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EFFECT OF SOWING DATES ON THE INCIDENCE OF MUSTARD APHID, *LIPAPHIS ERYSIMI* KALTENBACH IN MUSTARD

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ABSTRACT

Two varieties of mustard *viz*., Varuna and Rohini were evaluated for aphid incidence, yield and per cent oil content sown at 7 days interval from 1st October to 3rd December for three consecutive years *i.e.* 2001-2002, 2002-2003 and 2003-2004 in Rabi season. It was found that the early sown crop on 1st and 8th October had no/negligible aphid infestation. The crop sown on later dates had the higher aphid infestation as compared to early sowing dates. The crop sown by middle of October escaped the severity of aphid attack since the peak infestation is reached after the crucial growing and flowering period is over and plant become hard resulting in higher yield irrespective of varietals differences.

Key words: Sowing date, mustard aphid, mustard

INTRODUCTION

Rapeseed–mustard is second most important oilseed crop after groundnut grown in the country. It is prone to the attack of number of insect pests (Rai, 1976) amongst them mustard aphid, *Lipaphis erysimi* (Kaltenbach) is the most serious and act as a limiting factor in the production. The cultural practices of the insect pest are another important component of an Integrated Pest Management strategy in order to minimize the pest menace and the hazards accruing from insecticidal control. The present investigation was therefore, undertaken to find out the response of two cultivars sown on different dates against mustard aphid in the climatic conditions of eastern Rajasthan.

MATERIALS AND METHODS

The study was conducted at the farm of the National Research Centre on Rapeseed-Mustard, Sewar, Bharatpur (Rajasthan) for three consecutive years *viz*., 2001-2002, 2002-2003 and 2003- 2004.

The experiment was conducted in a split plot design with single replication. There were two varieties *viz.,* Varuna and Rohini and ten sowing dates *i.e.,* 1st October, 8th October, 22nd October, 29th October, 5th November, 12th November, 19th November, 26th November, and 3rd December. Each variety was sown in a plot size of 5.0 m x 4.8 m having row to row distance as 30 cm and plant to plant distance as 10 cm. All the recommended agronomic practices were followed in raising the crop successfully. Aphid incidence on each crop variety sown at each date was recorded on 10 plants per plot. The observations on aphid population were recorded twice a week *i.e.* Tuesday and Friday till remained on the crop.

RESULTS AND DISCUSSION

The influence of sowing dates on aphid infestation, seed yield and oil content were studied for three consecutive years *i.e*. 2001-2002, 2002-2003 and 2003-2004. The data on aphid infestation presented in figure from 1 to 6 shown that with the delay in sowing date resulted in higher aphid infestation on both the varieties. The variety Varuna had more number of aphids as compared to Rohini. The variation in aphid infestation among sowing dates and between the varieties were also observed. No/ negligible aphid infestation was found in the early sown dates *i.e.* 1st and 8th October sown crop however 15th and 22nd October sown crop had the low aphid infestation. Crop sown on 29th October and 5th November had moderate to severe infestation while the crop sown later to these dates has severe infestation. This shows that delay in sowings after 3rd week of October lead the crop to suffer from higher injury of mustard aphid at a younger crop stage.

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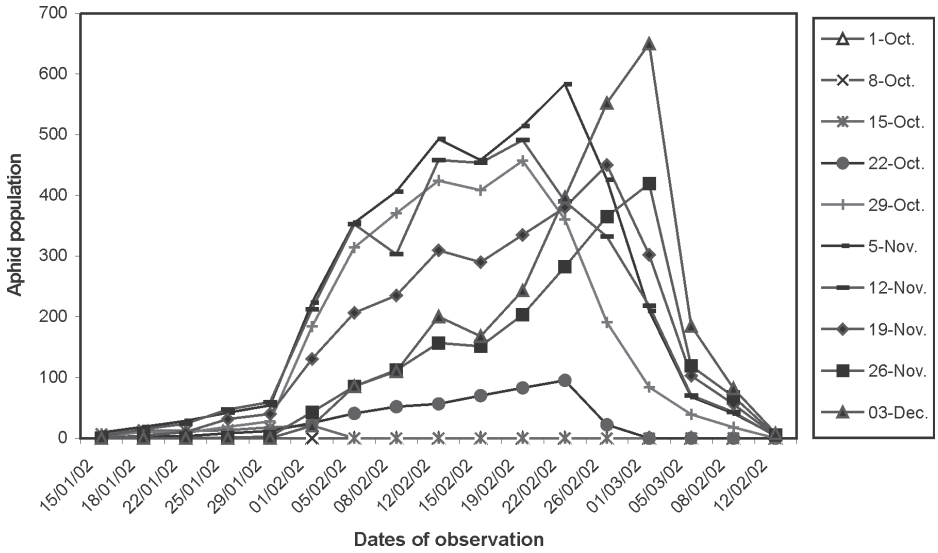

Fig. 1: Average aphid population on central shoot on cv. Varuna in different dates of sowing during 2001-02

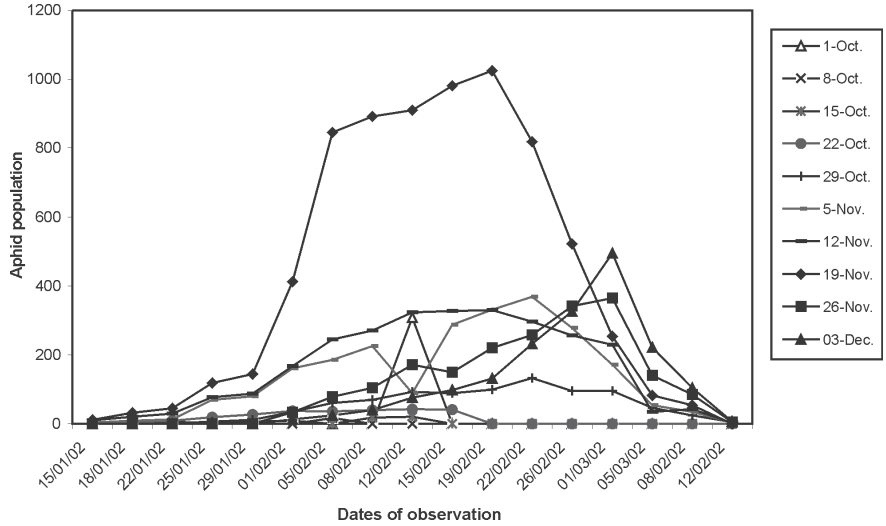

Fig. 2: Average aphid population on central shoot on cv. Rohini in different dates of sowing during 2001-02

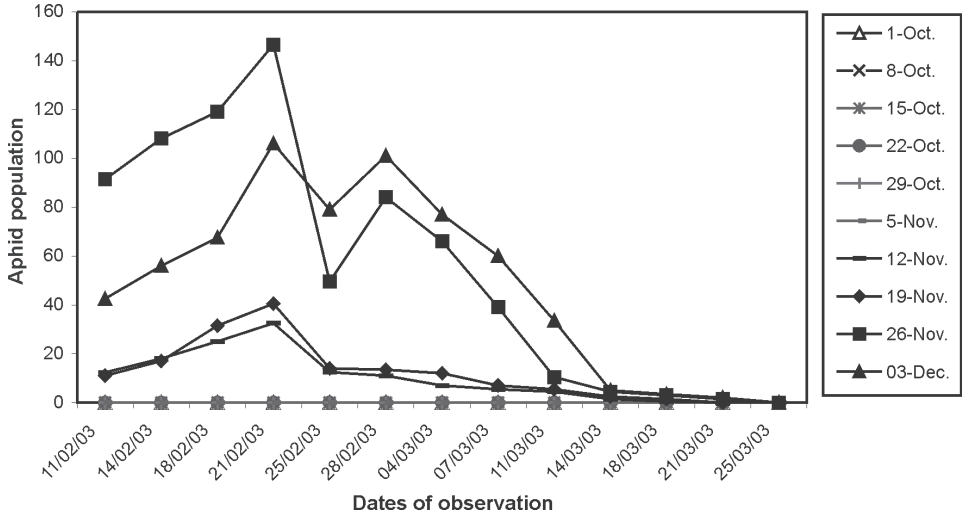

Fig. 3: Average aphid population on central shoot on cv. Varuna in different dates of sowing during 2002-03

Table 1: Effect of sowing dates on seed yield, test weight and oil content of mustard

Dates of sowing	2001-2002			2002-2003			2003-2004			Mean of three years		
	Yield Kg./ha.	Test weight (g/1000 Seeds)	Oil content (%)	Yield Kg./ha.	Test weight (g/1000 Seeds)	Oil content (%)	Yield Kg./ha.	Test weight (g/1000 Seeds)	Oil content (%)	Yield Kg./ha.	Test weight (g/1000 Seeds)	Oil content (%)
						Varuna						
1-Oct.	895.6*	5.82	39.9	2500.0	5.98	39.5	2791.7	5.68	39.5	2062.4	5.83	39.6
8-Oct.	1354.2*	5.51	40.1	2354.2	5.35	39.9	2708.3	5.60	39.2	2138.9	5.49	39.7
15-Oct.	2979.2	5.49	40.2	2491.7	5.37	39.8	2916.7	5.70	39.7	2795.9	5.52	39.9
22-Oct.	2375.0	5.68	39.5	2358.3	5.35	39.5	2208.4	5.48	39.6	2313.9	5.50	39.5
29-Oct.	1883.3	5.48	39.0	2375.0	5.56	39.4	2133.4	5.17	39.5	2155.6	5.40	39.3
5-Nov.	1800.0	5.65	38.8	2250.0	5.51	38.7	1625.0	5.11	39.0	1891.7	5.42	38.8
12-Nov.	1341.7	4.69	38.4	1416.7	5.15	38.9	1425.0	5.02	38.3	1394.5	4.95	38.5
19-Nov.	1187.5	4.43	38.3	1250.0	5.21	38.4	1125.0	4.95	38.1	1187.5	4.83	38.3
26-Nov.	766.7	4.13	38.1	541.7	4.41	38.2	1058.4	4.64	37.4	788.9	4.39	37.9
03-Dec.	616.7	4.25	38.0	500.0	4.40	37.8	916.7	4.36	37.7	677.8	4.34	37.8
SD	751.53	0.62	0.80	764.39	0.46	0.68	722.29	0.43	0.81	660.34	0.484	0.73
SEM	237.82	0.19	0.25	241.89	0.14	0.21	228.57	0.13	0.25	208.96	0.15	0.23
						Rohini						
1-Oct.	1104.0*	5.65	40.3	2770.8	5.85	42.6	2625.0	5.32	42.7	2166.6	5.61	41.9
8-Oct.	833.0*	5.16	40.2	2500.0	5.95	41.6	2666.7	5.69	42.3	1999.9	5.60	41.4
15-Oct.	2791.7	5.15	40.9	2458.3	5.55	42.8	2416.7	5.72	42.8	2555.6	5.47	42.2
22-Oct.	2916.7	5.71	40.5	2333.3	5.70	41.2	2166.7	5.68	42.7	2472.2	5.70	41.5
29-Oct.	2366.7	5.72	40.4	2391.7	5.10	41.5	1916.7	5.13	41.0	2225.0	5.32	40.9
5-Nov.	2008.3	5.75	39.7	2250.0	5.13	41.3	1901.7	5.04	41.0	2053.3	5.31	40.7
12-Nov.	1937.5	5.44	39.9	1375.0	4.90	40.6	1750.7	4.95	40.6	1687.7	5.10	40.4
19-Nov.	1466.7	5.36	39.5	1291.7	4.59	40.4	1333.7	4.40	40.3	1364.0	4.78	40.1
26-Nov.	675.0	4.61	38.8	583.3	4.34	39.4	1291.7	4.55	38.4	850.0	4.50	38.9
03-Dec.	645.8	4.29	38.3	520.8	4.31	39.2	916.7	4.01	38.1	694.4	4.20	38.5
SD	814.09	0.51	0.82	762.18	0.48	1.09	465.69	0.56	1.62	613.92	0.48	1.15
SEM	257.62	0.16	0.25	241.19	0.15	0.34	147.37	0.17	0.51	194.27	0.15	0.36

* Parakeet damaged plots, SD- Standard deviation, SEM - Standard Error of Mean

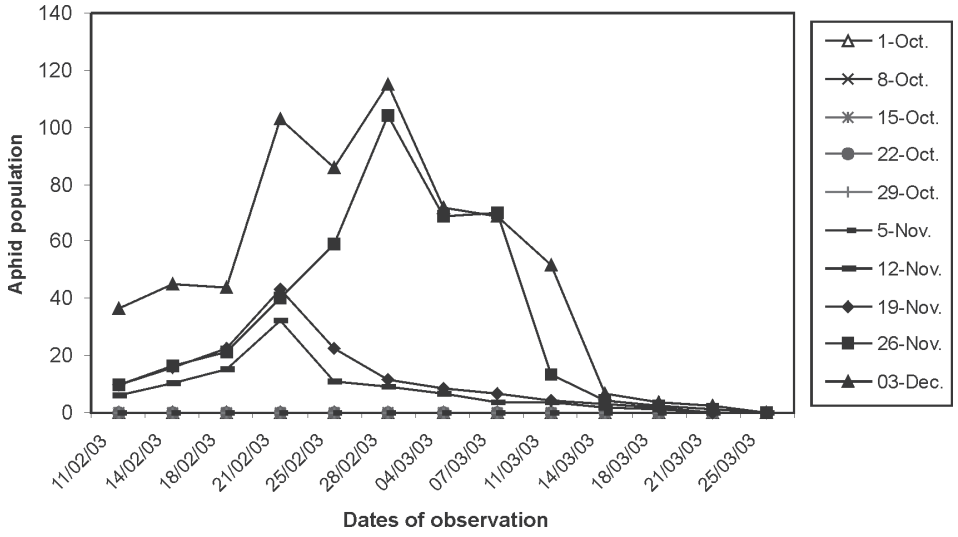

Fig. 4: Average aphid population on central shoot on cv. Rohini in different dates of sowing during 2002-03

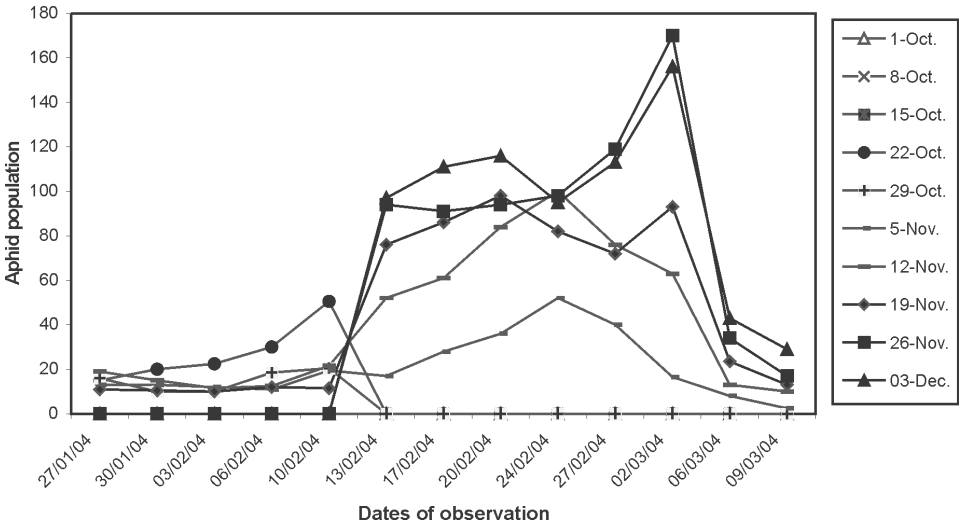

Fig. 5: Average aphid population on central shoot on cv. Varuna in different dates of sowing during 2003-04

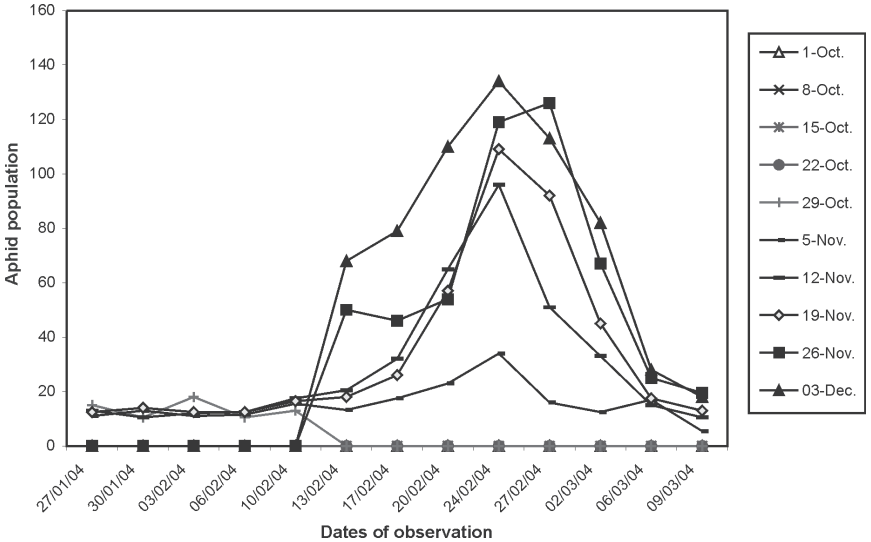

Fig. 6: Average aphid population on central shoot on cv. Rohini in different dates of sowing during 2003-04

The effect of dates of sowing is further observed on the seed yield, test weight and oil content in both varieties (Table-1). It is found that maximum yield was obtained in October sowing dates in both the varieties and years of study than declined. The varieties provided maximum yield in 15th October sown crop. Higher test weight and oil content were also recorded in the crop sown on early dates *i.e*. in October. Higher seed yield obtained in earlier sowing dates suggests that early sown crop escaped severity of aphid onslaught at its crucial period of flowering, since peak infestation is reached by the time flowering is over and most of the pods have been turned yellow. With the delay in sowing date, growing stage and flowering period coincided with the peak period of infestation resulting in yield decline (Bhattacharjee, 1961,Tripathi and Singh, 1969, Kundu and Pant, 1967,1968; Singh *et al.* 1984). The results, thus obtained show that irrespective of the variety sowing should be done by the middle of October to minimize the aphid infestation and obtain good yield.

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