International Journal of Plant Protection, Vol. 1 No. 2 : 88-91 (Oct. 2008)

Efficacy of oil formulation of *Nomurea rileyi* against *Helicoverpa armigera* on chickpea

Y.V. INGLE, B.T. RAUT, V.P. PARDEY AND V.B. SHINDE

Accepted : *August, 2008*

See end of the article for authors' affiliations

Correspondence to:

Y.V. INGLE
Department of Plant Pathology, Dr. Punjabrao Deshmukh Krishi Vidyapeeth, AKOLA (M.S.) INDIA

ABSTRACT

Field experiment was carried out to determine the effectiveness of oil formulations of an entomogenous fungus, *Nomurea rileyi* (Farlow) Samson on *Helicoverpa armigera* (Hubner) on chickpea at the field, Department of Plant Pathology, Dr.PDKV, Akola. Results showed that, larval reduction increased in duration after spraying under field condtion. Two sprays of DC-Tron, soybean and sunflower oil formulation were found very effective in reducing larval population, pod damage and increase in grain yield of chickpea. However, endosulfan 35 EC 0.06 per cent treated plot recorded maximum pod damage and higher grain yield than the fungus formulation treatments. On the basis of ICBR, endosulfan ranked first having 1: 21.14 ICBR followed by soybean oil (1:18.40), DC-Tron oil (1:16.57) and sunflower oil formulation (1:16.38).

Key words : *Nomurea rileyi,* Oil formulation, *Helicoverpa armigera,* Chickpea.

Chickpea (*Cicer arietinum* L.) is most important legume, occupying first rank in area as well as production among the pulses grown in the country. Pod borer, *Helicoverpa armigera* (Hubner) is an important major pest of chickpea responsible for its low production. Due to its direct attack on flower or fruiting bodies, high mobility, voracious feeding and high fecundity, it has assumed the status of key pest of many crops. Use of chemical insecticides has witnessed the alarming situation in present agro-ecosystem creating health hazards to the extent of human genetic level and this resulted in increased interest towards biological control in recent years.

Among the existing several entomognous fungi, *Nomurea rileyi* (Farlow). Samson is known to infect mainly several economically important and polyphagous noctuid pests namely *H. armigera, Spodoptrea litura, Trichoplusia ni, Achoea janata, Plusia* sp. Etc (Ignoffo, 1981). Therefore, it has great potential development into myco-insecticide. In this context, attempts were made to prepare some efficient oil formulation of N. *rileyi* and to evaluate their efficacy against *H. armigera* on chickpea under field conditions.

MATERIALS AND METHODS

The experiment were conducted at the field, Department of Plant Pathology, Dr.Panjabrao Deshmukh Agriculture University, Akola (MS), during the *rabi* season under irrigation condition in randomized block design with three replications having plot size of 2.4x 4 m and sowing was done with the ICCV-2 at the spacing of 30x10 cm. Two applications of the fungus formulation in aqueous suspension and oil in water emulsion by high volume sprays were made. A first spray was undertaken on reaching the economic threshold level (1 -2 larvae / m row) and second spray was given after 15 days on reaching the ETL again. In oil formulations, 0.05 ml of each oil, 0.02 ml Tween-80 and 500 ml water as used per plots and final concentration of fungus was made 2.39 x 10^9 spores / ml. Fresh kaolin based formulation was used containing 10^9 spores / ml @ 5 g / liter. Insecticide checks endosulfan 35 EC @ 0.06 per cent concentration and untreated control for comparison. The treatments details given in Tables. The observation on per cent larval reduction 4, 8 and 11 days after treatment (DAT) was worked out by following formula-

$$\% \text{ larval reduction} = \frac{\text{Post treatment population}}{\text{Pre - treatment population}} \times 100$$

At the harvest, the per cent pod damage due to pod borer was calculated as per the following formula –

$$\% \text{ pod damage} = \frac{\text{Total no. of damage pods}}{\text{Total no. of healthy pods}} \times 100$$

Yield performance of the crop in response to different treatment at harvest the grain yield per plot was recorded and converted it on hectare basis. The data thus collected for two years were pooled in respect of per cent reduction in larval population and per cent pod damage due to *H. armigera* were transformed into arc sin and square root values, respectively as per Gomez and Gomez (1984) and along with yield data were subjected to statistical analysis.

RESULTS AND DISCUSSION

Larval reduction:

The pooled data regarding the larval reduction of two seasons were statistically significant (Table 1). Larval