



Monitoring of Alate Mustard Aphid, *Lipaphis erysimi* Kalt on Yellow Sticky Traps

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Abstract: The alate mustard aphid (*Lipaphis erysimi* Kalt.) population was monitored for three years using sticky traps. The first appearance of alate aphid was recorded as early as in the 46th standard week during 2009-10, the 49th standard week during 2010-11 and latest in the 47th standard week during 2011-12. The initial average population ranged from 0.2 to 0.6 aphids per trap and reached to peak variably depending upon the weather parameters from 7th to 10th standard week in different years of study.

Key Words: Alate mustard aphid, yellow sticky trap, weather parameters

Rapeseed and mustard crops are highly vulnerable to the mustard aphid (*Lipaphis erysimi* Kalt.) that is the key pest. Alate forms determine the initiation of infestation and intensity of attack on the *Brassica* crops. The aphid multiplies gradually and reaches to a peak during December to March in different agro-ecological regions of the country. Kulta *et al.* (1997) found that in Nagpur, a combination of ambient maximum temperature (26.4 to 29°C), minimum temperature (8.4 to 12.6°C) and high relative humidity ranging from 75 to 85% in the month of January favoured aphid multiplication, whereas the activity of the aphid ceased at relative humidity of 65% and below.

Singh *et al.* (2012) reported average temperature 23.3 to 34.3°C (maximum) and 7.3 to 15.7°C (minimum) coupled with 64 to 74% relative humidity was found effectively for aphid moment. For effective and economical management of this serious pest in eastern Rajasthan, the alate population was observed and correlated to climate factors prevailing during the study period.

MATERIAL AND METHODS

The experiment was conducted at Directorate of Rapeseed-Mustard Research, Sewar, Bharatpur (Rajasthan) for three consecutive years *i.e.* from 2009-10 to 2011-12. Traps were made from empty tin boxes of 1kg capacity and painted with yellow colour paint to attract the alate aphids. These traps were placed with the help of iron pole at the height of 2.0 meters above the ground level. The traps were fixed on the bunds/boundaries at the four side's viz. East, west, north and south directions of the field. A thin layer of transparent grease was traps were observed daily at 10AM for the count of alate aphids, which adhered on these traps. Daily weather parameters were also recorded from the

Directorate of Rapeseed-Mustard Research observatory situated near the sticky traps installed and weekly means were worked out. The observation was recorded from October to August regularly on yellow sticky traps.

Population data of different insect pests thus obtained were subjected to statistical analysis to find out the coefficient of correlation and multiple regression line with average temperature (X_1), relative humidity (X_2) and rainfall (X_3) which were obtained from the Meteorological Observatory, Directorate of Rapeseed-Mustard Research, Sewar. Following formula was used for calculating correlation coefficient:

$$r_{xy} = \frac{\sum XY - \frac{\sum X \sum Y}{n}}{\sqrt{\left[\sum X^2 - \frac{(\sum X)^2}{n} \right] \left[\sum Y^2 - \frac{(\sum Y)^2}{n} \right]}}$$

Where,

- r_{xy} = Simple correlation coefficient
- X = Variable *i.e.* abiotic component. (Average temperature, relative humidity and rainfall, etc.)
- Y = Variable *i.e.* mean number of insect pests
- n = Number of paired observations

The correlation coefficient (r) values were subjected to the test of significance using t-test:

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

The calculated t-value obtained was compared with tabulated t-value at 5% level of significance.

RESULTS AND DISCUSSION

The alate mustard aphid differed in the timing of