

## Eco-Friendly Management Strategy for Pest Management

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### Abstract

The eco-friendly pest management strategy is important to check the growing environment of the plant before applying any control. In India, majority of the population depends on agriculture in India, so there is an urgent requirement to increase food production. The use of several eco-friendly pest management strategy like plant volatile oils, microbial insecticides, use of diet, use of natural enemies and use of botanicals is important as it efficiently controls the stored pests, sucking pest and in Sterile Insect Release Method.

**Keywords:** Plant volatile oils, Sterile Insect Release Method, Botanicals, Natural enemies

### Introduction

An organic pest control is really important as it damages environment in a less amount, less toxic to the beneficial insects, mammals, humans and marine bodies. In the eco-friendly pest management strategy, it is important to check the growing environment of the plant before applying any control. In eco-friendly, it is the combination of people, environment and earth. In eco-friendly pest control, we use the pest control strategy which does not have any adverse impact on the environment and human. As we know that healthy plants are less attracted by the pest and if they were attacked by the pests, they can recover from the damage by defending themselves. In India, majority of the farmers are controlling pests with the use of pesticides

without following any recommended doses. Majority of the population depends on agriculture in India, so there is an urgent requirement to increase food production. Therefore, there is high level of pest resurgence, secondary outbreak, insecticides toxicity to soil, water and plants which finally affected the ecosystem and diseases to human beings (Tripura *et al.*, 2017, Sushmita *et al.*, 2019). Hence, there is a need to exchange the use of pesticides with some eco-friendly bio pesticides, plant volatile oils, use of natural enemies etc. There are many good options of eco-friendly strategy which can ward off the insect pests.

### **Use of plant volatile oils**

The use of plant volatile oils like cinnamon oil, garlic oil, patchouli oil, lemon oil and zinger oil helps in controlling stored pests (Loni and Panahi, 2015; Sushmita *et al.*, 2019). These oils act as the contact toxicity as well as fumigant toxicity (Sushmita *et al.*, 2019). These plant volatile oils act as repellent, anti-feedant, oviposition deterrent etc. They are usually volatile, complex compound, natural, strong odour and presence of secondary metabolites. In Asia and Africa, use of plant volatile oils is regarded as traditional methods. The coatings of these plant volatile oils are effective for the control of immature stages of stored pest and eggs.

### **Use of microbial insecticides**

The use of microbial insecticides like *Verticillium lecani* is found to be effective in controlling sucking pests like aphids and whiteflies (Thokchom *et al.*, 2021; Thokchom and Akoijam, 2022). Also, the use of *Beauveria bassiana*, *Isaria fumosorosea* helps in the control of *Eublemma amabilis* by 40% and 80 % respectively (Purnima *et al.*, 2019).

### **Use of diet in insect control**

The use of 7 g protein hydrolysate and 10 g yeast powder mixed in 5 ml honey and 100 ml water were the most suitable diets for mass multiplication in *Bactrocera cucurbitae* for the insect suppression through Sterile Insect Release Method (SIRM) (Karthik *et al.*, 2019).

### **Use of natural enemies**

The use of natural enemies is an ecological importance and they help in 50- 90% control in crop fields. They help in maintaining natural balance in the ecosystem and control the

environment pollution. Most of the natural enemies belong to the order Coleoptera, Hymenoptera, Diptera, Odonata, Araneae, Mantodea and Lepidoptera (Thokchom *et al.*, 2019).

### Use of botanical insecticides

The botanical insecticides like pyrethrin and neem helps in controlling many chewing and sucking insects. Pyrethrin is moderately toxic to mammals and they can effectively control the mosquito. Neem is derived from neem tree and is systemic in nature.

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