



BIOLOGY, SEASONAL ABUNDANCE AND MANAGEMENT OF PAINTED BUG (*BAGRADA HILARIS* BURMEISTER) IN EASTERN RAJASTHAN

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ABSTRACT

Laboratory studies on the biology of painted bug (*Bagrada hilaris* Burm.) revealed that the mean number of eggs laid by a female were 70.8 ± 6.1 on soaked mustard seeds. The average preoviposition period, incubation period, nymphal period and total developmental period was found as 6.2 ± 0.11 days, 3.6 ± 0.09 , 16.2 ± 0.57 days and 18.6 ± 0.36 days, respectively. Two peaks of painted bug population were observed i.e. first in 49th standard week (6.5 painted bug/meter row length) and 12th standard week (9.7 painted bug /plant). *B. hilaris* population was found positively significantly correlated with maximum temperature ($r=0.420$), evaporation ($r=0.455$) and wind speed ($r=0.422$) while negatively significantly correlated with relative humidity ($r=-0.424$). Malathion 50EC @ 500ml/500 litre of water was found most effective (84.40% mean reduction after 10 days of spray). The highest incremental cost benefit ratio of 1:11.7 was obtained in malathion 50 EC @ 500ml/500 litre of water followed by endosulfan 4% dust @ 10 kg/ha (1:11.1) and endosulfan 35 EC @ 500ml/500 litre of water (1:11.0).

Key words: *Bagrada hilaris*, painted bug, Indian mustard, biology, management

Painted bug (*Bagrada cruciferarum* Kirkaldy now known as *Bagrada hilaris* Burmeister) is an important pest of crucifer crops in India. It is a pest of cruciferous crops throughout Asia, Africa, some islands of southern Europe such as Malta and Pantelleria (Italy) (CAB, 1981) and in California and Arizona (Palumbo and Natwick, 2010). It is a serious pest of mustard at seeding stage (Vora *et al.*, 1985), *Bagrada hilaris* was found active during seeding stage (October-November) and at harvest stage (March-April) (Singh and Malik, 1993). The attack at the pod formation and maturity stages is much more alarming as it results in losses to the tune of 30.1% in yield and 3.4% in oil content (Singh *et al.*, 1980). Several insecticides were evaluated against this pest. It was thought essential to study its biology, seasonal abundance and management, as mustard is the major cash crop of Eastern Rajasthan, and the results are presented herein.

MATERIALS AND METHODS

The biology of *Bagrada hilaris* was studied under laboratory conditions at room temperature in the Entomology Section at Directorate of Rapeseed Mustard Research (DRMR), Sear, Bharatpur (Rajasthan). The adults were collected from the mustard fields and kept in the glass jars (25cm x 15cm) as the stock culture and fed on seeds of Indian mustard (var. BIO-902) soaked overnight in water. Ten pairs

of adult males and females were separated from these glass jars and a single pair was kept in the petri dishes (10cm diameter) and kept in the laboratory at room temperature. Water soaked seeds of mustard were provided as food to these adults. Eggs laid by each pair were separated and kept in separate petri dishes. Each petri dish was observed daily carefully for recording all the developmental stages of the test insect.

The seasonal incidence of *B. hilaris* was recorded on Indian mustard var. BIO-902 in the field condition in plot size of 4.2x3 m having the row to row and plant to plant distances as 30cm and 10cm, respectively. In the initial stage of crop, the observation on *B. hilaris* was taken on the basis of total population of adults and nymphs in one meter row of plants in ten randomly selected rows however in the later stage of crop at fully grown stage the population of painted was recorded on 10 randomly selected plants diagonally tagged in the plot. The observations were made on weekly basis. The meteorological data was also collected from the DRMR observatory and correlated with the *B. hilaris* population.

The management studies of *B. hilaris* were conducted during 'Rabi' season of 2008-09. All the recommended agronomic practices were followed to raise the good crop. Nine treatments i.e. quinalphos 1.5% dust @ 10 kg/ha, fenvalerate 4% dust @ 10 kg/