Madras agric. J. 62 (9) : 589 — 590, September, 1975.

Effect of Fertiliser Use on the Incidence of *Spodoptera litura* F. and *Heliothis armigera* Hb. on Sunflower

Sunflower being a new oilseed crop to Tamil Nadu attempts were made to study the effect of fertilisers on the incidence of the two major pests *viz.*, the leaf caterpillar, *Spodoptera litura* F. and the capitulum borer, *Heliothis armigera* Hb. which damage it in winter (Rangarajan *et al.* 1973). The results of the experiment conducted at the Regional Agricultural Research Station, Kovilpatti during 1973-'74 are presented here.

A field experiment was laid out under dry farming conditions during the winter season of 1973-'74 with K1 sunflower in a randomised and replicated block design. Three fertilisers *viz.*, N in the form of urea, P in the form of single super phosphate and K in the form of muriate of potash each at 5 levels i.e. 0, 20, 40, 60 and 80 kg/ha were applied alone and in combinations in plots of the size of 9 sq. m. The fertilizers were applied on the receipt of north-east monsoon showers and the seeds were sown adopting a spacing of 30 cm between rows and 15 cm between plants.

The infestation of the leaf caterpillar *S. litura* was assessed, at the period of peak incidence i. e. 40 days after sowing, by examining the population of the larvae on five randomly selected plants in each plot. The damage by the capitulum borer *Heliothis armigera* Hb. was recorded by examining the symptoms of boring in all the heads in each plot on maturity of seeds after which the pest could do no further damage.

The data gathered on the incidence of *S. litura* and the damage by the capitulum borer *H. armigera* are presented in Table 1. Levels of applied N significantly influenced the incidence of the leaf catterpillar *S. litura*. While 20 and 0 kg N/ha recorded low population and were on par, the highest level of N tried in this experiment *viz.*,

TABLE Influence of levels of fertilizers on the incidence of pests on sunflower

Kg/ha	Population of *S. litura*			perecntage of capitulum damaged by *H. armigera*.		
	N	P	K	N	P	K
0	1.34	1.43	1.76	75.8	74.3	77.8
20	1.25	1.53	1.45	76.3	78.2	79.3
40	1.56	1.34	1.45	72.5	75.8	79.7
60	1.47	1.49	1.33	78.7	77.4	75.4
80	1.70	1.52	1.33	76.2	73.8	67.6
'F' test	Sig.	N. S.	Sig.	Sig.	N. S.	Sig.
S. E.	0.07	0.07	0.07	1.23	1.23	1.23
C. D. (P=0.05)	0.21	—	0.21	3.48	—	3.48

80 kg/ha has registered the maximum population. This trend of effect of N in influencing the higher incidence of the pests is in agreement with the results obtained by Padmanabhan and Israel (1956), Abraham *et al.* (1956), Gosh (1962), Varadharajan and Nagaraja Rao (1965), Michael Raj and Morachan (1973) in the case of rice stem borer and by Israel *et al.* (1961) and Narayanan *et al.* (1973) in the case of gall midge on rice. P had no significant effect on the occurrence of the pest. All the levels of applied K had significant effect in reducing the incidence of *S. litura.* over 0 level of K. The levels of 20, 40, 60 and 80 kg were on a par among which 60 kg recorded minimum population of the leaf caterpillar.

The damage by the capitulum borer *H. armigera* was least in the dosage of 40 kg N/ha and the highest damage was noted in 60 kg/ha. P had no significant effect on the incidence of *H. armigera* as in the case of *S. litura.* The highest dosage of K i. e. 80 kg/ha tried in the experiment registered the lowest damage by the capitulum borer.

The authors sincerely thank the Government Tamil Nadu under whose aegis the present study was conducted. Thanks are also due to Messrs. S. Iyemperumal and L. Anavaradham, Crop Specialists for the encouragement during the course of this study.

A. V. RANGARAJAN
B. MAHALINGAM
S. GANAPATHY
N. R. MAHADEVAN

Regional Agricultural Research Station, Kovilpatti-627701.

REFERENCES

ABRAHAM T. P., P. ISRAEL and G. VEDAMURTHY, 1963. Sampling for estimation of stem borer infection in rice. *Indian J. agric. Sci.* **33**: 174-85

GOSH, B. H. 1962. Note on the incidence of stem borer *Schoenobius incertulas* Wlk. on paddy, under nitrogen fertilizers. *Curr Sci.* **13**: 472

ISRAEL, P., VEDAMOORTHY and U. SESHAGIRI RAO, 1961. Technical report of the central Rice Research Institute, Cuttack pp 48-51.

MICHAEL RAJ, S., and Y. B. MORACHAN, 1973. Effect of fertilisation and diazinon application on the incidence of stem borrer and leaf roller on Rice. *Madras agric. J.* **60**: 431-5

NARAYANAN, K., J. CHANDRASEKARAN, M. MEERZAINUDEEN and S. JAYARAJ, 1973. Effect of graded levels of nitrogen on the incidence of Rice Gall midge *Madras agric. J.* **60**: 572

PADMANABHAN, S. Y. and P. ISRAEL, 1956. Prospects bright for pest and disease control. *Indian Fmg.* (Spl. rice number **6**: 36

RANGARAJAN, A. V., N. R. MAHADEVAN, K. T. SUBBARAJA., K. PILLAYAR SAMY and K, SIVAPRAKASAM, 1973. Pests and diseases of Sunflower and their control. *Tech. Bull.* Annual number 1972-73. Additional Director of Agriculture (Research), Tiruchirappalli, pp 28-35.

VARADHARAJAN, G. and P. R. NAGARAJA RAO, 1965. The influence of nitrogen and phosphoric acid on the incidence of rice stem borer *Tryporyza incertulas* Wlk. *Rice News Letter* **13**: 105-7.