



Insect Pests Management in Vegetables by Traps

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Insect pest cause enormous loss to the crops. Sole reliance on the application of chemical pesticides has led to several side effects like resurgence of pests, resistance to pesticides and outbreak of secondary pests coupled with problems of environment pollution. To effectively overcome these issues Integrated Pest Management (IPM) technology is advocated across the globe.

Nowaday, insect pest control has become serious issue for the farmers because of resistance to chemicals and lack of knowledge regarding which chemical to be used for particular pests. Irrespective use of chemicals can also cause irreversible effects to living beings.

In this way, pheromone traps plays an important role where this is both cultural and biological methods of pest monitor and pest control. Pheromone traps are very good tools to be incorporated in integrated pest management and sustainable agriculture. Pheromones are the chemicals released by insect for their communication with another fellow mate. Insect send these chemical signals to attract mates, warn other of predating insects or to find food. Using of specific pheromone along with lure is very important for monitoring and control of target pests in agriculture.

Pheromone traps can be used in different ways

Detection and monitoring of pests: Use of pheromone traps for identifying the particular insect and counting on them to take further control by using other methods.

Mass trapping and disruption: Use of pheromone traps for controlling the pest by mass trapping of them (usually male insect) continuously and reducing the count, thus preventing mating and multiplication of the insect.

Information For use Pheromone Trap

- Each pheromone is designed for a specific insect. No trap will be effective for all insects
- Pheromones are at lower risk than conventional pesticides
- Lures need to be replaced often to better the trapping of new insects
- Do not place them in high traffic areas near people or gardens
- Traps can be affected by weather events, check them after storms to see if they need repair or replacement
- Keep traps out of reach of children and pets
- Wash your hands after using pheromones, as pests may follow you if you smell like one of their own

Types of traps

Sticky traps:

- a) Yellow Sticky traps
- b) Blue Sticky traps

c) White Sticky traps

- Pest attracted: Whitefly, Leaf miner, Aphid, Cabbage root fly, Cabbage white butterfly, Cucumber beetles, Thrips, Tea mosquito bugs, Leafhoppers, Brown plant hopper etc.

Sticky cards are gum-based traps frequently used in pest control to catch and monitor insect pests.

Typically, sticky cards consist of a sticky glue substance layer on a piece of cardboard. Most sticky traps contain no pesticides, although some may be impregnated with pheromone designed to be attractive to certain pests.

Materials required for Yellow Sticky Trap: Card board/ hard board/ ply board (1.5"x1.0"), Yellow colour oil paint, Glue, Wire, Wooden poles etc.

- Recommendation: Yellow- 20 number and Blue- 5 number (Mainly for thrips) per ha.
- Benefits: Highly effective, Non- toxic and Easy to use.

Delta traps: Pest attracted: Flying insects, Diamond Back Moth and *Tuta absoluta*

Lure is placed in the centre of the trap which was folded in delta shape. It is also made up of yellow colour plastic/sheet to attract the insects. It is easy to assemble and use.

Crops: Tomato, Potato, Cabbage, Cauliflower, Broccoli, Brossel sprouts

- Materials required for Delta Sticky Trap: Wax coated card board(18x9 inches), Small piece of wire for suspension, Pheromone lure, Insect brush and Non-drying Glue.
- Recommendation: 6-8 traps/acre

Funnel traps: Funnel trap usually contain a lure suspended from the underside of the middle of the trap, with an insecticidal strip inside the collection container to dispatch the insects.

Pest attracted: Bollworm, Shoot and fruit borer, Tobacco caterpillar, Pink Bollworm, Yellow stemborer, Fall armyworm etc

Crops: Chickpea, Cabbage, Chilli, Chrysanthemum, Cotton, Cow pea, Green gram, Groundnut, Maize, Okra, Red gram, Rice, Sorghum, Soybean, Sunflower, Tomato, Cotton, Pigeon pea, Chickpea, Sorghum, Pea, Tobacco, Potato and Maize.

Recommendation: Around 6 traps/ acre

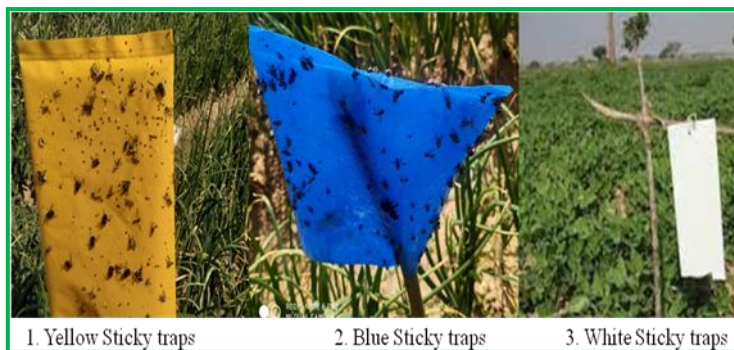
Light traps: The main light source attracts the phototrophic insects such as moths, flies and beetles towards it. Light trap is one of the important IPM tools. These are widely used visual traps to control the menace of agricultural pests.

Pest attracted: Armyworm, bugs, cutworm, flies, gnats, bollworm, leafhoppers, plant hoppers, stem borers and all type of beetles adults.

Host Crops: Rice, Cotton, Maize, Pulses, Tomato, Brinjal, Soybean

Recommendation: Around 4 traps/ ha.

- Benefits: Portable across the crop area without any changes.
- No Major mounting or installation efforts required and easy to operate.
- Economical and helps reduction of chemical pest management cost.
- Eco friendly Pest- Insects control device.



1. Yellow Sticky traps

2. Blue Sticky traps

3. White Sticky traps



- The beneficial insects, which are mostly smaller in size as compared to the pest will come out from the trapping system of the light trap through, the pores provided in the insect collection chamber.
- It is durable and can be used year after year. The individual or a group of farmers can use this trap to save the beneficial insects.
- Expenditure on pesticides and their application will decrease. Biodiversity will increase.

Bottle traps: Bottle trap also contains lure to attract male flies which is suspended in the middle of the cap and holes were made on the bottle to make sure that flies should enter inside and get trapped. Yellow colour of the cap is maintained to attract the insects.

Host Crops: Gherkins, Cucumber, Mango, Pumpkins, Mask melon, Watermelon, Guava, Sapota, Citrus, Banana, Papaya, Gourd crops etc.

Pests attracted: *Bactrocera cucurbitae* (Melon fruit fly), *Bactrocera dorsalis* (Oriental fruit fly), *Bactrocera Zonata* (Peach fruit fly), *Bactrocera correcta* (Guava fruit fly).

Recommendation: Around 6-8 traps/acre



Water pan traps: Insert the pheromone in the container and fix it on the upper central part of the trap. Fill the trap with water to the brim.

Target Pest: *Tuta absoluta* (American Pinworm)

Host Crop: Tomato, Potato, Eggplant (Brinjal) and Chilli

Recommendation: 8-10 traps/ acre

Lure Replacement: Within 4-6 weeks

Bucket trap: Insect can easily enter in bucket with help of hole, are easy to hang and insects can easily travel in the bucket with the help of gunny bag. The trap has to be installed around the tree about five feet from ground surface level and has to be fixed by pouring water.

Pest attracted: White groups, Rhinoceros beetle, Red palm weevil

Host Crop: Sugarcane, groundnut, Chilli, guava, coconut, tobacco, potato, betel nut, oilseeds, pulses and vegetables

Recommendation: 4-5 traps/ acre

Benefits of using pheromone trap:

- Reduces the Applications of Harmful Pesticide.
- Economically Affordable and easy to install
- If used properly can detect low numbers of insect pest levels
- Helps in reducing the damage to the crop

Pit Fall Traps:

Pitfalls are the best means of collecting crawling insects (The University of Wisconsin, 2003)

Pest attracted: Larvae of Army worm, Cut worm, White grub and Invertebrates

Host crops: Ground nut, Sugarcane, Fruit crops, Banana etc.

Benefit: Simple, Cheap and cost effective, do not kill the animals (Expect inadvertently) collect large no. of animals and safe for the operator.

Helps to identify the insect-pests pattern to develop pest management and control plan. Help to distinguish and control insect-pests damaging the crop and enabling pollination to improve the productivity.