SAXENA, R. and Z. R. KHAN, 1984. Electronically recorded disturbances in the feeding behaviour of green leaf hopper (GLH) on neem oil treated rice plants. *Int. Rice. Res. Newsl.*, *9* (5) : 17-18.

SAXENA, R. C. and Z. R. KHAN, 1985. Electronically recorded disturbances in the feeding behaviour of *Nephotettix virescens* (Hc ptera : Cicadelidae) on neem oil treated plants. *J Econ. Entomol*, *78* : 222-2

TONGCO, E. R., R. C. CABUNAGAN and HIBINO, 1983. Resistance of five IR vari to tungro. *Int. Rice. Res. Newsl.*, *8* (4

https://doi.org/10.29321/MAJ.10.A02120

Madras Agric. J. 75 [7-8] : 266—270 July - August, 1988

EFFECT OF SEED TREATMENT WITH PESTICIDES ON THE INCIDENCE SHOOTFLY ON PEARL MILLET

T. DAKSHINAMOORTHY[1], K. SIVAPRAKASAM[2] and A. V. RANGARAJAN[3]

Effect of seed treatment with insecticides, fungicides and their combinations on the occurrence of dead hearts due to shootfly *Atherigona approximata was studied*. Monocrotophos followed by chlorpyriphos and phosalone at 4 ml per kg of seed were effective in reducing dead hearts caused by *A. approximata*. The fungicides, thiram and carbendazim individually or in combination were ineffective in reducing dead hearts caused by shootfly.

Shoot cum earhead fly, *Atherigona approximata* Malloch is a very important pest which attacks pearl millet crop both in vegetative and earhead stages causing considerable loss. Jotwani *et al.* (1969) reported the infestation of *A. approximata* on pearl millet causing 47 per cent dead hearts in a plot in Coimbatore. The present study reports the effect of s ed treatment with insecticides and fungicides on the occurrence of dead hearts due shootfly.

MATERIALS AND METHODS

The pearl millet seeds were treat with three insecticides *viz.*, chlor riphos, phosalone and monocrotop at 4ml per kg, two fungicides carbendazim at 2g per kg and thiran 6 g per kg and also the combinatic of insecticides and fungicides.

* Part of rhe M. Sc. (Ag). thesis submitted by the senior author to the Tamil Nadu Agricult

Effect of seed treatment with pesticides on the occurrence of dead hearts

atment	Period after seed treatment in months												Mean
	0				2				4				
	Days after germination												
	7	14	21	28	7	14	21	28	7	14	21	28	
lazim	9.93 (18.37)	17.87 (25.01)	23.65 (29.10)	26.37 (30.90)	10.50 (18.91)	18.10 (25.18)	24.83 (29.89)	28.10 (32.01)	19.88 (26.48)	23.16 (28.77)	28.52 (32.88)	33.23 (35.20)	21.58 (27.68)
lazim+Chlorpyriphos	3.55 (10.86)	8.22 (16.66)	13.98 (21.96)	15.93 (23.52)	9.93 (18.37)	10.23 (18.65)	15.76 (23.39)	16.43 (23.91)	12.89 (21.04)	12.66 (20.84)	21.45 (27.59)	25.49 (30.32)	13.41 (21.42)
lazim+Monocrotophos	5.59 (13.67)	8.43 (16.88)	12.53 (20.73)	18.18 (25.24)	9.70 (18.15)	10.54 (18.94)	13.86 (21.86)	17.36 (24.62)	12.18 (20.43)	10.45 (18.86)	12.99 (21.13)	16.70 (24.12)	12.13 (20.38)
lazim+Phosalone	9.70 (18.15)	9.93 (18.37)	17.66 (24.85)	19.07 (25.89)	9.63 (18.08)	14.79 (22.62)	18.56 (25.52)	19.66 (26.32)	16.70 (24.12)	16.36 (23.86)	18.56 (25.52)	22.62 (28.40)	15.89 (23.49)
lazim + Thiram	9.63 (18.08)	20.61 (27.00)	22.12 (28.12)	25.99 (30.65)	11.53 (19.85)	23.24 (28.82)	25.97 (30.64)	26.08 (30.71)	17.29 (24 57)	23.24 (28.82)	27.24 (31.48)	30.27 (33.38)	21.58 (27.68)
lazim+Thiram+Chlor-pyriphos	2.46 (9.03)	8.03 (16.46)	11.79 (20.08)	14.94 (22.74)	2.29 (8.71)	8.05 (16.48)	13.58 (21.62)	15.08 (22.85)	7.28 (15.65)	10.54 (18.94)	12.13 (20.38)	18.47 (25.45)	9.76 (18.20)
lazim+Thiram otophos	4.09 (11.67)	9.95 (18.39)	13.84 (21.84)	17.67 (24.86)	5.59 (13.67)	12.06 (20.32)	15.32 (23 04)	14.99 (22.78)	9.93 (18 37)	9.91 (18.35)	11.80 (20.09)	17.45 (24 69)	11.52 (19.84)
lazim+Thiram+ Phosalone	5.39 (13.42)	9.72 (18.17)	16 65 (24 08)	21.29 (27.48)	9.89 (18.33)	12.31 (20 54)	16.70 (24.12)	18.16 (25.22)	15.14 (22.90)	13.47 (21.53)	16.93 (24.30)	19.29 (26.05)	14.25 (22.18)

	5.82 (13.96)	12.90 (21.05)	20.64 (27.02)	24.56 (29.71)	9.15 (17.61)	13.84 (21.84)	21.18 (27.40)	21.55 (27.66)	15.93 (23.52)	20.54 (26.95)	23.92 (29.28)	26.84 (31.10)	17.54 (24.76)
hlorpyriphos	0.00 (4.05)	7.51 (15.90)	13.27 (21.36)	16.12 (23.67)	2.45 (9.00)	9.53 (17 98)	12.75 (20.92)	16.43 (23.91)	5.59 (13.67)	15.14 (22.90)	19.07 (25.89)	22.13 (28.06)	10.54 (18.94)
onocrotophos	2.46 (9.03)	4.13 (11.72)	12.29 (20.52)	13.59 (21.63)	2.46 (9.03)	5.90 (14.06)	11.43 (19.76)	14.71 (22.55)	5.39 (13.42)	7.49 (15.88)	9.46 (17.91)	13.30 (21.39)	7.97 (16.40)
hosalone	5.59 (13.67)	11 54 (19 86)	21.02 (27.29)	25.30 (30.20)	9.63 (18.08)	18.10 (25.18)	22.61 (28.39)	26.05 (30.69)	13.01 (21.24)	22.17 (28.09)	27.24 (31.46)	27.60 (31.69)	18.51 (25.48)
hos	0.00 (4 05)	4.00 (11.54)	8.74 (17.20)	10.25 (18.67)	0.00 (4.05)	4.37 (12.07)	9.19 (17.65)	10.88 (19.26)	5.82 (13.96)	8.10 (16.54)	9.53 (17.98)	14.35 (22.26)	6.28 (14.59)
›phos	0.00 (4.05)	0.00 (4.05)	0.00 (4.05)	4.24 (11.88)	2.46 (9.03)	0.00 (4.05)	0.00 (4.05)	4.24 (11.58)	10.19 (18.62)	5.59 (13.67)	6.40 (14.65)	8.22 (16.66)	2.83 (9.69)
	8.19 (16.63)	16.60 (24.04)	17.82 (24.97)	20.28 (26.62)	4.97 (12.88)	18.96 (25.81)	21.85 (27.87)	25.06 (30.04)	15.93 (23.52)	24.29 (29.53)	29.23 (32.73)	32.23 (34.59)	18.90 (25.77)
	19.87 (26.47)	31.67 (34.25)	41.40 (40.05)	43.96 (41.53)	21.85 (27.87)	33.03 (35.08)	40.67 (39.62)	46.32 (42.89)	21.04 (27.30)	31.51 (34.15)	33.69 (35.63)	42.20 (40.51)	33.67 (35.44)
Mean	4.92 (12.82)	10.29 (18.71)	15.68 (23.33)	19.15 (25.95)	6.79 (15.10)	12.24 (20.48)	16.69 (24.11)	19.30 (26.06)	12.32 (20.55)	15.24 (22.98)	18.56 (25.52)	22.58 (28.37)	

(Figures in parentheses represent transformed values)

seeds were treated with the fungicides as dry seed dressing. In the case of treatments involving insecticides, gum was dissolved at the rate of 0.125 g in 5 ml of water per kg of seed to which the insecticides were added. This solution was poured slowly while stirring the seeds for pelletisation. The treated seeds were shade dried for one day. In the combination of seed treatment with fungicides and insecticides, the seeds were treated first with fungicides and 2 hours later with insecticides. One lot of seed was left untreated to serve as control. The seeds were stored in cloth bags for four months at laboratory conditions (30±2°C) and relative humidity varying from 60 to 90 per cent. The efficacy of seed dressing chemicals on the incidence of *A. approximata* assessed under pot culture conditi by sowing the seeds immediately day after seed treatment and subquently two and four months storage. Pots were filled up with soil mixture of uniform compositi The treated seeds were raised direct sowing. Suitable control w maintained by sowing seeds with any chemical treatment. Each tre ment was replicated thrice. Each containing ten plants was consider as a replication. Observations on de heart symptoms were recorded on 14, 21, and 28 days after sowing.

RESULTS AND DISCUSSION

The data revealed that all the thr insecticidal seed treatments were si

Table 2. Interaction between insecticides and periods on the occurrence of dead hearts due shoot fly *A. approximata* in per cent

Insecticide	Period after seed treatment in months							
	0		2		4		Mean	
Chlorpyriphos	7.70	(16.11)	8.97	(17.43)	13.24	(21.34)	9.85	(18.2
Monocrotophos	6.71	(15.01)	7.68	(16.09)	10.22	(18.64)	8.14	(16.5
Phosalone	14.89	(22.10)	16.19	(23.73)	20.40	(26.85)	16.84	(24
Control	21.44	(27.58)	22.77	(28.50)	25.90	(30.59)	23.34	(28.6
Mean	11.92	(20.20)	13.36	(21.44)	17.00	(24.35)		

(Figures in parantheses represent transformed values)

Comparison of significant effects

	S. E.	C. D. (P=0.05)
Periods	0.28	0.78
Insecticides	0.32	

nificantly superior to the control in registering less dead heart incidence due to shootfly. The fungicides were ineffective in reducing deadhearts caused by shootfly (Table 1). Among the insecticides, lowest infestation of shootfly was noticed in monocrotophos followed by chlorpyriphos and phosalone ranging from 8.14 to 16.84 per cent as against 23.34 per cent in control (Table 2).

Among the pesticides tested for seed treatment, monocrotophos followed by chlorpyriphos and phosalone were effective in reducing the shootfly infestation (Table 2). Thobbi and Mohan (1971) observed that the combined application of carbofuran and thiram to the sorghum seeds was effective against shootfly in sorghum. Natarajan and Chelliah (1981) found that seed pelleting with monocrotoph before sowing had reduced de hearts due to shootfly in sorghu Sukhani and Jotwani (1982) have r ported the efficacy of seed treatme with monocrotophos and chlorpyriph in the control of shootfly, *Atherigo soccata* on sorghum while Rangaraj *et al.* (1985) have recommend phosalone in addition to the abo two insecticides. Monocrotophos ev though had significant effect in co taining the shootfly incidence, it h hamperad the viability of pearl mil seeds. The other two test insecticid *viz.*, chlorpyrophos and phosalone al have recorded reduced germinati indicating that insecticidal seed trea ment hampered the seed viabili over a storage period of four mont (Dakshinamoorthy, 1987).

REFERENCES

DAKSHINAMOORTHY, T. 1987. Studieson the management of ergot caused by *Claviceps fusiformis* Loveless and shoot cum earhead fly *Atherigona approximata* Malloch in pearl millet. M. Sc. (Ag.) Thesis, TNAU, Coimbatore. 171 pp.

JOTWANI, M.K., K.K. VERMA and W.R. YOUNG. 1969. Observations on shoot fly damaging different minor millets. *Indian J. Ent. 31* : 291-294.

NATARAJAN, K. and S. CHELLIAH. 1981. Evalution of insecticides against sorghum shootfly. *Indian J. Plant Prot. 9*: 202-203.

RANGARAJAN, A. V., S. CHELLIAH a S. JAYARAJ. 1985. Pest management field crops and stored products. T. N. A. Publication. 108 : 64.

SUKHANI, T. R. and M. G. JOTWANI. 1 Insecticidal seed soaking technique for t control of sorghum shootfly *Atherig soccata*. *J. Entomol. Res. 6* : 104-106.

THOBBI, V. V. and N. J. MOHAN. 1971. note on beneficial effect of combined inse ticide fungicide treatment in control sorghum shootfly. *Pesticides 5* (4) : 15-1