CHEMICAL CONTROL OF SUCKING INSECT PESTS ATTACKING SUNFLOWER

Shamshad Akbar and Sohail Ahmad
Department of Agri. Entomology,
University of Agriculture, Faisalabad

Three different insecticides viz., Polytrin-C, Danitol and Monitor each at the rate of 0.1, 0.15 and 0.2 per cent were tried against whitefly *(Bemisia tabaci)*, Jassid *(Amrasca devastans)* and tingid bug attacking sunflower crop. Danitol 0.2% gave maximum mortality of 89.5, 91.2 and 90.7% in case of jassid, whitefly and tingid bug, respectively, after 24 hours of spray followed by Polytrin-C 0.2% with 85.4, 84.4 and 88.3% mortality while Monitor 0.1% proved to be the least effective with only 63.4, 58.4 and 61.3% mortality of three insect species.

INTRODUCTION

Sunflower is an important oil-seed crop bridging over the vegetable-oil gap in Pakistan. It is attacked by a number of insect pests which inflict heavy losses to it. Makhdoomi *et al.* (1984) recorded 29 insects associated with sunflower crop in Pakistan out of which Jassid *(Amrasca devastans)*, whitefly *(Bemisia tabaci)* and tingid bug were the most common. Hassan *et al.* (1984) obtained an effective control of jassid with Temik 10 g, or Disyston 10 G, and of whitefly and dusky cotton bug with Metasystox 25 EC and Dimecron, respectively. Bala-subramanian and Chelliah (1986) procured an effective control of *Amrasca biguttula biguttala* and *Bemisia tabaci* with 0.05% Fendosulfan applied 3 times, 25, 35, 45 days after sowing. In the present studies, an attempt has been made to evaluate different doses of three insecticides for the control of sucking insect pests attacking sunflower.

MATERIALS AND METHODS

The experiment was conducted at PARS, University of Agriculture, Faisalabad during autumn 1989 following RCBD with 3 replications using Suncom 90 variety of sunflower. Plot size was 9' x 30'. Monitor, Polytrin-C and Danitol were applied each @ 0.1, 0.15 and 0.2 per cent, 30, 45 and 60 days after sowing. Observations on population of jassid, whitefly and tingid bug were recorded 24 hours before and then after 24, 48, 72 and 96 hours of each spray. Three leaves, one each from top, middle and base of each of the eight randomly selected plants from each plot were observed for recording insect population during early sunrise hours when they were almost inactive. The data were analysed statistically to calculate the comparative efficacy of different doses of insecticides used. Yield data were recorded at maturity. The data obtained were analysed statistically using Duncan's Multiple Range test as given by Steel and Torrie (1960).

RESULTS AND DISCUSSION

Danitol 0.2% gave the highest mortality (84.12%) of whitefly and was statistically similar to Polytrin-C 0.2%, Danitol 0.15% and Polytrin-C 0.15% with 81.16, 80.45 and 74.43% mortality, respectively (Table 1). Polytrin-C 0.15% and

Table 1. Per cent mortality of pests of sunflower at different post-treatment time intervals

Treatment	Concentration	Whitefly				Jassid				Tingid bug			
		24 hours	48 hours	72 hours	96 hours	24 hours	48 hours	72 hours	96 hours	24 hours	48 hours	72 hours	96 hours
Check	-	13.3 a	10.7 a	12.2 a	8.5 a	16.9 a	8.2 a	9.7 a	9.6 a	4.6 a	8.0 a	3.0 a	
Monitor	0.15	69.8 bc	66.6 bcd	50.1 b	47.1 bc	68.7 bc	61.1 b	64.9 cd	51.0 c	61.6 b	54.7 b	59.2 bc	37.5 b
Monitor	0.2	72.8 c	70.4 cd	66.1 c	56.0 c	76.1 bcd	63.9 b	63.9 cde	60.8 cd	70.9 bc	63.9 bc	71.1 cd	47.2 b
Polytrin-C	0.15	76.8 cd	80.4 de	75.8 cd	64.7 cd	84.0 cd	79.9 c	73.3 def	71.4 de	85.7 cd	79.2 cd	76.4 cd	69.7 c
Danitol	0.15	85.7 de	87.8 e	78.7 d	69.4 de	81.2 cd	80.3 c	78.8 ef	72.8 de	87.1 cd	78.2 cd	73.7 cd	72.2 c
Monitor	0.1	63.4 b	52.2 b	49.5 b	38.9 b	58.4 b	55.2 b	49.8 b	37.6 b	61.3 b	49.6 b	47.2 b	36.4 b
Danitol	0.1	66.4 bc	65.3 bcd	58.1 bc	53.7 c	68.4 bc	51.3 b	62.2 bc	55.4 c	58.8 b	59.8 b	52.4 b	50.6 b
Polytrin-C	0.2	85.4 de	83.4 de	81.9 d	73.8 e	88.4 cd	82.7 c	78.5 ef	77.5 e	88.3 cd	85.6 d	80.3 d	74.9 c
Polytrin-C	0.1	68.0 bc	62.3 bcd	59.6 bc	54.2 c	72.0 bcd	50.9 b	61.48 bc	53.2 c	65.6 b	58.5 b	50.4 b	47.2 b
Danitol	0.2	89.5 e	90.5 e	83.4 d	76.3 e	91.2 d	84.6 c	81.5 f	78.0 e	90.7 d	86.2 d	80.7 d	79.2 c

Monitor 0.2% with 74.43 and 67.15% mortality were statistically at par with each other, whereas Monitor 0.2%, Polytrin-C 0.1%, Danitol 0.1%, Monitor 0.15% and Monitor 0.1% with 67.16, 61.03, 60.94, 58.43 and 57.70% mortality did not differ significantly among themselves in controlling whitefly.

The insecticides gave significant control of tingid bug: Danitol 0.2%, Polytrin-C 0.2%, Danitol 0.15% and Polytrin-C 0.15% with 83.83, 82.31, 77.84 and 77.79% mortality, respectively did not differ significantly from each other in controlling tingid bug (Table 2). Monitor 0.2% and 0.15%, Polytrin-C 0.1% and Danitol 0.1%

Table 2. Overall average reduction in population recorded at 24, 48, 72 and 96 hours after treatment

Treatment	Concentration (%)	Overall average reduction of			Yield (lbs/plot)
		Whitefly	Jassid	Tingid bugs	
Check	-	11.20 d	11.11 f	5.78 d	12.1 d
Monitor	0.1	57.70 c	50.30 e	46.39 c	14.19 b
Monitor	0.15	58.43 c	61.82 d	61.45 b	15.10 bc
Monitor	0.2	67.16 bc	67.23 c	69.09 b	15.30 c
Polytrin-C	0.1	61.03 c	59.43 d	55.46 bc	14.37 bc
Polytrin-C	0.15	74.43 ab	77.23 b	77.79 c	18.11 a
Polytrin-C	0.2	81.16 a	81.97 ab	82.31 a	18.5 a
Danitol	0.1	60.94 c	59.35 d	54.96 bc	14.45 bc
Danitol	0.2	84.12 a	83.88 a	83.83 a	18.75 a

Danitol 0.2% and Polytrin-C 0.2% by yielding 83.88 and 81.97% mortality were statistically at par with each other in controlling jassid. Polytrin-C 0.2%, Danitol 0.15% and Polytrin-C 0.15% had non-significant difference among themselves and yielded 81.97, 78.33 and 77.23% mortality, respectively. Monitor 0.15%, Polytrin-C 0.1% and Danitol 0.1% gave 61.82, 59.43 and 59.35% mortality, respectively and were statistically equal to one another, whereas Monitor 0.2% and Monitor 0.1% differed significantly from each other. Both of these treatments were different from rest of the treatments.

had similar effect on tingid bug and yielded 69.09, 61.45, 55.96 and 55.46% mortality, respectively. The latter two insecticides were also statistically at par with Monitor 0.1% in controlling the tingid bug.

Treated plots gave higher yield than the check (12.1 lbs). The highest yield (18.75 lbs) was obtained from plots treated with Danitol 0.2% followed by Polytrin-C 0.2%, Danitol 0.15% and Polytrin-C 0.15% with 18.5 lbs, 18.39 and 18.11 lbs, respectively, revealing no statistical difference among themselves but were significantly different from Monitor 0.2% with 15.30 lbs yield per plot. The latter treatment was statistically at

par with plots treated with Monitor 0.15%, Danitol 0.1% and Polytrin-C 0.1%.

A perusal of data presented in Tables 1 and 2 indicate that Danitol 0.2% has proved to be the best of all the treatments as it yielded the highest mortality of 90.25, 91.2 and 90.7% of whitefly after 48 hours, jassid and tingid bug after 24 hours of treatment, respectively. Results of present studies are not comparable with those of previous workers as these compounds have not been used extensively in the past. However, Hassan *et al.* (1984) got effective control of jassid with Temik and Disyston 10 G and whitefly with Metasystox and Dimecron.

REFERENCES

Balasubramanian, G. and S. Chelliah. 1986. Chemical control of pests of sunflower. Pesticides, 19 (14): 21-22. (Rev. Appl. Ento. Ser. A, 74 (12): 5904; 1986).

Hassan, A.M., T. Mahmood and M. Ahmad. 1984. Insect pests of sunflower at Faisalabad. PARC Proc. Nat. Sunflower Workshop. April 28-30, Barani Agri. Res. and Dev. Proj. NARC, Islamabad. p. 39.

Makhdoomi, S.M.A., M.N. Bhatti, M.A. Zia and M. Shafique. 1984. Studies on insects associated with sunflower crop in Faisalabad. J. Agric. Res., 22: 51-62.

Steel, R.G.D. and J.H. Torrie. 1960. Principles and Procedures of Statistics. McGraw Hill Book Co., New York, USA. 481 p.