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SEASONAL INCIDENCE OF SPOTTED POD BORER, *MARUCA TESTULALIS* (GEYER) ON BLACKGRAM*

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ABSTRACT

Studies on population dynamics of spotted pod borer revealed that the incidence of this pest commenced from the 2nd week of August and remained active up to the first week of October. The pest showed one peak of its population with 3.84 larvae per plant at the 4th week of August. Correlation studies indicated that larval population and per cent pod damage by spotted pod borer exhibited a significant negative correlation (r = -0.5540 and r = -0.5556 respectively) with minimum temperature. There was no effect of other abiotic factors on the pest population and pod damage.

Key words: Blackgram, *Maruca testulalis* (Geyer), Seasonal incidence

INTRODUCTION

Black gram, *Vigna mungo* (L.) is one of the important pulse crop due to its nutritional and industrial values. In Gujarat, it is cultivated in the area of about 895 hectares with the production of about 392 metric tonnes of grain and productivity of 438 kg/ha. In Junagadh district, it is mainly cultivated in *kharif* season, which occupies the area of 49 hectare and produced about 23 metric tonnes of grain with an average productivity of 466 kg/ha during 2007 (Anonymous, 2007). A preliminary survey around Junagadh revealed that the spotted pod borer, *Maruca testulalis* (Geyer) has been observed as a key pest of black gram in this area. Excessive use of chemical insecticides not only causes the economical restrain on farmers but also produces the harmful side effects on the environment as well as human being. The best way to overcome this situation is to destroy the pest at its initial stage of the life cycle. This is possible if timely prediction of the occurrence of the pest can be made. Hence, an attempt has been made to investigate the sensitivity of the incidence of spotted pod borer, *M. testulalis* infesting black gram to the different meteorological parameters.

MATERIAL AND METHODS

The crop was sown at College Farm, College of Agriculture, Junagadh Agricultural University, Junagadh in order to study the seasonal incidence of spotted pod borer infesting black gram during *kharif* season of 2008. The crop was grown in plot size of 20 m x 20 m and keeping 45 cm x 15 cm spacing between row to row and plant to plant. The crop under the experiment was kept free from pesticides throughout the season. The whole plot was divided randomly into 10 quadrates each of 1 m X 1 m consisting 5 plants in each quadrate, thus 50 plants were observed for the number of spotted pod borer larvae at weekly intervals after appearance of the pest till harvest of the crop and mean larval population per plant was worked out. The numbers of healthy and damaged pods were also recorded from initiation of pod formation till harvest. Mean per cent pod damage was also calculated. The impact of various abiotic factors on pest incidence was as certained by correlation study.

RESULTS AND DISCUSSION

The results presented in Table 1 revealed that the population of spotted pod borer was ranging from 0.80 to 3.84 larvae per plant during *kharif* season. The incidence of this pest commenced after the 5th week of sowing i.e. the 2nd week of August with 0.80 larva per plant and gradually increased and attained a peak of 3.84 larvae per plant during the 4th week of August. Later on, it started to decline slightly (3.35 larvae per plant) during the first week

* Part of M. Sc. Thesis of first author

of September. Further, the pest continuously declined with increase in age of crop and it reached to 1.25 larvae per plant during the 13th week after sowing i.e. the 1st week of October.

Thus, it indicated that the pest was active from mid August to first week to October. It was also concluded that maximum pest population was observed at the time of flowering stage. Similar trend of pest population was also recorded by Goud and Vastrad (1992); Alghali (1993); Pithava (1996); Patel (1997); Veeranna *et al.* (1997); Pachani (2000); Virani (2000) and Hinsu (2005) in *kharif* season of various pulse crops.

The analytical data on correlation co-efficient between population of spotted pod borer and weather parameters are presented in Table 2. The data indicated that larval population of spotted pod borer exhibited a significant negative correlation with minimum temperature (r = -0.5540), whereas other factors did not showed any significant impact on incidence of the pest. However, the pest population showed positive correlation with maximum temperature (r = 0.2051) and mean bright sunshine hours (r = 0.5397). But they were non significant. Similar trend was also observed by Virani (2000) on blackgram.

Studies on effect of various weather parameters on the pod damage by *M. testulalis* in blackgram were carried out and data obtained are presented in Table 2. The pod damage fluctuation was similar as reported in the present findings of larval population present on plant of blackgram. The correlation co-efficient values presented in Table 2 exhibited a significant negative correlation with minimum temperature (r = -0.5556), whereas other factors did not showed significant impact on pod damage. Similar trend was also observed by Veeranna *et al.* (1997); Virani (2000) and Viroja (2003).Thus, the present findings are more or less in confirmation with the earlier works.

From the present investigation, it can be concluded that the pest population ranged from 0.80 to 3.84 larvae per plant. The incidence of this pest commenced in the 2nd week of August, which gradually increased and attained peak at the 4th week of August then it declined slowly. Thus, the pest was found to be active from the 2nd week of August to the first week of October. A study on correlation of spotted pod borer and percentage of pod damage with weather parameters indicated that only minimum temperature exhibited significantly negative correlation (r = -0.5540 and r = -0.5556 respectively) with this parameters. There was no effect of other abiotic factors on the pest population and pod damage.

Table 1: Per cent pod damage and population of spotted pod borer infesting black gram during *kharif,* 2008

Week after sowing	Std. week	Mean larvalpopulation per plant	Per centpod damageper plant
1	31	0.00	–
2	32	0.80	–
3	33	1.08	25.00
4	34	3.84	33.50
5	35	3.35	30.85
6	36	2.49	25.20
7	37	1.96	20.45
8	38	1.70	17.80
9	39	1.51	15.20
10	40	1.25	14.25

Table 2: Correlation of weather parameters with per cent pod damage and incidence of *M. testulalis* during *kharif,* 2008

Stage of pest	Weather parameter				Wind speed	Mean bright	Evapo-ration	Rain fall	Rainy days
	Temperature ^{O}C		Relative humidity %		Km/hr	sun shine hours	mm	(mm)	
	Max	Min.	Morning	Evening					
Larvae on black gram	0.2051	-0.5540*	-0.2292	-0.5529	-0.5397	0.4082	-0.2313	-0.0778	-0.5003
Per cent pod damage	0.1331	-0.5556*	-0.1875	-0.5529	-0.5320	0.3945	-0.2498	-0.0660	-0.4735

*Significant at 5 % (r= $\pm$ 0.553) n=13

REFERENCES

Alghali, A. M. (1993). *Insect Sci. and its App.,* **14**(1): 55-59.
Anonymous (2007). Web site (www.agri.gujarat.gov.in) of Directorate of Agriculture, Gujarat State, Gandhinagar, pp.3.
Goud, K. B. and Vastrad, A. S. (1992). *Karnataka J. Agric. Sci.,* **5** (3): 270-271.
Hinsu M. K. (2005). M. Sc. (Agri.) Thesis, Junagadh Agricultural University, Junagadh, pp. 108.
Pachani, B. G. (2000). M. Sc. (Agri.) Thesis, Gujarat Agricultural University, Sardar Krushinagar, pp. 88.
Patel, A.G. (1997). M. Sc. (Agri.) Thesis, Gujarat Agricultural University, Sardar Krushinagar, pp. 98.
Pithava, B.B. (1996). M. Sc. (Agri.) Thesis, Gujarat Agricultural University, Sardar Krushinagar, pp. 88 (Unpublished).
Veeranna, R. *et al* (1997). *Flora and Fauna Jhansi,* **3**(2): 119-120.
Virani, V. R. (2000). Ph. D. Thesis, Gujarat Agricultural University, Sardar Krushinagar, pp. 183.
Viroja, K. J. (2003). M. Sc. (Agri.) Thesis, Junagadh Agricultural University, Junagadh, pp. 159.