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Pest Complex in Chillies and Their Management

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Chilli (*Capsicum annuum* L.) is an important spice and vegetable crop cultivated widely across India. The crop is affected by several insect pests that cause significant yield losses and deteriorate fruit quality. This article reviews the major insect pests of chillies, their symptoms of damage, and effective integrated pest management (IPM) strategies using simple and practical approaches.

1. Introduction

Chilli is one of the major commercial crops in India, used both as a spice and a vegetable. From nursery to harvest, several insect pests attack the crop, causing damage to leaves, flowers, and fruits, and in some cases transmitting viral diseases. Understanding the pest complex and adopting integrated pest management practices help farmers achieve higher and more sustainable yields.

2. Major Pests of Chillies

a) Aphids (*Aphis gossypii*)

Aphids are small, soft-bodied insects that suck sap from young leaves and shoots. Their feeding results in leaf curling, yellowing, and stunted growth. They also secrete honeydew that promotes sooty mold and transmit the Chilli Leaf Curl Virus.

b) Thrips (*Scirtothrips dorsalis*)

Thrips feed on the lower surface of tender leaves and flower buds, leading to silvering, curling, and deformation. They are known vectors of leaf curl and bud necrosis viruses, with infestation peaking in hot and dry weather.

c) Whitefly (*Bemisia tabaci*)

Whiteflies suck plant sap, causing leaf yellowing, wilting, and premature drying. They also excrete honeydew and transmit viral diseases such as the leaf curl complex.

d) Fruit Borer (*Helicoverpa armigera*)

The larvae bore into green fruits and feed internally, causing holes and fruit drop. Damaged fruits become unfit for marketing, leading to yield losses of up to 50%.

e) Mites (*Polyphagotarsonemus latus*)

Mites attack tender leaves and buds, causing downward curling and crinkling. Their population builds up rapidly in hot and dry conditions.

f) Cutworm (*Spodoptera litura*)

Cutworms are nocturnal caterpillars that cut young seedlings at the base and feed on foliage. They are particularly destructive in nurseries and young chilli fields.

3. Integrated Pest Management (IPM)

A. Cultural Control

- Remove and destroy infested and diseased plants.
- Practice crop rotation with non-solanaceous crops.
- Maintain proper spacing to improve air circulation.
- Grow barrier crops like maize or sorghum to reduce pest entry.

B. Mechanical and Physical Control

- Use yellow sticky traps to monitor aphid and whitefly populations.
- Install light traps to attract adult fruit borer moths.
- Handpick and destroy infested fruits and larvae.

C. Biological Control

- Release *Chrysoperla carnea* for the control of aphids and thrips.
- Release *Trichogramma chilonis* to parasitize fruit borer eggs.
- Apply entomopathogenic fungi such as *Beauveria bassiana* or *Metarhizium anisopliae* to manage sucking pests.

D. Botanical Control

- Spray neem oil (3%) or Azadirachtin (1500 ppm) for effective control of sucking pests.
- Use garlic–chilli extract as a natural pest repellent.

E. Chemical Control *(Use only under expert supervision)*

- Imidacloprid 17.8 SL @ 0.3 ml/L for aphids and whiteflies.
- Spinosad 45 SC @ 0.3 ml/L or Emamectin benzoate 5 SG @ 0.4 g/L for fruit borer.
- Fenazaquin 10 EC @ 1 ml/L for mite control.

4. Conclusion

Chilli crops are attacked by a wide range of insect pests at various growth stages. Adopting an integrated pest management approach—combining cultural, mechanical, biological, and botanical methods—is the most sustainable strategy to manage pest populations effectively. Minimizing chemical pesticide use not only reduces production costs but also maintains environmental balance and ensures safer, high-quality chilli production.

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