



# INTEGRATED MANAGEMENT OF FUSARIUM WILT AND CHICKPEA POD BORER (*Helicoverpa armigera* Hub.)

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## ABSTRACT

To test the different IPM modules to manage the Fusarium wilt and pod borer of chickpea. In these resistant varieties, seed treatment with *Rhizobium*, *Trichoderma* spp. And use of pheromone trap and N.P.V. spray. Among the treatments N.P.V. +Pheromone trap proved significantly superior over the rest treatment.

**Key Words :** Wilt, *Fusarium Oxysporum*, IPM, pod borer, *Helicoverpa armigera*.

Pulses are important sources of protein for India's large and growing population. Chickpea (*Cicer arietinum* L.) Commonly known as gram or Bengal gram is an important pulse crop of India. India has 75 per cent of world acreage and production of gram. India produces 5.77 mt of chickpea from 7.29 mha with an average production of 792 kg ha<sup>-1</sup> (Anonymous, 2010). It is a crop of both tropical and temperate regions. Kabuli type is grown in temperate regions while the *desi* type chickpea grown in the semi-arid tropics. (Muelhbauer and Singh, 1987) chickpea is valued for its nutritive grains with high protein content, 25.3-28.9% after dehulling, and also contains 5% fat and 55% carbohydrate (Hulse, 1991). Among disease and pest Fusarium wilt and pod borer are the most major disease and pest of chickpea. They cause 50-60 per cent losses of crops. Pod borer damaging many crops like, tomato,

Arhar and cotton also. (Manjunath *et al.* 1989). due to pest infestation and destruction of natural enemies, the use of chemical are not very much effective against larvae of pod borer. Therefore, it was demand to use desirable study to conduct a study of pest management for chickpea crop using integrated pest management technology to reduce the chemicals from farmer society.

## MATERIALS AND METHODS

An experiment was conducted using RBD design with six treatments and five replication in 2009-2010 at Jaitpur, Ladpur and kulphar comes under Krishi Vigyan Kendra Belatal, Mahoba. The soil of field was mar. The fertilizers and other practices followed as per requirement of crop the experiment on three locations were sown the wilt resistant variety Avarodhi and *Rhizobium* culture was inoculated with seed of chickpea

**Table 1 : Effect of different combination on larval population of pod borer yield of Chickpea**

Sr. No.	Treatments	Larval population/m <sup>2</sup>
1	Farmers practices( no use of IPM)	6.5
2	Avarodhi variety against wilt	5.5
3	Avarodhi +seed treatment with rhizobium culture	4.5
4	Avarodhi+ seed treatment with Rhizobium +Trichoderma viridae @6g/kg	4.0
5	Avarodhi +seed treatment with rhizobium culture+ Trichoderma viridae @6g/kg+ pheromone trap @ 20 trap/ha	2.5
6	Avarodhi +seed treatment with rhizobium culture+ Trichoderma viridae @6g/kg+ pheromone trap @ 20 trap/ha+N.P.V.@ 250 le/ha	1.5

crop. The seed treatment with *Trichoderma viride* @ 6 g/kg of seed and sown in line with proper distance. In the month of Feb. 15<sup>th</sup> the pheromone trap was installed with specific lure and changed after 10 days intervals. In the month of starting March ,when the larval population of pod borer more than 3 larvae per Metter sq<sup>2</sup> or 4-5 per cent pods were damaged then apply N.P.V @ 250 LE/ha. through sprayer. The 15 days intervals observations on insect-pest and disease were recorded. The mature crop harvested and grain yield of each plot were weighted separately and analysis loss due to pod borer and wilt.

## RESULTS AND DISCUSSION

All the data presented in table-1 revealed that the use of resistance chickpea variety Avarodhi inoculated with rhizobium culture and seed treatment with *Trichoderma viridae* @ 6g/kg and fix pheromone trap with specific lure 20/ha and use of N.P.V. @ 250 LE/ha had significantly lowest population of pod borer.(1.5 larvae/ metter square

Whereas, the maximum larval population 6.5 larvae/ metter square was recorded in farmers practices (no use of IPM practices). On the basis of these results it is clearly indicate that larval population was lowest where integrated pest management practices has been adopted. Sowing of chickpea in the month of October 15<sup>th</sup>, the use of resistant variety Avarodhi against chickpea wilt, inoculation of rhizobium culture and bio-agent trichoderma viridae @ 6 g/kg of seed and use of pheromone trap with specific lure @ 20/ha and use of N.P.V. @ 250 LE/ha yielded 22.5 q/ha, whereas, the minimum grain yield of 15.25 q/ha was recorded in

farmers practices (no use of IPM). Chickpea wilt resistant variety Avarodhi increased the yield 16.85% .besides the integrated use of rhizobium culture, *Trichoderma viridae* and pheromone traps except N.P.V. increase the yield of chickpea up to 39.85 per cent. Based on observations it was concluded the use of integrated pest management technology against wilts and pod borer of chickpea.

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