

## Population dynamics of diamond backmoth, *Plutella xylostella* (Linnaeus) on cabbage

S.K. DALAVE, K.L. RAGHVANI, M.D. JOSHI\*, S.S. RANAWARE, P.L. DABHADE, S.M. GHADGE  
AND V.P. CHATAR

Department of Entology, College of Agriculture, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA

### ABSTRACT

Studies on population dynamics of diamond backmoth, *Plutella xylostella* (Linnaeus) on cabbage revealed that the pest population of *Plutella xylostella* (Linnaeus) appeared from third week December which gradually increased and attained a peak of 8.9 larvae per plant during fourth week January. It indicated that the pest was more active during the month of January. Later on, the pest population declined gradually towards the maturity of the crop. Among the different weather parameters, evening relative humidity exhibited highly significant negative correlation ( $r=-0.6852$ ) with *P. xylostella*. Whereas, remaining all the weather parameters showed non significant correlation with *P. xylostella*.

**Key words :** Cabbage, *P. xylostella* and population dynamics

### INTRODUCTION

Cabbage is a high yielding and remunerative *Rabi* vegetable crop. Total cultivated area of cabbage in Gujarat is about 19,046 hectares with the total production of 3, 29,236 MT with an average productivity of 17,286 kg per hectare (Anonymous, 2006). This crop is attacked by 375 species of insect pests (Oatman and Planter, 1969). Among the insect pests of cabbage, *P. xylostella* is the most destructive pest of cruciferous plants through out the world (Talekar and Shelton, 1993). Different control measures, especially insecticides are applied indiscriminately to control this pest in the country. Excessive use of chemicals not only causes the economical restrain on farmers but also produce the harmful side effects on the environment as well as human being. The best way to over come this situation is to destroy the pest at its initial stage of the life cycle. This is possible if timely prediction of the occurrence of the pest can be made. Hence, an attempt has been made to investigate the sensitivity of the incidence of the diamond backmoth, *P. xylostella* on cabbage to the different meteorological parameters.

### MATERIALS AND METHODS

The cabbage cv. GOLDEN ACRE was transplanted at Instructional Farm, Department of Agronomy, College of Agriculture, Junagadh Agricultural University, Junagadh during *Rabi* season of 2008-09 in a block size of 10.0 m x 18.0 m (180 m<sup>2</sup>) keeping the spacing of 45 cm x 30 cm. The crop area was divided into 10 quadrates (5.0 m x 2.25 m). Five plants were selected randomly and tagged from each quadrate. The absolute larval population of *P.*

*xylostella* was counted from seedling to maturity stage of crop at weekly interval. The data thus obtained were correlated with various meteorological weather parameters to ascertain the effects of abiotic factors on population fluctuation of the pest on cabbage.

### RESULTS AND DISCUSSION

The data (Table 1) revealed that the pest commenced after 3<sup>rd</sup> week of transplanting *i.e.* 4<sup>th</sup> week of December with 0.86 larvae per plant, which gradually increased and attained a peak of 8.90 larvae per plant in 4<sup>th</sup> week of January (7<sup>th</sup> week after transplanting). The population of *P. xylostella* was ranged from 0.86 to 8.90 larvae per

**Table 1 : Population of *P. xylostella* on cabbage in relation with different weather parameters during *Rabi* 2008-09**

Sr. No.	Standard week	Date of observation	Week after transplanting	Mean larval population <i>P. xylostella</i> / plant
1.	50	15/12/08	1	0.00
2.	51	22/12/08	2	0.00
3.	52	29/12/08	3	0.86
4.	1	05/01/09	4	1.88
5.	2	12/01/09	5	3.00
6.	3	19/01/09	6	4.80
7.	4	26/01/09	7	8.90
8.	5	02/02/09	8	7.80
9.	6	09/02/09	9	6.20
10.	7	16/02/09	10	6.00
11.	8	23/02/09	11	6.80
12.	9	2/03/09	12	2.65
13.	10	9/03/09	13	0.00