

Seasonal Incidence of Gram Pod Borer in Rainfed Chickpea in Andhra Pradesh

M Suganthy, G V Ranga Rao[†] and S Tej Kumar

Department of Entomology, Acharya N. G. Ranga Agricultural University, Hyderabad - 500 030, Andhra Pradesh, India.

[†] International Crops Research Institute for the Semi-Arid Tropics, Patancheru, Andhra Pradesh, India.

Chickpea, *Cicer arietinum* Lin., is an important winter season food legume. In India, it is cultivated in an area of 7.3 million hectares, which is about 64.6 % of world chickpea cultivation area, with 5.5 million tonnes production and 753 kg per hectare productivity. Per capita availability of pulses in India has declined from 24 g/ day to 16 g/ day, which is about 1.2 % per year, since 1970. This is almost exclusively because of chickpea, which registered a steep 32 % decline in per capita availability due to lower productivity mainly because of the pest problems.

Among different insects, gram pod borer, *Helicoverpa armigera* is a major pest attacking chickpea. It is a prolific and widespread pest, which feeds on at least 180 plant species spread across 47 botanical families (Pawar *et al.*, 1986). According to Yadava and Lal (1988), there were two peaks in the population of *H. armigera* during the 47th to 50th and 11th to 15th weeks in chickpea in northern India.

The field experiment was conducted to study the seasonal incidence of gram pod borer in rainfed chickpea, at the International Crops Research Institute for the Semi Arid Tropics, Patancheru, Andhra Pradesh during 1998-99 post rainy season with ICCV 37 variety. At ICRISA T research farm BP 7 A, an area of 8000m² was used to conduct the research. The entire area was divided into 24 plots, each plot measuring 292m² (16.2m x 18m), for six treatments and four replications with randomized block design and the treatments were imposed The number of eggs, small sized larvae (first and second instar), medium sized larvae (third and fourth instar), and large sized larvae were counted on twenty randomly selected plants in each plot. The observations were taken at larvae (first and second instar), medium sized larvae (third and fourth instar), and large sized larvae were counted on twenty randomly selected plants in each plot. The observations were taken at weekly intervals starting from fifteen days after sowing and continued upto crop maturity. To monitor the moth activity sex pheromone trap was used. The sex pheromone of *Helicoverpa armigera* prepared at Natural Resources Institute, Chatham, UK. were used in the experiment. The sex pheromone trap was set up @ one trap / hectare at two meters height and maintained

throughout the year. The number of male moths caught were counted and removed daily. Total number of moths caught per standard week was worked out to monitor the peak moth emergence period.

Studies on incidence of *H. armigera* were carried out with a view to find out the peak period of activity of gram pod borer during post rainy season and also the population fluctuations in relation to age of the crop. A perusal of the data in table revealed that the number of eggs laid per twenty plants were more (44.3) at 15 days after sowing (DAS) and gradually increased and reached the highest number (67.3) at 50 DAS. The eggs were not noticed after 99 DAS. The egg laying was observed to be the maximum at the second fortnight of December.

Table 1. Monitoring of *Helicoverpa armigera* adults, eggs and larvae at different stages of Chickpea crop at ICRISAT centre during 1998-99

Date of Count	Age of the Crop (Days)	Pheromone trap catches/ week/ trap	Population/ 20 plants (Mean of four replications)	
			Eggs	Larvae
26.11.98	15	11.0	44.3	7.3
03.12.98	22	27.0	9.5	56.3
10.12.98	29	24.6	12.5	60.3
17.12.98	36	110.9	27.3	34.5
24.12.98	43	89.8	44.3	42.5
31.12.98	50	105.0	67.3	46.5
07.01.99	57	141.8	21.5	85.5
14.01.99	64	129.0	44.0	47.8
21.01.99	71	493.4	9.8	57.5
28.01.99	78	298.8	20.8	49.0
04.02.99	85	283.2	1.8	74.3
11.02.99	92	190.8	2.8	70.8
18.02.99	99	382.8	1.0	22.3

The larval population was recorded on twenty plants, at weekly intervals from 15 DAS. The pest incidence started in the seedling stage itself (15 DAS). A perusal of the data in table revealed that the larval population was very less at 15

DAS (7.3 per 20 plants). A gradual increase in larval population was observed thereafter and attained the first peak at 29 DAS, second and third peak at 57 and 85 DAS with 60.3, 85.5 and 74.3 larvae respectively. The larval population was not noticed at 99 DAS. The peak activity of pest was observed in first fortnight of December, January and February when the crop was at peak podding stage.

Thakur (1990) observed the infestation of *H. armigera* on chickpea from third week of October and first week of November upto the middle of March. He recorded the highest population in second week of December and the second peak in first and third week of January.

The persual of data in table revealed that the maximum moth emergence was observed during the second, third and fourth week of January and also in the first week of February i.e. between 65 and 85 days of crop age with the moth catches of 129.0, 493.4, 298.8 and 283.2 / trap/ week, respectively. Mahajan *et al.*, (1990) also observed the maximum pheromone trap catches during third and fifth meteorological week. So the sex pheromone traps can be used as monitoring device to forecast the pest outbreak and peak activity of *H armigera*.

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