The results obtained on pod and seed damage larval population of *M.testulalis, C. otychora and L.boeticus* ten days after application and grain yield revealed that the monocrotophos spray and endosulfan spray were superior to malathion spray and dust, endosulfan dust and neem oil spray. The results on the efficacy of monocrotophos and endosulfan on pod borer control is in agreement with Dina (1977) and Lal *et al.* (1981).

Dept. of Agril. Entomology UAS, Dharwad - 580005

S.B.JAGGINAVAR
K.A.KULKARNI
S.LINGAPPA

(Received December, 1989)

References

DINA, S.C., 1977, Effect of monocrotophos on insect damage and yield of cowpea (*Vigna unquiculata L.*) in Southern Nigeria. *Exptl. Agri.*,13 : 155-159.

LAL, S.S., YADAV, C.P. AND DIAS, C.A.R., 1981, Insect pests of pulse crops and their management. *Pesticides*, 15 : 60-67

Karnataka J. Agric. Sci., 4 (1&2) : (58- 59) 1991

Quantitative Relationship Between Alternaria Blight of Soybean and Loss in Grain Yield

Alternaria leaf blight causedby *Alternaria tenuissima* (Kunze ex Pers.) Wiltshire, has become a serious disease next to bacterial pustule in Soybean production (Sundaresh and Hiremath, 1981). Though, the leaf infection occurs late, it causes considerable defoliation before grain is physioloigically matured and leads to formation of small, shrivelled grains. Much information is not available on the extent of loss due to this disease. Therefore, a study was initiated to assess crop loss and to build a suitable crop loss model.

An experiment was carried out with 32-2 soybean variety, susceptible to alternaria leaf blight. Different levels of blight severity were simulated by spraying six fungicides at 0.2 percent (ai) concentrations. In all, three sprays were given at 15 days interval commencing from the date of first appearance of the blight. The blight severity was assessed 15 days after the final spray, using a 0-4 scale.

Further, the disease index was calculated and the corresponding grain yield was recorded. With the help of recorded grain yield potential, yield of the crop was estimated by the curve fitting method of James, *et al.* (1968) with suitable modifications. The percent loss (1) in grain yield was calculated using the formula $\left[\frac{\bar{y}_p - \bar{y}_x}{\bar{y}_p}\right] \times 100$, where y_p is potential yield and y_x is yield at blight severity level x. Finally, using the grain yield and blight severity relation the crop loss model was developed as $\% I = \frac{b}{a+b} (1 - \cos dx) \times 100$, where a+b represented potential yield and b and d as suitable constants. Correlation and regression techniques were used for estimating the parameters and judging the fitness of the model.

Table Alternaria blight severity in relation to grain yield of soybean.

Percent disease index	Grain yield q/ha.	Percent yield loss	
		Observed	expected
17.2	6.9	12.7	12.2
17.8	6.0	24.0	13.0
18.6	6.0	13.9	14.1
23.5	6.3	20.3	21.6
26.4	6.1	22.8	26.5
26.9	5.4	31.7	27.3
26.9	6.0	24.0	27.3
27.8	5.9	25.0	28.9
29.0	5.9	25.0	31.0
29.5	5.7	27.9	31.9
30.1	5.1	35.5	33.0
30.2	5.5	30.4	33.2
31.2	5.8	26.6	35.0
33.0	6.1	22.8	38.2
33.1	6.2	21.5	38.4
33.6	3.8	51.9	39.3
33.7	3.8	51.9	39.5
34.4	5.3	33.0	40.7
34.5	4.5	43.1	40.9
36.0	2.9	63.3	43.6
37.6	3.5	55.7	46.4
38.4	3.3	58.3	47.8
38.5	3.7	53.2	48.0
52.8	3.1	60.8	68.0
54.2	2.7	65.8	69.6
55.1	2.5	68.4	70.4
56.0	1.9	76.0	71.1

It is seen from the Table that the percent disease index of alternaria blight varied from 17.2 to 56.0 and grain yield from 1.9 to 6.9 quintals per hectare. Negative relation was noticed between grain yield and blight severity and the form of relation was y = 4.9559 - 2.94896 cos (2.76923 x)with 0.79 as correlation coefficient. The equation so derived explains to a considerable extent the relation between the blight severity and the crop loss. Further, the potential yield of the crop was 7.905 q/ha. The equation also revealed that the maximum blight severity was 65 per cent and the estimated minimum yield noticed at this severity level was 2.0 q/ha.

The crop loss model was developed as

$$\% I = 37.306 \left[1-\cos (2.76923\ x)\right].$$

There was least difference between the percent yield loss of observed and expeced vlaues, except at few points. This indicated the fitness of the crop loss model developed.

College of Agriculture, Raichur — P.C.HIREMATH

UAS Dharwad. — M.R. ADAVANI

(Received May, 1988)

References

JAMES, W.C., JENKINS, J.E.E. and JEMMETT, J.L., 1968, The relationship between leaf blotch caused by *Rhynchosporium Secalis* and lossess in grain yield of spring barley. *Ann. Appl. Biol., 62* : 273-288.

SUNDARESH, H.N. and HIREMATH, P.C., 1981, A new threat to soybean cultivation in Karnataka. *Curr. Res.*, 10 : 94.