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EFFECICACY OF DIFFERENT INSECTICIDES FOR THE CONTROL OF APHID, *BREVICORYNE BRASSICAE* (LINN.) (HOMOPTERA; APHIDIDAE) ON CANOLA, *BRASSICA NAPUS* (L.)

Muhammad Aslam, Muhammad Razaq, Zafar-Ul-Islam and Shazad Anjum
University College of Agriculture, Bahauddin Zakariya University, Multan

Abstract: Effectiveness of Imidacloprid 25WP @250 gm/ha, Cabosulfan 20EC @1800 ml/ha, Triazophos 40EC @1400 ml/ha and Imidacloprid 200SL @ 600 ml/ha was studied for the control of aphid, *Brevicoryne brassicae* (Linn.) on canola, *Brassica napus* at Multan, Pakistan during crop season 1998-99, at pod formation stage. All the insecticides gave effective control of the aphids up to nine days after application, but Triazophos proved to be the best because of its consistent effectiveness throughout the experiment

Keywords: *Brevicoryne brassicae, Brassica napus*, insecticides, aphid, canola.

INTRODUCTION

At present, Pakistan is self sufficient only in one third of the requirements for edible oil. The remaining requirement is met by import [Hashmi 1994]. Canola, *Brassica napus* has been recently introduced in this country. It was cultivated on 100,000-hectare area in 1996-97 and produced 60,000 tons of oil [Potash Development Institute 1998]. Medicinal value and presence of lesser amount of saturated fats in canola oil [POS 1994] has further increased its importance.

Canola is the host of 21 insect pest species in the world [Lamb 1989], among which aphid dominates the others [Weber *et al*. 1991]. In Pakistan, five insect pests feed upon canola, out of which *Brevicoryne brassica* (Linn.) aphid is the most serious [Ali and Munir 1984]. Aphids suck the plant juices from the leaves and inflorescence and deform them. The depletion of the nutrients in the plant adversely affect crop's growth and seed yield. In case of severe infestation, yield may be reduced up to 35% [Buntin and Raymer 1994, Atwal and Dhaliwal 1998]. Importance of this pest on canola and other oil seed crops and need for its control has been emphasized by various workers in Pakistan [Chaudhri 1985, Chaudhri 1986], India [Maurya 1998] and USA [Raymer *et al.* 1990]. The area under canola cultivation is increasing and aphid is a serious pest of this crop. Thus, efficacy of different insecticides was investigated and reported in this paper.

MATERIALS AND METHODS

Westar variety of canola was sown by broadcast method at Agriculture Farm of the University College of Agriculture, Bahauddin Zakariya University, Multan on October 27, 1998. Total area under the crop was 3 hectares. Single Super Phosphate (SSP) @ 66 kg/ha and Urea @ 122 kg/ha was applied during land preparation. The crop was irrigated four

times during the growing season. Absolute population of aphids per plant was recorded from the very early stage of the crop. At pod formation stage, an area of 30 x 29m was selected in the field and 24 plots of 6 x 4m were marked in the selected area. Non- experimental area between replications was one meter. The experiment was laid out in a randomized complete block design with four replications

Five insecticides namely Imidacloprid 25WP @250 gm/ha, Cabosulfan 20EC @1800 ml/ha, Triazophos 40EC @1400 ml/ha and Imidacloprid 200SL @ 600 ml/ha were sprayed. A knapsack sprayer was used with hollow cone nozzle using 250 l water per ha. The sprayer pressure was 18 PSI. The number of aphid was counted, on top 30 cm of the main inflorescence, 24 hours before and one, three, seven and nine days after application. In each plot, five inflorescences were taken randomly- four from the corners one meter inside the plot and one from middle of the plot.

Data analysis was performed by analysis of variance for RCB design and means were separated using LSD at 5% level of significance [Chaudhry and Kamal 1996].

RESULTS AND DISCUSSION

Numbers of aphids per inflorescence were non-significantly different in all the treatments before insecticide application (Table 1). One day after insecticide application mortality in Imidacloprid 25WP @ 500 g/ha and 250 g/ha, Carbosulfan 20EC and Triazophos 40EC treated plots was non-significantly different from each other, but was significantly higher than that in Imidacloprid 200SL and control. On third and seventh day after insecticide application, mortality in all the insecticide treated plots was non-significant, but was significantly higher than that in control. On ninth day after application, mortality of aphids was significantly lower in plots treated with Carbosufan than all other treatments including control. This may be due to the loss of persistence of Carbosulfan after seven days of application and the pest reappeared. Quality of food could have been poor for aphids at this stage of the crop, which has pronounced effect on insect population [Price 1975]. Mortality in control also increased due to crop maturity resulting in emigration of aphids from canola.

These studies support the recommendations that mid February was the most crucial time to spray with seven days interval when the population reached 50 aphids per plant [Maurya 1998]. Our results are different from the results of Bath and Singh [1989]. The difference may be due to different plant species under trial and sowing dates.

It is concluded that there is no advantage of using insecticides for the control of aphids on pod formation stage of canola because aphid population will decline naturally at this stage. Application should not be repeated before seven days. Among the tested products, Traizophos

40EC proved to be the best insecticide against aphid because of its persistence up to nine days after application.

Table 1: Mortality of *Brevicoryne* b*rassicae* on canola with five insecticides during 1999[a].

Treatment	Aphids/ Inflorescence*	Percent Mortality of Aphids**			
	Before Insecticide Application	1 DAT***	3 DAT	7 DAT	9 DAT
Imidacloprid 25 WP @ 500 g/ha	90a	91a	95a	92a	90a
Imidacloprid 25 WP @ 250 g/ha	88a	77a	91a	96a	95a
Carbosulfan 20EC @ 1800 ml/ha	65a	83a	89a	81a	65b
Trazophos 40EC @ 1400 ml/ha	140a	70a	97a	99a	98a
Imidacloprid 200 SL @ 600 ml/ha	93a	32b	83a	99a	97a
Control	134a	32b	61b	72b	89a

a Means followed by the same letter in columns are non-significantly different from each other (LSD; P=0.05).
* Top 30 cm of the inflorescence;
** Calculated on the basis of number of aphids/ inflorescence before insecticide application;
*** Days after treatment.

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