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# A Review on Synergistic Effect of Insecticides and Plants Extracts against Gram Pod Borer *Helicoverpa armigera* Hubner (Lepidoptera: Noctuidae)

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**Abstract:** *Gram pod borer Helicoverpa armigera Hübner (Lepidoptera: Noctuidae) a globally widespread and cosmopolitan insect pest, causing estimated global economic losses of over 3 billion US dollars annually. Crops most affected include cotton, tomato, soybean, grain crops such as corn and sorghum, chickpea and other pulses. Adults of this species possess strong migratory abilities (>2000 km), high fecundity and rapid reproductive rates, completing 4–6 generations per year in most cropping regions. Yield losses of up to 90 percent may occur, contingent upon insect density and cultivar susceptibility. In instances of pod borer outbreaks, Various control measures have been tried or proposed for the treatment of this pest, including synthetic insecticides, Phyto pesticides, microbial pesticides, macro-biocontrol agents and the development of genetically modified crops (e.g. Bt cotton) are considered a last resort for farmers.*

*However, Successful control necessitates and the use of an integrated pest management (IPM) approach, wherein biological, chemical and physical control measures are combined for the greatest control efficacy. In addition, multiple studies show that combination of chemicals and plant extracts is effective in the management Helicoverpa armigera and the combination of biological control methods have proven to be more efficacious, sustainable and environmentally friendly of chickpea pod borer.*

**Keywords**: *Helicoverpa armigera*, Plant extract, *Insecticide; Management; Damage*


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