

Research Paper :

Effect of date of sowing and irrigation level on the incidence of *Helicoverpa armigera* (Hubner) on chickpea crop



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SUMMARY

A field experiment was conducted during *Rabi* 2002-2003 at the Agricultural Engineering Farm, College of Agriculture, JNKVV., Jabalpur (M.P.) To study the effect of date of sowing (October 28, November 20 and December 11) and irrigation levels (I₀-No irrigation, I₁ – one irrigation at branching, I₂-one irrigation at flowering, I₃-one irrigation at podding and I₄-One irrigation at branching + one at irrigation at podding) on the incidence of *Helicoverpa armigera* (Hubner) on chickpea crop. In the October 28 and November 20 sown crop harbored least larval population (3.79 and 6.83 larvae/0.25 sqm), least pod damage (7.17% and 7.58%) and gave highest grain yield (25.13 and 26.098 q/ha, respectively) whereas December 11 sown crop showed highest larval population (14.96 larvae/0.25sqm) and pod damage (13.36%), and yielded lowest (16.53 q/ha). Crop treated with different levels of irrigation showed no significant difference and highest number of larvae (8.33 to 8.93 larvae/0.25 sqm) and statistically lowest yield (19.94 to 24.78 q/ha).

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Chickpea is generally known as Bengal gram or Gram and botanically called *Cicer arietinum* Linn. It is the oldest and most important pulse crop, mostly grown under dry land condition with heavy cloddy soil. It has an important place in the diet of Indian people because it gives comparatively more protein than any other food grains. Other than dry grains, its green pods are also consumed as such, after roasting, while the green grain and its green twigs are used as vegetable by many of the people in their daily meals. Gram contains 21.5% protein, 61.5% carbohydrates and 4.5% fat (Ahlawat and Omprakash 1996). In Indian agriculture, gram crop ranks fifth in area and fourth in production among the food grain crop. It is cultivated in about 6.68 million ha. with a production of 5.07 million tonnes in India with a productivity of 759 kg/ha. (Anonymous, 2002a). The largest acreage falls in credit of Madhya Pradesh, Rajasthan, Haryana, Maharashtra and the Punjab. In Madhya Pradesh gram occupies the largest area among the pulses covering about 2222 thousands ha. with production of 2197 thousand tonnes with a productivity of 989 kg/ha (Anonymous,

2002b). In India, the yield potential of gram is quite low. The poor crop management, low doses of fertilizers, disease and the serious damage by insect pests are the main constraints for successful cultivation of the crop. The gram pod borer (*Helicoverpa armigera* Hubn., Lepidoptera: Noctuidae) is the most destructive, polyphagous and serious pest causing heavy economic losses to the crop every year. In Madhya Pradesh it is also a key pest of gram and causes more than 10.17% yield loss regularly (Thakur *et al.*, 1980), Choudhary and Sharma (1982) observed that during larval development each larva damages 7 to 16 pods. Continuous presence of single larva per meter row during pod formation stage of the crop resulted in 6.9% pod damage, 6.2% grain damage and 5.4% yield loss.

MATERIALS AND METHODS

Plot size:

A field of 1376 m² was divided into 45 plots the size of each sub plot being 18.2 m². The experiment was conducted in a split plot design. The details are given below:

The experiment was conducted in split plot