Research Paper :

Incidence of flower feeders and tissue borers on urd bean (*Vigna mungo* L. Hepper) and their correlation with abiotic factors

UMESH CHANDRA, KUMUD SINGH, H.M. SINGH AND RAKESH KUMAR

International Journal of Plant Protection (October, 2010), Vol. 3 No. 2 : 242-244

See end of the article for authors' affiliations

Correspondence to :
UMESH CHANDRA
Department of Entomology, N.D. University of Agriculture and Technology, Kumarganj, FAIZABAD (U.P.) INDIA

SUMMARY

A field experiment was conducted during *Kharif* 1997 and 1998 to find out the population of sixteen insect pests associated in the *Vigna mungo* at different stages of crop growth. Out of these, three flower feeders *viz., Mylabris pustulata*, *Indozocludius aspercullus* and *Caliothrips* sp. and one tissue borer *Chromatomyia horticola* were observed to infest in *Vigna mungo*. The population of flower thrips was significant negatively correlated with minimum temperature and relative humidity. The bud weevil was significant negatively correlated with relative humidity.

Key words : Incidence, *Vigna mungo*, Flower feeders

Accepted :
June, 2010

Urd bean [*Vigna mungo* (L) Hepper] commonly known as black gram is an important pulse crop cultivated in India, the area under this crop in India is 3.45 m/ha with production and productivity of 1.32 million tonnes and 470 kg. respectively(Anonymous, 1999). Although it is a short duration crop but suffers from severe insect pests infestation. A total of 18 insect pests have been reported in India infesting urd bean crop at its various growth stages (Lal *et al*., 1980). Keeping this view, the present study was under taken to know the incidence of flower feeders and tissue borer on urd bean and their correlation with abiotic factors.

MATERIALS AND METHODS

A field experiment was conducted at Student's Instructional Farm of N.D. University of Agriculture and Technology, Kumarganj, Faizabad (U.P.) during *Kharif* 1997 and 1998. The experiment was sown urd bean cv. PU-19 in 3rd week of August during both years. The experiment laid out in RBD having 6x5 M^2 plot size with 45x25 cm distance row to row in three replications. Recommended agronomical practices were adopted for raising a good crop. Meteorological data were collected from the Department of Meteorology of the University. Observations on damage caused by flower feeders and tissue borer were recorded on 10 randomly selected plants per plot, at weekly interval from germination to harvesting stage of the crop. Flower feeder *viz.,* blister beetle population per plant and nymphs and adults population of thrips were recorded by taking of twenty five flowers per plot on randomly selected plants. The incidence of leaf miner, number of damaged leaves and total number of leaves in each plant were counted on randomly selected plant for per cent damage.

RESULTS AND DISCUSSION

Table 1and 2 reveal that the peak population of flower thrips, blister beetle and bud weevil were founded 40th standard week with mean 3.79, 2.27 and 0.45 population per plant. The peak population of leaf minor was 38th standard week with 5.47 percent population during *Kharif* 1997 while during *Kharif* 1998 the peak population of flower thrips and blister beetle was 40th standard week, bud weevil, 39th standard week and leaf minor was 38th standard week with mean 5.47 per cent. Srivastava *et al.* (1978) observed grey weevil as a serious pest of black gram and peak infestation as last week of August. Singh and Singh (1978) insect pests observed at the time of bud initiation were blister beetle flower thrips and bud weevil.

Table 1 : Incidence of flower feeders and tissue borer on urd bean during *Kharif* 1997

Standard weeks	Flower feeders (Population/plant)			Tissue borer	Abiotic parameters			
					Temperature (^{0}C)		Relative humidity (%)	Rainfall (mm)
	Flower thrips	Blister beetle	Bud weevil	Leaf miner (%)	Min.	Max.		
35	0.00	0.00	0.00	0.00	25.42	30.65	85.20	127.9
36	0.00	0.00	0.20	2.11	24.60	29.70	87.30	17.4
37	2.20	0.50	0.47	3.96	25.40	28.50	80.50	119.0
38	2.94	0.83	0.60	5.47	24.50	33.20	72.40	23.8
39	3.02	1.77	1.65	2.59	20.90	30.30	77.80	00.0
40	2.79	2.27	0.45	1.41	20.30	30.60	71.25	00.0
41	2.47	1.10	0.30	0.00	19.70	31.30	72.70	18.2
42	1.41	0.00	0.00	0.00	17.10	27.10	72.40	0.00

Table 2 : Incidence of flower feeders and tissue borer on urd bean during *Kharif* 1998

Standard weeks	Flower feeders (Population/plant)			Tissue borer	Abiotic parameters			
					Temperature (^{0}C)		Relative humidity (%)	Rainfall (mm)
	Flower thrips	Blister beetle	Bud weevil	Leaf minor (%)	Min.	Max.		
35	0.00	0.00	0.00	0.00	25.42	30.65	85.20	127.9
36	0.00	0.00	0.20	2.11	24.60	29.70	87.30	17.4
37	2.20	0.50	0.47	3.96	25.40	28.50	80.50	119.0
38	2.94	0.83	0.60	5.47	24.50	33.20	73.40	23.8
39	3.02	1.77	1.65	2.59	20.90	30.30	77.80	0.00
40	3.79	2.27	0.45	1.41	20.30	30.60	71.25	0.00
41	2.47	1.10	0.30	0.00	19.70	31.30	72.70	18.2
42	1.41	0.00	0.00	0.00	17.10	27.10	72.40	0.00

Table 3 : Correlation coefficient between abiotic variables and incidence of flower feeders and tissue borer on urd bean (*V. mungo* L. Hepper)

Sr. No.	Insect pests	Abiotic factors *Kharif* 1997				Abiotic factors *Kharif* 1998			
		Temperature (^{0}C)		R.H. (%)	Rainfall (mm)	Temperature (^{0}C)		R.H. (%)	Rainfall (mm)
		Min.	Max.			Min.	Max.		
	Flower feeders								
1.	*Mylabris pustulata* Thumb	-0.942*	-0.214	-0.874*	-0.694*	-0.776*	-0.299	-0.809*	-0.404
2.	*Indozocludius asperculus*	-0.366	0.319-	-0.794*	-0.436	-0.04	0.310	-0.460	-0.132
3.	*Caliothrips* spp	-0.322	0.375	-0.568	-0.460	0.197	0.457	-0.338	0.049
	Tissue borer								
4.	*Chromatomyia horticola*	-0.03	0.254	-0.12	-0.302	0.060	0.305	-0.323	-0.272

Table 3 reveals that the population of *Mylabris pustulata* was significant negatively correlated with minimum temperature (-0.942), R.H. (-0.844) during *Kharif* 1997 while also the population was significant negatively correlated with minimum temperature (-0.776) and R.H. (0.809) during *Kharif* 1998. The population of *Indozocludius asperculus* was significant negatively correlated with relative humidity (-0.794) during *Kharif* 1997. Bhatnagar (2007) the incidence of insect pests as potato and also were correlated with abiotic factors.

Authors' affiliations:
KUMUD SINGH, Krishi Vigyan Kendra, BAHRAICH (U.P.) INDIA
H.M. SINGH AND RAKESH KUMAR, Department of Entomology, N.D. University of Agriculture and Technology, Kumarganj, FAIZABAD (U.P.) INDIA

REFERENCES

Anonymous (2009). National Horticulture Board. Annual Report. pp. 4-5.

Bhatnagar, Anuj (2007). Incidence and succession of thrips, leaf hoppers and white fly in combination of planting dates and potato varieties. *Ann. of Pl. Protec. Sci.,* **15** : 101-105.

Lal, S.S., Yadav, C.P. and Dias, C.A.R. (1980). Important pests of pulse crops in India and their management. Publication No. 2 Project Directorate AICPIP (ICAR) Kanpur.

Singh, K.M. and Singh, R.N. (1978). Succession of insect pests in green gram and black gram under dry land condition at Delhi. *Indian J Entomology,* **34** : 365-370.

Srivastava, A.S., Awasthi, B.K. and Nigam, P.M. (1978). Incidence of *Myllocerus maculosus* on leguminous crops (Coleoptera: Curculionidae). *Labd J. Sci. Tech.,* **13**: 215-216.

****