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THE COMPARATIVE EFFICACY OF SOME INSECTICIDAL SPRAY SCHEDULES AGAINST THE SUCKING PEST-INSECTS ON FS-628 COTTON

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The efficacy of three insecticide spray schedules comprising eight insecticides viz. thiomethoxam,diafenthiruan, buprofezin, cypermethrin, fenpropathrin, methamidophos, endosulfan and quinalphos was compared, using recommended doses, against the sucking pest-insect complex of FS-628 cotton. All the insecticidal spray schedules tested, in general, were effective against the sucking pest-insects. On numerical basis, however, an insecticide spray schedule involving thiomethoxam followed by one spray of quinalphos and another with fenpropathrin + buprofezin was found as the most effective both against each individual sucking pest-insect and their overall complex.

Key words: cotton, insecticides efficacy, sucking pest-insects

INTRODUCTION

Sucking pest-insects viz. cotton jassid, whitefly and thrips are the mostnotQrious pests of cotton crop and play havoc with it. To avoid such a situation, the application of the latest insecticide spray schedule is the only quick and safe escape. The previous investigation on the present lines revealed that probably none of the earlier workers tried the present insecticidal spray schedules/pest complex/crop combination. However, the information supplied by Dhawan et al. (1988), Satpute et al. (1989), El-Shahaway et al. (1991), Bashir (1993), Wahla et al. (1996), Hussain (1997), can in some way be quoted in this context. The main objective of the present studies was to sort out the comparative efficacy of some of the latest spray schedules not only against cotton jassid, whitefly and thrips but also that of their complex on FS-628 cotton.

MATERIALS AND MEmODS

The materials employed in the present investigations were on field grown crop of FS-628 cotton and three spray schedules of eight different insecticides viz. Gammon 25 WG (thiomethoxam), Polo 500 SL (diafenthiuran), Pride 25 WP (buprofezin), Cypermethrin 10 EC (cypermethrin), Digital 20 EC (fenpropathrin), Trend 60 SL (methamidophos), Fezdion 35 EC (endosulfan) and Taophos 25 EC (quinalphos) as explained later through Table 1. The trials were laid out in randomized complete block design and there were 6 treatments including a control, having 4 repeats each. The spray materials were prepared according to the dose-schedules extended by the insecticide promoters and sprayed over to the ,crop at an interval of fortnight starting from August, 1999. The data on the pest population were recorded separately for each pest species, from 15 randomly selected leaves of 15 randomly selected plants/plot.

The counts were, however taken four times after the insecticide application to the crop with a lapse of 24, 48, 72 hr and 7 days and considered to be an indirect reflection of the pest population. The significance of the difference in mean population of pest-insects was sorted out through the Duncan's multiple range test (Steel and Torrie, 1980) and the relationship between the toxicity of the test schedules on different species of sucking pest-insects as well as on that of their overall complex was also sorted out as far as possible.

RESULTS AND DiSCUSSION

The data on multiple comparison of mean values for the population of different species of sucking pest-insects are presented in Table 1. An overall perusal of the data concerning mean values from one treatment to another, reveals a highly significant variation in the incidence of each sucking pest-insect species individually as well as in that of their complex. The mean values of the overall population of the sucking pest-insects [Table 1 (A)] in *T1-Ts'* where, different insecticidal spray-schedules were applied to the crop, were found to be very significantly lower than those of T_6 kept as control. Similarly, the mean values of the individual population ofjassid, whitefly, as well as those of the thrips [Table 1 (B to D)] in *T1-Ts'* where different insecticidal spray schedules were applied to the crop, were also found to be highly significantly lower than those in T_6 kept as control.

Thus, the lower mean values in the treatment~ from T_1 to T, compared with those of T_6 would reflect on their killing potential against the sucking pest-insect species as well as against their overall complex. On iiumeri~al basis, however, lower mean values for the sucking pest-insects in T_1 involving spray schedule comprising one spray of Gammon 25 WG followed with one spray of

quinalphos and another of fenpropathrin + buprofezin was found to be the most toxic to the pests .. A critical review of the correlation matrix, given in Table 2 reveals only one pattern of these changes in the sucking pest-insects. population, depending upon the significance of their relationship. Thus, the effects of the insecticides on cotton jassid [Table 2 *(2/1)],* cotton whitefly [Table 2 *(3/1)]* and cotton thrips [Table 2 *(4/1)]* were found to be positively correlated with those of their overall population complex.

Table l.A multiple comparison of the mean values for the population of different species of sucking pest-insects (leaf') on FS-628 cotton, with that of their complex after being sprayed over with some insecticides using various spray schedules

Treatments	Spray schedules comprising various insecticides	Dose (a.i.)/aere	Mean population of sucking pest-insects			
			Overall population of pest-insects (A)	individual population of		
				Jassid (B)	Whitefly (C)	Thrips(D)
T_6	Control	0.00	4.063** a	1.417** a	7.946** a	4.078** a
T_5	endosulfan, twice	2451nL., 245 ml,	1.266 b	0.234 b	2.560 b	1.006 b
	buprofezin+fenpropathrin	(137.5 g + 60 00)				
T_3	buprofezin, , twice,	137.5g, 137.5 g,	1.206 be	0.244 b	2.706 b	0.668 b
	fenpropathrinrcypermethrin.	(6000+2500)				
T_4	methamidophos, twice,	240 ml, 240 ml,	1.100 bed	0.221 b	2.589 be	0.491 b
	fenpropathrin+endosulfan	(60 00+245 00)				
T_2	diafenthiuron, , fenpropathrin..	100 00, 60 00,	1.077 cd	0.209 b	2.346 cd	0.677 b
	quinalphos+fenpropathrin	(17500+60 00)				
T_1	thiomethoxam, , quinalphos,	40.5 g, 175 00,	.0.936 ~ d	0.170 b	2.058 d	0.586 b
	fenpropathrin+buprofezin ..	(175 00+ 137.5g)				

** = Significant at 1% level..

Table 2. A correlation matrix.. between the mean population of different species of sucking pest-insects (leaf") and that of their overall complex on FS-628 cotton, after being sprayed over with some insecticides using various spray schedules

Population of pest-insects	Y (1)	X_1 (2)	X_2 (3)	X_3 (4)
Overall population	1.000			
Jassid population	0.990**	1.000		
Whitefly population	0.995**	0.988**	1.000	
Thrips population	0.967**	0.940**	0.939**	1.000

** = Significant at 1% level..

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