

Sucking Pest of Brinjal and their Management

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ABSTRACT

Sucking pests significantly hinder the production of brinjal, a crucial vegetable crop in the world. The main sucking pests of brinjal, such as aphids, whiteflies, Thrips, and Mealy bugs are the subject of this article because they extract sap and spread viruses that can seriously harm the plant. The article covers the life cycle, nature of damage, damage symptoms and identification of these pests, along with the financial losses that ensue. Integrated Pest Management (IPM) techniques such as chemical, biological, cultural, and resistant cultivar approaches are emphasised. The goal of this article is to give farmers, researchers, and politicians a foundation for creating efficient and sustainable management strategies for sucking pests of brinjal.

INTRODUCTION

The brinjal (*Solanum melongena* L.) is a member of the Solanaceae family. Native to Southeast Asia and India. In 2021, brinjal was produced in around 58.6 million metric tonnes worldwide, with China producing the most at 37.4 million metric

tonnes, and India coming in second at 12.9 million metric tonnes. approximately 26% of the world's output (Bakare, 2021). In India, about 550,000 hectares are used to grow brinjal, mostly in areas like West Bengal, Orissa, Gujarat, and Bihar (Passricha *et al.*,

2020). Brinjal is rich in vitamins, minerals, and antioxidants, making it a valuable addition to a healthy diet. It is also low in calories and high in fibre, supporting weight management and digestive health (Naeem and Ugur, 2019). It is a crop that can be grown in a variety of agroclimatic conditions and with the use of sustainable farming methods. Brinjal deserves more study and promotion because of its nutritional value, medicinal worth, and agricultural significance.

Brinjal is facing significant threats from sucking pests. These pests, including aphids, whiteflies, thrips, and mealy bugs cause substantial damage to brinjal crops, resulting in reduced yields, lower-quality produce, and economic losses for farmers. With the global demand for brinjal projected to increase, managing sucking pests is crucial for ensuring food security and sustainable agriculture (Romeh, 2019). In addition to taking the sap from brinjal plants, sucking pests spread plant viruses, increasing damage and decreasing crop resilience. With estimated yearly losses ranging from 20% to 50% of global brinjal crops, the economic ramifications are significant. Concerns regarding environmental contamination, hazards to human health, and pesticide resistance have also been brought up by the overuse of chemical pesticides to eradicate sucking pests. Suckers pose a serious threat to brinjal output in India, where the crop is a staple and over 90% of cultivated land is affected. To minimise these losses and guarantee the long-term viability of brinjal production, effective management techniques are needed.

Sucking pest of brinjal: Here is the enlisted of some common sucking pests of brinjal.

S. No.	Common Name	Scientific Name	Order	Family
1	Aphids	<i>Aphis gossypii</i>	Hemiptera	Aphididae
2	Whiteflies	<i>Bemisia tabaci</i>	Homoptera	Aleyrodidae
3	Thrips	<i>Thrips tabaci</i>	Thysanoptera	Thripidae

4	Leafhoppers	<i>Amrasca biguttula</i>	Hemiptera	Cicadellidae
5	Mealybugs	<i>Ferrisia virgata</i>	Homoptera	Coccoidea
6	Scale insects	<i>Aspidiotus nerii</i>	Hemiptera	Coccoidea

1. Aphids:

The sucking pests *Aphis gossypii*, *Aphis nerii*, and *Macrosiphum euphorbiae* are major causes of harm to brinjal because they extract sap and spread viruses. These tiny, soft-bodied insects feed on plant sap, which causes leaves to become twisted or curled, development to be stunted, fruit output to be diminished, and the generation of honeydew, which encourages the spread of sooty mould. Plant viruses such as the Tobacco Ringspot Virus can be spread by aphids, which exacerbates damage and lowers crop resistance. Aphids can quickly colonise brinjal plants due to their high reproduction rate, which is predicted to cause yield losses of 20–50%.

• Damaging symptoms -

- Distorted or curled leaves and yellowing or stunted growth.
- Sooty mould and honeydew present.
- Small, soft-bodied insect clusters on undersides of leaves.

2. Whiteflies:

Whiteflies, specifically *Bemisia tabaci* and *Trialeurodes vaporariorum*, are noteworthy sucking pests that seriously harm brinjal by extracting sap and spreading viruses. These microscopic, flying insects cause stunted growth, yellowing leaves, and decreased fruit output because they feed on plant sap. Plant viruses such as Begomovirus and Tomato Leaf Curl Virus (ToLCV) are spread by whiteflies. The undersides of leaves are where female whiteflies deposit their eggs, and the nymphs hatch into adults after four instars. Whiteflies can colonise brinjal plants quickly due to their

fast reproduction rate, which is predicted to cause yield losses of 20–50%.

- **Damaging symptoms –**

- Yellowing or stunted growth.
- Sooty mould and honeydew present.
- Tiny, winged insect clouds surrounding plants.
- Sticky substance on leaves and surrounding surfaces.

3. Thrips:

Thrips (*Thrips palmi*, *Thrips tabaci*, and *Frankliniella occidentalis*) are important sucking pests that harm brinjal by extracting sap and spreading viruses. These tiny, slender insects cause stunted growth, deformed leaves, and decreased fruit production because they feed on plant sap. Additionally, thrips spread plant viruses such as the Impatiens Necrotic Spot Virus (INSV) and the Tomato Spotted Wilt Virus (TSWV). The nymphs of thrips go through two instars before pupating on the soil or plant surface. The female thrips deposit her eggs in leaf tissue. Thrips have unique fringed wings and are 1-2 mm in length, yellowish or black.

- **Damaging symptoms –**

- Diminished growth and deformed foliage.
- White or silver flecks on foliage.
- Tiny insects on leaf undersides.
- Dark patches or droplets on foliage.

4. Mealy bugs:

Mealybugs (*Phenacoccus solenopsis* and *Ferrisia virgata*) are important sucking pests that harm brinjal plants by removing their sap and weakening them. Because of their waxy secretions, these tiny, soft-bodied insects—

which range in length from 1 to 5 mm—have a white, cottony look. Mealybugs cause stunted growth, yellowing leaves, and decreased fruit output because they feed on plant sap. Additionally, they release honeydew, which encourages the formation of sooty mould and creates an atmosphere that is favourable for fungi. A mealybug's life cycle consists of three instars for nymphs and eggs laid in cottony egg sacs by females. Mealybugs can spread plant viruses, and they are frequently seen with ants, who shield them from their natural predators.

- **Damaging symptoms –**

- Cottony, white patches on stems and leaves.
- Adhesive material on leaves and adjacent surfaces.
- Honeydew and sooty mould present and reduced growth and deformed leaves.

Management

➤ **Culture controls:**

- **Crop rotation** - To disrupt the life cycle of sucking pests, alternate brinjal with non-solanaceae crops.
- **Sanitation** - To lower pest populations, and remove of weeds, waste and infected plants.
- **Pruning** - To stop the spread of pests, remove infected leaves and shoots.
- **Irrigation management** - Use drip irrigation as compared to overhead irrigation, which can disperse pests.

➤ **Physical controls:**

- **Yellow sticky traps** - To catch adult aphids and whiteflies.

- **Fine mesh screens** - To keep out aphids and whiteflies; cover your plants with fine mesh screens.
- **Biological controls:**
 - **Predatory insects** - Promote parasitic wasps, lady beetles, and lacewings, among other naturally occurring predators.
 - **Neem oil** - Use Neem oil to keep mealy bugs, whiteflies, and aphids under control.
 - **Insecticidal soap** - To manage mealy bugs, aphids, and whiteflies, use insecticidal soap.
- **Chemical controls:**
 - Spraying methyl demeton 25 EC or dimethoate 30 EC 500 ml or Fenvalerate 20 EC 375-500 ml or Phosphamidon 40 SL 625-750 ml or Thiometon 25 EC 1000 ml
 - Spraying of Carbaryl (0.1%) or Malathion (0.05%) controls the pest effectively
 - Spraying of insecticides like Dichlorvos (0.02%) or Chlorpyrifos (0.05%) with fish oil rosin soap was found to control the insect population

CONCLUSION

The sucking pests of brinjal pose a significant threat to the crop's productivity and quality. However, with effective management strategies, farmers can minimize the damage and ensure a healthy and sustainable crop. By

adopting integrated pest management practices, using biological pesticides, and maintaining crop sanitation, farmers can protect their crops from these devastating pests. It is imperative that farmers, government agencies, and social organizations work together to promote sustainable agricultural practices and mitigate the impact of sucking pests on brinjal crops.

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