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FIELD EVALUATION OF ACARICIDES FOR THEIR EFFECTIVENESS AGAINST WHITE MITE, *SCHIZOTETRANYCHUS* SPP. ON SUGARCANE

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Several new acaricides were evaluated against sugarcane white mite, *Schizotetranychus* spp., during 1969–1970. The sugarcane crop was sown at Punjab Agricultural Research Institute, Faisalabad, in a randomized block design. Each compound was sprayed three times at 10-day intervals.

Data on mite population and mortality were recorded 24 hr before, and 48 and 96 hr after each treatment. Twentyseven leaves were observed from each treatment. One square inch area from the top, middle and bottom of each leaf was observed under the microscope.

Chlorobenzilate, ethion, formothion and methylparathion were significantly more effective than other chemicals used against this pest. These acaricides provided more than 90 % control of white mite during the four days observation period. Four other compounds, chloropropylate, bromophosethyl, tetradifon, and azinphosethyl were relatively less effective. Further studies of their effect on predatory mites and integration with other cultural practices for the management of this pest are suggested.

INTRODUCTION

Sugarcane is an important crop in Pakistan. The early sown crop is severly attacked by the white mite, *Schizotetranychus* spp., which results in considerable damage to the crop. Rattan Lal *et al* [1] used dicofol, carbophenothion and dimethoate against the sugarcane mite, *Schizotetranychus andropogoni* (Hirst.), in India and reported that dicofol and carbophenothion were highly effective against this mite. Authentic information in Pakistan, however, is very limited. Demeton-s-ethyl, azinphosethyl, ethion and dicofol are being recommended for commercial applications [2]. The present work describes the effectiveness of some new acaricides against this pest.

MATERIALS AND METHODS

Experiments for the evaluation of acaricides against sugarcane white mite were conducted at Punjab Agricultural Research Institute (PARI), Faisalabad, during 1969–1970.

The first experimental sugarcane crop was sown in March 1969, in a randomized block design. Five treatments, including control, were replicated three times. The plot size was 12′ x 47′. Four acaricides, viz., chlorobenzilate, chloropropylate, bromophosethyl and tetradifon were sprayed at the rate of 0.5, 0.75, 1.0 and 0.5 lb AI/acre, respectively. Each chemical was sprayed three times at 10-day intervals.

The sugarcane crop for the second experiment was sown in September, 1970 and sprayed three times with formothion 0.75 lb, and azinphosethyl, ethion and methylparathion each at the rate of 0.5 lb AI/acre. Experimental design and plot size were the same as for the first experiment (above).

Observations regarding infestation and mortality of nymphs and adults of the mite, were recorded 24 hr before, and 48 and 96 hr after each treatment. Three plants were selected atrandom from each plot and three leaves were collected from the top, middle and base. For every selected leaf, one square inch area from the top, middle and bottom was observed under the microscope.

RESULTS AND DISCUSSION

Data on the effectiveness of different acaricides against nymphs and adults of *Schizotetranychus* spp., are presented in Tables 1 and 2. Results are an average of three treatments made at 10-day intervals.

Chlorobenzilate was the most effective compound when applied 0.5 lb AI/acre (Table 1). It provided an excellent control of both adults and nymphs of this pest throu-

ghout the observation period. Other acaricides in the order of descending effectiveness were formothion, methyl-parathion and ethion (Table 2), which gave significantly better control as compared to other chemicals, four days after treatment. Azinphosethyl and tetradifon were least effective. However, tetradifon showed latent toxicity to nymphs when observed 96 hr after treatment.

Data on the effectiveness of these chemicals against sugarcane mite has not been published previously in Pakis-

Table 1. Efficiency of several acaricides against *Schizotetranychus* spp. on sugarcane, sown in March 1969.

Acaricide	Dose (lb) AI/acre	Av. Infestation per sq. inch 24 hr before treatment		Av. percentage mortality at post-treatment interval (hr)*			
				48		96	
		Adults	Nymphs	Adults	Nymphs	Adults	Nymphs
Chlorobenzilate	0.50	2.70	2.35	98.90^{a}	95.70^{a}	74.80^{a}	99.50^{a}
Chloropropylate	0.75	3.80	4.50	82.60^{b}	82.00^{b}	71.05^{a}	71.11^{b}
Bromophosehtyl	1.00	4.05	4.70	72.80^{bc}	59.50^{c}	61.90^{a}	57.40^{c}
Tetradifon	0.50	4.18	4.50	61.70^{c}	53.30^{c}	38.20^{b}	93.30^{a}
Control	0.0	4.10	8.40	23.10^{d}	50.90^{c}	2.40^{c}	34.50^{d}

*Column means followed by the same letter are not significantly different at 5% level of probability (Chi-Square Contingency Analysis).

Table 2. Efficiency of several acaricides against *Schizotetranychus* spp. on sugarcane, sown in September 1970.

Acaricide	Dose (lb) AI/acre	Av. infestation per sq. inch 24 hr before treatment		Av. percentage mortality at post-treatment interval (hr)*			
				48		96	
		Adults	Nymphs	Adults	Nymphs	Adults	Nymphs
Formothion	0.75	4.96	21.12	97.70^{a}	95.50^{a}	86.40^{a}	90.09^{a}
Methylparathion	0.50	2.41	6.30	99.50^{a}	93.60^{a}	90.40^{a}	87.30^{a}
Ethion	0.50	1.34	5.94	99.20^{a}	96.40^{a}	65.60^{b}	95.10^{a}
Azinphosethyl	0.50	3.70	8.22	80.20^{b}	62.10^{b}	68.10^{b}	48.70^{b}
Control	0.0	2.79	9.51	47.30^{c}	59.80^{b}	10.03^{c}	25.30^{c}

*Column means followed by the same letter are not significantly different at 5% level of probability (Chi-Square Contingency Analysis).

tan. However, Ali Niazee *et al.* [3] reported that ethion was very effective against Pacific spider mite, *Tetranychus pacificus* McGregor, without any significant effect on its predatory mite, *Metaseiulus occidentalis* (Nesbitt). Similar results on the effectiveness of ethion have also been reported against other species of Tetranychidae on various crops [4, 5, 6]. Chlorobenzilate has also been reported very effective against *T. urticae* (Koch) [7]. Present results are, therefore, in agreement with previous studies on other tetranychid mites.

Ethion stands a good chance for its integration with other agricultural practices; late sowing, mite free seed, etc., for the management of this pest, probably, without doing much damage to its predators. However, further studies are needed to explore the harmful effects of this chemical to predatory mites of this pest under local conditions.

In view of the present work chlorobenzilate, ethion, formothion and methylparathion could be recommended in future for the control of this mite.

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