

Insect Pest Problems in Cucurbit-Vegetables and Their Management

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Abstract: Rajasthan is an agricultural state of India where about 70 percent people depend on agriculture. Farmers are interested for cultivation of cucurbits but the production has become risky due to significant losses by various insect pest species. Red pumpkin beetle and melon fruit fly are major pest of cucurbits.

Keywords: cucurbits, melon fruit fly, Red pumpkin beetle, pest management

1. Introduction

Rajasthan is an agricultural state of India where about 70 percent people depend on agriculture. Agriculture is the backbone of Rajasthan, a means of livelihood for a majority of population. In Rajasthan vegetable farming is done not just for family consumption but also for purpose of income generating. Tomato, cauliflower, cabbage, chilli and onion are mostly grown vegetable in state, but cucurbits are also one of the most commonly grown. Cucurbits are the popular name of family Cucurbitaceae, commonly known as the guard family. These are mostly climbers and traitors and are best source of vitamins and minerals. Cucurbits have 114 genera and 500 species. These are mostly monoicous but some are dioecious and are mostly grown in tropical and subtropical area of India.

Problems in cucurbit-vegetables: Cucurbit-vegetables have a prominent place among other vegetables having to its high productivity, nutritional value, good storability, long period of availability and better transport qualities. Although there are many factors responsible for lower production. Some insect pests attack on these crops from these insect farmers take heavy loss. Many insect pest such as melon fruit fly, red pumpkin beetle, aphid and spotted beetle etc. attack the plants at different stages of different part like root, stem, leaves, fruits and inflorescence. Some insects such as white fly and aphids not only cause loss directly to the crops by damaging plants but also responsible for transmission of various disease-causing pathogens like virus and phytoplasma. Farmers are interested for cultivation of cucurbits but the production has become risky due to significant losses by various insect pest species. Red pumpkin beetle and melon fruit fly are major pest of cucurbits.

Melon fruit fly: (*Bactroceracucurbitae*; family-Tephritidae; order-Diptera)

This pest is mostly distributed in Africa, America, Australia, Bangladesh, Pakistan and India. In addition to melons, it has been found feeding on chillies, tomato, beans, guava, citrus, fig and cauliflowers etc.

Damage: Adult female lays eggs on soft and young fruits. Eggs are laid inside the fruits by puncturing fruits with their ovipositor. After hatching maggots destroy fruits, as well as immature seeds by feeding on pulp. The damage caused by

this pest is most serious in melons and after the shower of monsoon attacked fruits rot and not fit for sale or human consumption. Damaged fruits give foul smell and numerous larvae are seen when cut the fruits, the infestation often reaches 100 percent in melons.

Management

Before sowing:

- Deep ploughing and sanitation of field.
- Burying of fall off fruits of previous crops

After sowing:

- The regular removal and destruction of the infested fruits helps in the suppression of this pest.
- Frequent raking of the soil under the vine.
- Bagging of fruits also check the infestation by fruit fly.
- Set up fly traps in the field to prevent oviposition.
- Grow the trap crop like maize in field to minimize the damage by fruit fly.
- Apply parasitoid-*Fopiusarisanus*
- Use of biopesticide such as neem extracts.
- Apply the bait spray containing 50 ml of malathion 50 EC + 0.5 kg Gur in 200 liters of water/ha, it should be repeated at weekly intervals.

Red pumpkin beetle: (*Raphidopalpafoveicollis*; family-Chrysomelidae; order-Coleoptera)

Red pumpkin beetle found in Asia, Australia, Southern Europe and Africa. It feeds majorly on cucurbitaceous crops, where rice and pea are the minor host of red pumpkin beetle.

Damage: Damage is done by creamy, yellow-colored larvae which have biting and chewing type of mouthparts. The larvae damage the plants by boring into the roots, underground stem and fruits touching the soil. Adult beetle feeds on leaf lamina and injure the cotyledons, flowers and foliage by biting holes into them. The first-generation larvae are more destructive than the subsequent generations. The early sown cucurbits are so severely damaged by this pest.

Management

Before sowing

- Plough the fields just after harvesting to destroy the hibernating stage.

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- Soil drenching with neem oil cake to killing the pest larvae.

After sowing

- Seedling should be monitored regularly to check infestation.
- Collect and destroy the adult beetles and larvae.
- Monitor the crop once a week to check the population of the pest.
- Avoid sowing alternate host
- Apply entomopathogenic fungus *beauvariabassiana* to effective control of red pumpkin beetle.
- Apply parasitoid-*Opiusfletcheri*
- Spray deltamethrin 0.004% or Cypermethrin 0.12% or fenvalrate 0.01% to effective in controlling beetles.