, relative humidity and rainfall had a significant negative correlation with the population build up.

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