PREFERENCE OF Lipaphis erysimi (KALT.) TO DIFFERENT CANOLA VARIETIES

Bhai Khan Solangi, Muzaffar Ali Talpur and Imtiaz Ahmed Nizamani

ABSTRACT
Preference to Lipaphis erysimi Kalt, on different canola varieties was carried out at field of Oilseed Section, Agricultural Research Institute, Tandojam during 2004-05. The seeds of six canola varieties, viz., (1) Oscar, (2) Drunkled, (3) PR-1007, (4) PR-1005, (5) PR-1003, (6) AH-2001 were sown to record the aphid population. The Lipaphis erysimi Kalt., appeared on plants during last week of January and continued upto harvesting. First observation was taken on 26-01-2005. When the minimum population of 4.50 aphid/plant was observed on variety AH-2001, and the maximum population of 11.55 aphid /plant on variety PR-1005. The peak population of Lipaphis erysimi Kalt., was observed on 26-02-2005. Minimum pest population was 375.55 aphids/plant on AH-2001 and the maximum population was 593.55 aphid/plant on PR-1005. The result shows among all the varieties under observation that Lipaphis erysimi preferred the variety PR-1005 than the others.

INTRODUCTION
Pakistan is an agricultural country; its economy depends upon agriculture. Amongst the traditional oilseeds, rape and mustard, (Brassica spp) are the established oilseed crops in the country, these are the second largest contributors towards local production after cotton Khoso, (1991); Sekhon and Baketia, (1994).

Canola (sweet mustard) varieties developed by agricultural scientists of Canada or Europe in 1970, are recently introduced oilseed crop in Pakistan. Canola is free of bitterness odor are very popular amongst the health conscious people due to less content of erucicacid, glucosinolates and cholesterol. Canola oil is also rich in requisite food ingredients, delicious and easily digestible Mishra, (1995); Parsad and Katiyar, (1997).

Consumption of edible oil in Pakistan is 19 Lakh tonne out of which Pakistan produces 10 Lakh tons and 9 Lakh tons is imported. In 1999-2000 cropping season rape and mustard crops were sown on 321.3 hectares in Pakistan and the production was 289.5 tons (1999-2000). In Sindh, the cultivation of oilseed crops was made on 98.1 hectares and the production was 82.2 tons in 1999-2000 Upadhyay, (1996); Vekaria and Patel, (2000).

The Brassica spp. crops are attacked by a large number of insect pests. Such as mustard aphid, Lipaphis erysimi Kalt. cabbage aphid, Brevicoryne brassicae L., whiteflies, painted bugs, mustard leaf eater, thrips etc. Among all, aphids are serious pests. The adult and nymph are pale greenish in colour and look like louse; feed in large number on leaves, flowers, buds, pods and shoots of cruciferous oilseed crops. Aphids breed parthenogenetically and they produce about 23-130 young ones, full grown in 7-10 days, and complete 4 to 5 generations in a year Lohar, (2001).

The losses caused by insect pests particularly aphids have compelled the entomologists to develop control strategies for these insect pests. Feeling the gravity of the situation, the study was carried out to assess the varietal preference of Lipaphis erysimi Kalt to different canola varieties under agro-ecological conditions of Tandojam, district Hyderabad, Sindh.

MATERIAL AND METHODS
Preference of Lipaphis erysimi (Kalt) to different canola varieties was studied in the experimental field of Oilseed Section, Agricultural Research Institute, Tandojam during 2004-05.

The seeds of 6 Brassica varieties i.e., (1) Oscar (2) Dunkled (3) PR-1007 (4) PR-1005 (5) PR-1003 and (6) A.H-2001 were sown on 29-10-2004 in randomized complete block design with four replications. Each replication was divided into 6 sub-plots for respective varieties and each sub-plot measured 4.5 x 2.5 meters with a row to row spacing of 45 cm. After germination all the cultural practices were performed throughout the growing season in all the plots; however insecticides were not sprayed in and around the experimental area.

Observation on Aphid Population
The observations on aphid population were recorded at weekly intervals starting with invasion of aphids (last weak of January, 2005).
Five plants from each sub-plot, i.e. 20 plants of each variety were selected at random and tagged for aphid counts throughout the crop season. Whole plants from bottom to top were observed. When direct counting became difficult the population was estimated by counting aphids on a measured part of plant and then population was multiplied with the measurement of whole plant, and from this the number of aphids present on the plant were calculated. Finally the average number of aphids per plant was determined. The daily weather data on maximum and minimum temperature, relative humidity and rainfall were also collected from Regional Agro Meteorological Center (R.A.C.) Tandojam. The results obtained on aphid population were further analyzed statistically.

RESULTS AND DISCUSSION

The preference of Lipaphis erysimi (Kalt.) on different canola varieties under field conditions was determined from 29th October, 2004 to 19th March, 2005 at the Oilseed Section, Agriculture Research Institute, Tandojam. The detailed results on various aspects of aphid, Lipaphis erysimi development are discussed as follows.

The results of mean aphid population/plant on different canola varieties at weekly interval starting from the appearance of aphid till maturity of the crop are presented in table-I.

A critical review of the data showed that aphid population varied significantly with the canola varieties. The appearance of aphid population on Oscar variety was recorded during last week of January (6.75 aphids/plant). The aphid infestation increased gradually with plant phenology of reproductive stages and reached to peak (481.5 aphids/plant) during last week of February. Thereafter population of aphids declined gradually towards the maturity of the plants.

The infestation of Lipaphis erysimi on variety Dunkled appeared during last week of January (7.2 aphids/plant). Lipaphis erysimi multiplied very rapidly during January and February and reached to its peak (393.9 aphids/plant) during last week of February. Thereafter pest population declined during third week of March due to crop maturity.

The abundance of Lipaphis erysimi on variety PR-1005 was recorded during last week of February and declined gradually with crop maturity.

The infestation of Lipaphis erysimi on variety PR-1003 was (6.2 aphids/plant) on 26th January. The Lipaphis erysimi increased its population and reached at its peak (442.5 aphids/plant) on 26th February. The population of Lipaphis erysimi gradually declined during third week of March.

The infestation and abundance of Lipaphis erysimi on variety AH-2001 was lower (4.5 aphid/plant) during last week of January than other varieties. The pest population multiplied gradually and reached maximum (375.5 aphids/plant) during last week of February and declined rapidly (32.3 aphids/plant) during third week of March.

The results on preference of Lipaphis erysimi Kalt., on different canola varieties (averaged over varieties) showed that the incidence of Lipaphis erysimi was recorded during last week of January with lower (7.1 aphids/plant).

The results show that maximum aphid population was observed on variety V4 (225.15), followed by V1 (181.42), V3 (167.63), V5 (162.98), V2 (147.5) and V6 (122.81), respectively.

The results further show that the highest aphid population was observed on 26-2-2005 (457.0 aphids/plant) during last week of February and reduced gradually in third week of March (75.71 aphids/plant) due to maturity of the crop.

Naveen et al. (1996) studied the influence of crop morphphenological parameters on infestation of Lipaphis erysimi (Kalt) on brassica genotypes and reported that Lipaphis erysimi
appeared in the 4th week of January and continued up to the third week of March.
Ram and Gupta (1987) reported that cloudy weather caused an increase in aphid population.

CONCLUSION
On the basis of data presented, it could therefore be concluded that:

i. The aphid, Lipaphis erysimi (Kalt.) preferred the canola varieties from last week of January to 3rd week of March.

ii. The AH-2001 was comparatively resistant to aphid and PR-1005 was susceptible one.

Table-I Mean aphid population/plant of different canola varieties from 26-01-2005 to 19-03-2005.

<table>
<thead>
<tr>
<th>Date / Month</th>
<th>V¹</th>
<th>V²</th>
<th>V³</th>
<th>V⁴</th>
<th>V⁵</th>
<th>V⁶</th>
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<tr>
<td>26-01-2005</td>
<td>6.75</td>
<td>7.20</td>
<td>5.85</td>
<td>11.55</td>
<td>6.20</td>
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<td>30.25</td>
<td>29.20</td>
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<td>45.00</td>
<td>30.95</td>
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<td>19-2-2005</td>
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<td>128.0</td>
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<td>241.0</td>
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<td>26-2-2005</td>
<td>481.55</td>
<td>393.90</td>
<td>454.95</td>
<td>593.55</td>
<td>442.55</td>
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<td>5-3-2005</td>
<td>405.45</td>
<td>310.60</td>
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<td>12-3-2005</td>
<td>257.80</td>
<td>233.45</td>
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<td>246.0</td>
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<td>19-3-2005</td>
<td>90.35</td>
<td>66.15</td>
<td>78.65</td>
<td>119.70</td>
<td>67.15</td>
<td>32.30</td>
<td>75.71f</td>
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</table>

Mean 181.42b 147.85 cd 167.63 bc 225.15a 162.98 bc 122.81d --

V¹ Oscar V³ PR-1005
V² Dunkled V⁵ PR-1003
V³ PR-1007 V⁶ AH-2001

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<td>S.E±</td>
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<td>36.668</td>
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REFERENCES


