

SHRI GURU RAM RAI UNIVERSITY

DEPARTMENT OF ENTOMOLOGY , SCHOOL OF AGRICULTURAL SCIENCES

Subject: MANAGEMENT OF BENEFICIAL INSECTS (BSAC-605)

Instructor : Dr. Hitendra Kumar, Associate Professor & Head (Entomology)

Q.: Describe different Diseases and Pests of Honey Bees in India and Their Management.

Ans: I. Introduction

- Honey bees (*Apis* spp.) play a vital role in pollination and honey production.
- India is home to several species including *Apis cerana indica*, *Apis dorsata*, *Apis florea*, and *Apis mellifera*.
- Bee health is threatened by several pests and diseases, affecting colony strength and productivity.

II. Major Diseases of Honey Bees in India

1. Bacterial Diseases

a) American Foulbrood (AFB)

- **Causative agent:** *Paenibacillus larvae*
- **Symptoms:** Brownish, sticky larva; foul smell; sunken, perforated brood cappings.
- **Transmission:** Contaminated equipment, robbing, drifting bees.
- **Management:**
 - Burning infected colonies.
 - Sterilizing equipment.
 - Use of antibiotics like oxytetracycline (with caution due to resistance and residue concerns).

b) European Foulbrood (EFB)

- **Causative agent:** *Melissococcus plutonius*
- **Symptoms:** Twisted larvae, yellowish color, sour odor.
- **Management:**
 - Requeening with disease-resistant stock.
 - Shook swarm method.
 - Use of antibiotics under veterinary guidance.

2. Fungal Diseases

a) Chalkbrood

- **Causative agent:** *Ascosphaera apis*
- **Symptoms:** Mummified larvae with white or black fungal growth.
- **Management:**
 - Improve hive ventilation.
 - Replace old combs.
 - Maintain strong colonies.

b) Stonebrood

- **Causative agent:** *Aspergillus spp.*
- **Symptoms:** Hard, stone-like mummified larvae.
- **Management:**
 - Good sanitation.
 - Avoid excessive moisture.

3. Viral Diseases

- Common viruses: Sacbrood virus (SBV), Deformed wing virus (DWV), Chronic bee paralysis virus (CBPV).
- **Symptoms:** Sac-like larvae (SBV), deformed wings (DWV), trembling and black bees (CBPV).
- **Management:**
 - No specific cure.
 - Control Varroa mites (vectors).
 - Maintain colony hygiene and nutrition.

III. Major Pests of Honey Bees in India

1. Wax Moth

- **Species:** Greater wax moth (*Galleria mellonella*) and Lesser wax moth (*Achroia grisella*).
- **Symptoms:** Tunnels in combs, webbing, destruction of stored combs.
- **Management:**
 - Regular inspection.
 - Store combs in light and airy places.
 - Use of acetic acid fumigation.

2. Varroa Mite

- **Species:** *Varroa destructor*
- **Symptoms:** Deformed wings, weak colonies, patchy brood pattern.
- **Management:**
 - Monitor infestation using sticky boards.
 - Use of formic acid, thymol, or amitraz (rotation recommended).
 - Integrated pest management (IPM) approach.

3. Tropilaelaps Mite

- **Species:** *Tropilaelaps clareae*
- **Symptoms:** Similar to Varroa but faster reproduction.
- **Management:**
 - Break brood cycle.
 - Use of formic acid or screen bottom boards.

4. Ants, Wasps, and Birds

- **Ants:** Invade weak colonies.
- **Wasps:** Attack for honey and brood.
- **Birds:** Bee-eaters feed on bees.
- **Management:**
 - Ant barriers (grease/oil bands).

- Hive stands with water moat.
- Scare tactics or netting for birds.

IV. Integrated Disease and Pest Management (IDPM)

- **Hygienic practices:** Regular cleaning, replacing old combs.
- **Colony management:** Strong colonies are more resilient.
- **Use of resistant stock:** Queen bees from disease-resistant lines.
- **Monitoring and threshold-based interventions.**
- **Safe use of chemicals:** Avoid residues in honey.