

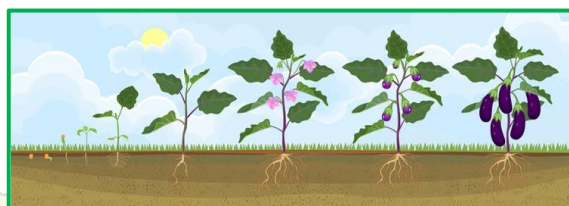
Insect Pests of Brinjal (Eggplant): Host Range and Nature of Damage

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Brinjal (*Solanum melongena*), commonly known as eggplant or aubergine, is a widely cultivated vegetable in tropical and subtropical regions. It is highly susceptible to several insect pests, which pose significant challenges to its production. Among these, the brinjal shoot and fruit borer (*Leucinodes orbonalis*) is the most notorious pest, causing major yield losses. Other pests like aphids, whiteflies, jassids, mealybugs, and mites also infest brinjal, affecting its growth and productivity. These pests not only reduce yield directly through feeding damage but also act as vectors for viral diseases. The article explores the key insect pests of brinjal, their host range, nature of damage, and offers a brief on integrated pest management strategies.



Introduction

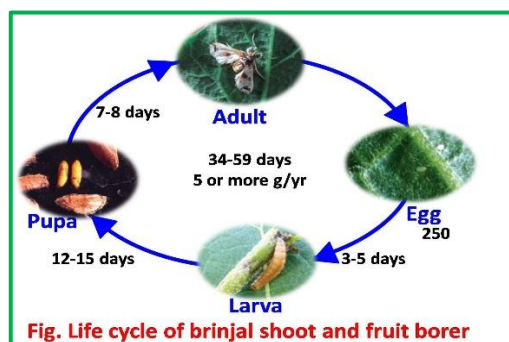
Brinjal (*Solanum melongena*) is an important solanaceous crop cultivated for its edible fruits. It is rich in vitamins, minerals, and antioxidants and is a staple in many culinary traditions. However, its cultivation is severely affected by several insect pests, which can reduce yield by up to 70% if not managed properly.

Among the insect pests, *Leucinodes orbonalis* is the most serious, followed by other sucking pests like aphids (*Aphis gossypii*), whiteflies (*Bemisia tabaci*), and jassids (*Amrasca biguttula biguttula*). The use of chemical pesticides has led to resistance development and ecological imbalance. Hence, understanding pest biology, host range, and damage is crucial for effective pest management.

Major Insect Pests of Brinjal

1. Brinjal Shoot and Fruit Borer (*Leucinodes orbonalis*)

- **Family:** Crambidae
- **Order:** Lepidoptera
- **Host Range**
 - ✓ **Primary host:** Brinjal
 - ✓ **Secondary hosts:** Potato, tomato, *Solanum indicum*, *Solanum torvum*
- **Nature of Damage**
 - ✓ Larvae bore into tender shoots, causing wilting.
 - ✓ Later stages infest fruits, making them unmarketable.
 - ✓ Damage causes secondary infection by pathogens.
- Yield loss can go up to 60–70%.



- **Symptoms**

- ✓ Wilting of shoots
- ✓ Holes in fruits with excreta (frass)
- ✓ Premature fruit drop

2. **Aphids (*Aphis gossypii*)**

- **Family:** Aphididae
- **Order:** Hemiptera
- **Host Range**
- ✓ Brinjal, cotton, cucurbits, okra, chili, tomato
- **Nature of Damage**
- ✓ Suck sap from leaves and tender shoots.
- ✓ Transmit viral diseases like mosaic virus.
- ✓ Cause leaf curling, yellowing, and stunted growth.

- **Symptoms**

- ✓ Sticky honeydew secretion
- ✓ Presence of sooty mold
- ✓ Curling and distortion of leaves

3. **Whiteflies (*Bemisia tabaci*)**

- **Family:** Aleyrodidae
- **Order:** Hemiptera
- **Host Range**
- ✓ Tomato, brinjal, cotton, okra, chilies, beans
- **Nature of Damage**
- ✓ Sap sucking from lower leaf surface.
- ✓ Vector of Tomato Leaf Curl Virus (ToLCV) and other begomoviruses.
- ✓ Weakens plants and leads to poor fruit development.

- **Symptoms**

- ✓ Chlorosis
- ✓ Leaf curling
- ✓ Honeydew and black sooty mold on leaves

4. **Jassids (*Amrasca biguttula biguttula*)**

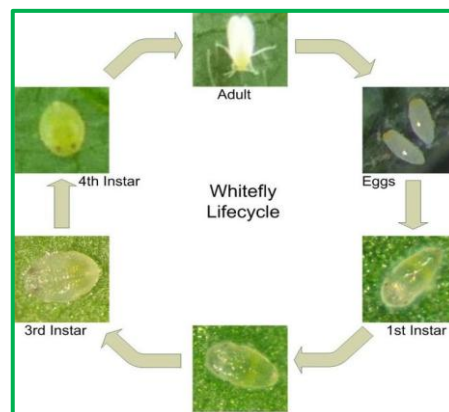
- **Family:** Cicadellidae
- **Order:** Hemiptera
- **Host Range**
- ✓ Okra, cotton, brinjal, tomato
- **Nature of Damage**
- ✓ Nymphs and adults suck sap from underside of leaves.
- ✓ Toxins in saliva cause "hopper burn".

- **Symptoms**

- ✓ Leaves turn yellow and bronze
- ✓ Leaf margins curl upward
- ✓ Severe infestation causes defoliation

Red Spider Mites (*Tetranychus urticae*)

- **Family:** Tetranychidae
- **Order:** Acari
- **Host Range**
- ✓ Wide host range including brinjal, cotton, chili, beans
- **Nature of Damage**
- ✓ Feed on the lower surface of leaves by sucking cell sap.
- ✓ Severe attack causes webbing and leaf desiccation.



- **Symptoms**

- ✓ Yellow speckling on leaves
- ✓ Webbing on undersides
- ✓ Leaf drop under heavy infestation

Mealybugs (*Phenacoccus solenopsis*, *Ferrisia virgata*)

- **Family:** Pseudococcidae
- **Order:** Hemiptera
- **Host Range**
- ✓ Brinjal, cotton, tomato, hibiscus, papaya
- **Nature of Damage**
- ✓ Suck plant sap and excrete honeydew.
- ✓ Attracts ants and leads to sooty mold development.
- ✓ Weakens plant and stunts growth.

5. **Ash Weevil** (*Myloccerus subfasciatus*)

- **Family:** Curculionidae
- **Order:** Coleoptera
- **Host Range**
- ✓ Brinjal, groundnut, okra, legumes
- **Nature of Damage**
- ✓ Adults feed on leaves causing notching.
- ✓ Grubs feed on roots leading to poor anchorage.

Integrated Pest Management (IPM) Strategies

1. Cultural Methods

- Crop rotation with non-solanaceous crops
- Removal of infested shoots and fruits
- Use of pest-resistant brinjal varieties
- Intercropping with repellent crops (e.g., marigold)

2. Mechanical Control

- Light traps and pheromone traps for shoot and fruit borer
- Yellow sticky traps for whiteflies and aphids

3. Biological Control

- Release of *Trichogramma chilonis* for egg parasitism of borers
- Use of predators like *Chrysoperla carnea* (lacewing) and ladybird beetles
- *Beauveria bassiana*, *Metarhizium anisopliae* as entomopathogenic fungi

4. Botanical Insecticides

- Neem oil (2–5%) sprays effective against sucking pests
- NSKE (Neem Seed Kernel Extract) 5%

5. Chemical Control (as last resort)

- Use selective insecticides like spinosad, emamectin benzoate
- Avoid broad-spectrum chemicals to protect beneficial insects
- Follow recommended waiting periods before harvest



Conclusion

Brinjal is vulnerable to a wide range of insect pests, the most significant being the brinjal shoot and fruit borer. Sucking pests like aphids, whiteflies, jassids, and mites also contribute to reduced yield and disease spread. Understanding their biology, host range, and damage symptoms is essential for devising effective management strategies. Integrated Pest Management (IPM), which includes cultural, mechanical, biological, and chemical approaches, is the most sustainable and eco-friendly way to manage these pests while maintaining productivity and minimizing environmental harm.

References

1. CABI Crop Protection Compendium. (2022). *Leucinodes orbonalis*. <https://www.cabi.org>
2. Srinivasan, R. (2008). Integrated Pest Management for eggplant fruit and shoot borer (*Leucinodes orbonalis*) in South and Southeast Asia: Past, present and future. *Journal of Biopesticides*, 1(2): 105–112.
3. Dhandapani, N., Shelkar, U. R., & Murugan, M. (2003). Bio-intensive pest management in major vegetable crops: An Indian perspective. *Journal of Food, Agriculture & Environment*, 1(2): 330–339.
4. Anonymous. (2020). Package of Practices for Brinjal. Indian Council of Agricultural Research (ICAR), New Delhi.
5. Ooi, P.A.C. (2000). Integrated Pest Management in the Tropics: Current Status and Future Prospects. *Environmental Management*, 25(3): 205–218.