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Efficacy of Different Insecticides Against Thrips, *Caliothrips indicus* Bagnal (Thysanoptera : Thripidae) on Groundnut

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Groundnut is one of the most important oilseed crops of India. In Gujarat, it is cultivated extensively in about 2.28 million hactares and producing 1.99 million tonnes of groundnut pods (Anonymous, 1986).

The crop is attacked by various insect pests causing appreciable damage, which ultimately affect the yield. In recent years the thrips have assumed a pest status by causing 17 to 40 per cent loss in yield in different groundnut cultivars (Ghewande *et al.*, 1987).

The information regarding the control of this pest is very scanty. Field experiments were, therefore, conducted during summer and *Kharif* seasons at the College Farm, Gujarat Agricultural University, Junagadh Campus, Junagadh during the year 1987 on groundnut variety GG 2. The experiments were laid out in randomized block design with four replications.

The plot size was 5.0 x 3.0 metres. There were ten treatments (Table 1) including a control and spraying was carried out @ 500 litres/ha with knapsack sprayer. The crop was raised by providing six irrigations due to drought condition prevailed during the *Kharif* season, 1987. The spraying was carried out once, when there was substantial population in experimental area, for studying the effectiveness of various insecticides under test. The observations on the leaf damage was recorded from upper, middle and lower leaves of each of five randomly selected plants 24 hours before and 3 and 7 days after the spraying. The data were converted to percentage damage and were subjected to statistical analysis.

The results during summer season on per cent leaf damage 3rd day after spray (Table 1) revealed that all the insecticides significantly reduced the percentage leaf damage due to thrips over the control. Among the insecticidal treatments, significantly lowest per cent leaf damage (23.12%) was found in the treatment of dimethoate 0.03%. The next in order of reducing the incidence of thrips were phosphamidon 0.03 and quinalphos 0.05 per cent, which showed 28.32 and 29.15 per cent damage, respectively. The results on per cent leaf damage seventh day after spraying also revealed that the damage was reduced drastically in all the insecticidal treatments. However, the lowest leaf damage (12.77%) was recorded in the treatment of dimethoate 0.03 per cent and it was statistically superior over the remaining treatments. Phosphamidon 0.03 per cent was also found effective in reducing the damage and it was at par with quinalphos 0.05 per cent followed by methyl-o-demeton 0.03 per cent as they registered 18.60, 19.43 and 22.37 per cent leaf damage, respectively. Thus, among all the treatments,

TABLE 1

Efficacy of different insecticides for the control of groundnut thrips, *C. indicus* during summer season, 1987.

Sr. No.	Treatments	Concentration	Leaf damage 24 hrs. before spray (%)	Per cent leaf damage after spray		Per cent reduction in damage over control	Pod yield (kg/ha)
				3 days	7 days		
1.	Dimethoate	0.03	55.46	23.12	12.77	75.10	2019.83
2.	Phosphamidon	0.03	54.65	28.32	18.60	63.74	1844.52
3.	Methyl-o-demeton	0.03	57.05	32.60	22.37	56.39	1814.04
4.	Monocrotophos	0.04	54.78	36.00	26.70	47.95	1806.41
5.	Formothion	0.03	53.67	40.95	31.43	38.73	1471.05
6.	Endosulfan	0.05	57.83	39.80	29.48	42.53	1326.22
7.	Quinalphos	0.05	58.40	29.15	19.43	62.12	1699.71
8.	Fenvalerate	0.015	56.65	36.78	26.25	48.83	1547.26
9.	Cypermethrin	0.006	54.05	35.65	25.18	50.92	1745.44
10.	Control	—	54.62	53.00	51.30	—	1143.30
	S. Em. ±		—	0.84	0.72	—	134.14
	C.D. at 5%		N.S.	2.43	2.11	—	388.72
	C.V.(%)		—	4.72	5.53	—	16.40

TABLE 2

Efficacy of different insecticides for the control of groundnut thrips, *C. indicus* during *kharif* season, 1987.

Sr. No.	Treatments	Concentration	Leaf damage 24 hrs. before spray	Per cent leaf damage after spray		Per cent reduction in damage over control	Pod yield (kg/ha)
				3 days	7 days		
1.	Dimethoate	0.03	87.17	53.27	20.28	75.97	1407.87
2.	Phosphamidon	0.03	83.38	57.23	24.40	71.09	1273.29
3.	Methyl-o-demeton	0.03	81.00	57.40	26.55	68.54	1273.29
4.	Monocrotophos	0.04	82.60	60.40	31.92	62.18	1200.83
5.	Formothion	0.03	83.50	68.60	39.98	52.63	1086.96
6.	Endosulfan	0.05	83.90	65.42	35.98	57.37	1118.02
7.	Quinalphos	0.05	78.92	63.30	33.50	60.30	1273.29
8.	Fenvalerate	0.015	85.98	66.25	36.85	56.34	1149.07
9.	Cypermethrin	0.006	86.17	60.65	35.03	58.50	1252.59
10.	Control	—	82.38	82.60	84.40	—	931.68
	S.Em. ±		—	4.10	0.46		84.68
	C.D. at 5%		N.S.	11.91	1.32		238.09
	C.V. %		—	12.89	2.47		14.28

dimethoate 0.03 per cent was the most effective insecticide followed by phosphamidon 0.03 per cent and quinalphos 0.05 per cent as they registered 75.10, 63.74 and 62.12 per cent reduction in leaf damage, respectively over control. Considering the yield (Table 1), it was found that all the treatments gave higher yield over control. Among all the treatments, the highest pod yield (2019.83 kg/ha) was recorded in the treatment of dimethoate 0.03 per cent. However, it was statistically at par with the plots treated with phosphamidon 0.03 per cent (1844.52 kg/ha), methyl-o-demeton 0.03 per cent (1804.04 kg/ha), monocrotophos 0.04 per cent (1806.41 kg/ha), cypermethrin 0.006 per cent (1745.44 kg/ha) and quinalphos 0.05 per cent (1699.71 kg/ha).

The results on leaf damage 3rd day after spray (Table 2) during *Kharif* season indicated that all the insecticides were significantly superior over control in reducing the per cent leaf damage due to thrips. Significantly the lowest leaf damage (53.27%) was recorded in the treatment of dimethoate 0.03 per cent. However, it was at par with phosphamidon 0.03 per cent (57.23%), methyl-o-demeton 0.03 per cent (57.40%), monocrotophos 0.04 per cent (60.40%), cypermethrin 0.006 per cent (60.65%) and quinalphos 0.05 per cent (63.30%). The results on leaf damage seventh day after spray (Table 2) revealed that dimethoate 0.03 per cent registered the lowest (20.38%) thrips damage. The treatments viz., phosphamidon 0.03 per cent, methyl-o-demeton 0.03 per cent, monocrotophos 0.04 per cent and quinalphos 0.05 per cent also gave good control as they showed 24.40, 26.55, 31.92 and 33.50 per cent leaf damage, respectively. Considering the per cent reduction in leaf damage over control, dimethoate 0.03, phosphamidon 0.03, monocrotophos 0.04 and quinalphos 0.05 per cent showed more than 60 per cent reduction in leaf damage over control. Among all the treatments, dimethoate 0.03 per cent gave the significantly highest pod yield (1407.87 kg/ha). However, it was statistically at par with the treatments of phosphamidon, methyl-o-demeton, quinalphos (each 1273.29 kg/ha) and cypermethrin (1252.59 kg/ha).

Looking to the effectiveness of insecticides, both for control of thrips and increase in groundnut pod yield, dimethoate, phosphamidon, methyl-o-demeton (each at 0.03%), quinalphos 0.05 per cent and monocrotophos 0.04 per cent were proved to be consistently effective during both the seasons. According to Ghewande *et al.* (1987), dimethoate 0.05 per cent and monocrotophos 0.05 per cent gave effective and economic control of thrips with a cost benefit ratio of 1:6.33 to 1:19.68, respectively, thus the present results are in agreement with the previous findings.

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REFERENCES

Anonymous 1986. District-wise area production and productivity of groundnut in Gujarat (From 1981-82 to 1984-85). Seminar on strategies of oilseeds production in Gujarat State, 9-10th May, 1986, Directorate of Research, G.A.U., Ahmedabad.

Ghewande, M.P. ; Nandgopal and P.S. Reddy 1987. Plant protection in groundnut. N.R.C.G. (I.C.A.R.), Junagadh, (Gujarat State). Technical Bulletin No. 1, pp. 25-35.