

## Eco-friendly Pest Management Approach in pulse crops for yield maximization

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### Introduction

Pulses are the primary source of protein for the poor and the vegetarians who constitute the majority of Indian population. Pigeon pea and Chickpea are the major pulse crops which are grown in large area in India and its productivity is quite low as compared to other developing countries. Pod borer is the most important insect that causes major economic losses to the pulse crops. Chemical controls are the only strategy being currently adopted by the farmers and rely on synthetic organic insecticides to manage the insect-pests in pulse crops. This increases the risk of environmental contamination, loss of biodiversity, health hazards, killing of natural enemies and development of insecticide resistance in pod borer and other pests. To avoid ill effects of chemical pesticides, use of ecofriendly methodology like intercropping, skip sowing technique and neem alkaloids *i.e.*, Azadirachtin are effective for pest management in pulse crops.

### Intercropping Conserve Natural Enemies for Pest Management

Intercropping is one of the most important cultural practices in integrated pest management (IPM) system involving the growing of different crops in the same field. Although it is old practice but the recent interest in intercropping as an IPM tool is the result of concerns about potential negative impacts of pesticide on human health and the environment, pesticide resistance, resurgence of insect pest and general considerations of agricultural production. Intercropping in pigeon pea with long standing crop *i.e.*, sorghum and maize (2:1) are very common practices for reducing pod borer. Planting of tall varieties of sorghum and maize on border/mixed to conserve natural enemies and function as live perches for predatory insects *i.e.*, wasp, coccinellids, chrysopa, ladybird beetle, spiders, dragon fly, preying mantid, robber fly and bird like black mayana, blue jey etc. Intercropping in chickpea with coriander (9:1) and linseed (4:2), conserve the egg parasitoids *i.e.*, *Trichogramma spp.*,

*Telenomus spp.*, *Tetrasticus spp.*, larval parasitoids i.e., *Bracon spp.*, *Campoletis spp.*, nymph/adult parasitoids i.e. *Lysiphlebus spp.* and *Aphelinus spp.*, they control the pests significantly.



Pigeon pea + Sorghum



Pigeon pea + Maize



Chickpea + Linseed



Pigeon pea + Maize

### Short Stature Crop

It is a problem to operation of pesticide spraying in long standing broadcasted pigeon pea crop. If pigeon pea grows with short stature crop like moong bean, urdbean, groundnut and cowpea in one-meter-wide band after every 8-10 rows of pigeon pea that created space will be facilitated for free movement of operator/machine during spraying of ecofriendly pesticides for pest management.

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Skip method of sowing (Pigeon pea + Groundnut)

### Economic Importance

Intercropping in pulse crops has indicated benefits in terms of economic returns on an average of 20-25 per cent increase in net profit mainly resulting reduces incidence of insect pests. Intercrops play an important role in managing several pests in other pulse crops also.