

POPULATION BUILD UP OF MUSTARD APHID (*LIPAPHIS ERYSIMI* Kalt) ON MUSTARD (*BRASSICA JUNCEA* COSS) UNDER SUB HUMID MID HILL ZONE OF HIMACHAL PRADESH, INDIA

Subhash Chandra Verma, Dinesh Singh Thakur and Vinod Kumar
Krishi Vigyan Kendra, Chamba

ABSTRACT

The experiment was conducted during 1999-2000 and 2000-2001 at Haripura Farm of the KVK, Chamba. The maximum population of the aphids, *Lipaphis erysimi* Kalt. (56.50 aphids/10 cm apical twig) was recorded during first fortnight of March,2000 while during 2001 its maximum population (40.70 aphids/10cm apical twig) was recorded in the second fortnight of February. The population of the aphids showed a low negative correlation with maximum temperature and total rainfall during both the years.

INTRODUCTION

The mustard aphid, *Lipahis erysimi* Kalt is the most serious pest of Brassica oil seeds crops in India and is the limiting factor in the successful cultivation of Brassica oil seed crops. The estimated yield losses due to this pest have been reported to vary from 35.4 to 73.3% under different agro-climatic regions in India (Bakhetia, 1983). This pest causes severe damage to the Brassica oil seeds crops in Chamba (900 amsl) district also. Chamba is situated in the Western Himalayas between North Latitude 32° 10' and 33° 13' and East Latitude 75° 33'. Among the Brassica oil seed crops, mustard (*Brassica juncea* Coss) (var. RCC-4) is an important crop of Rabi season and is gaining popularity in Chamba also. The climatic factors play an important role in population buildup of this pest. For ensuring effective economical management of mustard aphid, *Lipaphis erysimi* Kalt in Chamba district its population build up was, therefore, recorded on mustard in relation to climatic factors.

MATERIALS AND METHODS

The experiment was laid out Haripura Farm of the Kirshi Vigyan Kendra Chamba during two consecutive crop growing seasons in *rabi* 1999-2000 and 2000-2001. The mustard (*Brassica juncea* Coss) var. Rcc-4) was taken for studying the population build up of the mustard aphid (*Lipaphis erysimi* Kalt). The recommended package of the practices were followed. The spacing between row to row and plant to plant was kept as 30 x 10 cm. For recording population build up of mustard aphid 20 apical twigs of mustard of 10 cm were collected in polythene bags at fortnightly intervals. The aphids were anaesthisised with benzene and brought to the laboratory and aphids were removed with camel hair brush and population was counted. The data were subjected to $x+0.5$ transformations. The meteorological data during the period of experiment were obtained from the meteorological observatory of NHPC, Chamba, Baloo to study the influence of weather factors on the population buildup of this aphid on mustard.

RESULTS AND DISCUSSION

The first incidence of the aphid was recorded in the first fortnight of February,2000 during which average population of the aphid was 16.45/10 cm apical twig and maximum and minimum temperature was 15.5°C and 2.73°C with total rainfall 101.79mm. The aphid population showed an increasing trend and it reached maximum in the first fortnight of March,2000 when its population was 56.50 aphids/10cm apical twig with average maximum and minimum temperature was 24.06°C and 5.23°C and total rainfall 65.5 mm. Thereafter the population of aphid showed declining trend and it reached to 2.55 aphid/10 cm apical twig in the first night of showed declining trend and it reached to 2.55 aphid/10cm apical twig in the first night of

April, 2000 when average maximum and minimum temperature was 33.43°C and 11.46°C respectively and total rainfall was 1.0 mm.

The population of the aphid showed almost similar trend during 2001 when its first incidence was noticed in the first fortnight of February 2001 during which aphid population was recorded as 12.40 aphids/10 cm apical twig. The maximum population of the aphid (40.70 aphids/10 cm apical twig) was recorded in the second fortnight of February, 2001 when mean maximum and minimum temperature was 23.38°C and 6.03°C with total rainfall 16.0mm (Table 1) Thereafter the population of the aphid declined and it reached minimum 0.90 aphid/10 cm apical twig in the first fortnight of April, 2001. The population of the aphid showed a low negative correlation with maximum and minimum temperature and total rainfall during both the years. The role of temperature, relative humidity and rainfall on the incidence of mustard aphid were reported by several workers, Bakhetia and Sidhu, 1983 and Ahuja, 1990). Our results are in conformity with those reported by Chandra and Kushwaha 1986, Mathur and Singh 1986 and Singh and Singh, 1989.

ACKNOWLEDGEMENT

Thanks are due to the Incharge, KVK Chamba for providing necessary facilities.

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Table-1. Population buildup of *Lipaphis erysimi* Kalt on Mustard Cvar RCC-4 at Chamba

Sampling intervals (Fruit night)	Population*	Weather Factors		
		Temp (oC)		
		Max.	Min.	Rainfall
1999-2000				
Feb-I	16.45(3.89)	15.50	2.73	101.79
Feb-II	64.80(8.01)	2064	2.53	9.5
March-I	56.50(7.43)	24.06	5.23	65.5
March-II	37.50(5.94)	26.21	8.5	20.0
April-I	2.55(1.45)	33.43	11.86	1.00
'r' aphid population		0.3457	0.5816	0.0646
2000-2001				
Feb-I	12.40(3.34)	25.0	3.23	0.00
Feb-II	40.70	23.38	6.03	16.00
March-I	22.80(4.56)	26.86	6.46	3.50
March-II	06.30(2.08)	27.06	7.68	90.50
April-I	00.90	27.40	9.86	10.50
r-aphid population		0.8050	0.2705	0.2923

* average of 20 apical twigs of 10 cm.

Figures in parenthesis are the $x+0.5$ transformation.