

Q.1 : Describe different diseases and pests of silk worm and their management

Ans. : Silkworm rearing is a delicate process, as the larvae are highly susceptible to various pathogens and parasites. Management is generally divided into preventive measures (hygiene and disinfection) and curative/control measures.

1. Major Silkworm Diseases

The four most critical diseases are categorized by their causative agents: viral, bacterial, fungal, and protozoan.

A. Grasserie (Viral)

- **Causative Agent:** *Nuclear Polyhedrosis Virus* (NPV).
- **Symptoms:** Larvae become sluggish with swollen, shiny inter-segmental regions. Their skin becomes thin and fragile, breaking easily to release a milky-white fluid (hemolymph) containing polyhedra.
- **Management:**
 - **Disinfection:** Treat the rearing room and appliances with **2% formalin** or **5% bleaching powder**.
 - **Hygiene:** Collect and burn infected larvae immediately.
 - **Bed Disinfectants:** Apply bed disinfectants like **Vijetha** or **Resham Keet Oushadh** after each moult.

B. Flacherie (Bacterial/Viral)

- **Causative Agent:** Complex infection by viruses (IFV/DNV) and bacteria like *Streptococcus* or *Staphylococcus*.
- **Symptoms:** Larvae lose appetite, become soft and flaccid (limp), and may vomit gut juice. They often excrete "chain-type" feces. Dead larvae turn black and emit a foul smell.
- **Management:**
 - **Environmental Control:** Avoid high temperature and high humidity. Provide proper ventilation.
 - **Leaf Quality:** Feed only fresh, nutritious mulberry leaves; avoid over-mature or wet leaves.
 - **Spacing:** Ensure larvae are not overcrowded in the rearing trays.

C. Muscardine (Fungal)

- **Causative Agent:** Primarily *Beauveria bassiana* (White Muscardine).
- **Symptoms:** Initial moist specks appear on the skin. After death, the body becomes hard, stiff, and eventually turns chalky white as fungal spores cover the exterior (mummification).

- **Management:**
 - **Humidity Control:** Use slaked lime to reduce humidity in the rearing bed.
 - **Anti-fungals:** Apply fungicides like **Captan** or **Dithane M-45** mixed with lime.
 - **Sanitation:** Remove diseased larvae before they mummify to prevent spore dispersal.

D. Pebrine (Protozoan)

- **Causative Agent:** *Nosema bombycis*. This is the most dreaded disease because it is **transovarial** (passed from mother to egg).
- **Symptoms:** Irregular black "pepper-like" spots on the larval skin. Larvae show stunted growth and uneven sizes. Eggs may fail to adhere to the egg sheet.
- **Management:**
 - **Mother Moth Examination:** Only use "Disease Free Layings" (DFLs) by examining the mother moth for spores.
 - **Rigid Disinfection:** Use 2% formalin for all rearing equipment.

2. Major Pests of Silkworm

A. Uzi Fly (*Exorista bombycis*)

The uzi fly is a parasitoid that lays eggs on the silkworm's body. The maggots hatch and burrow into the silkworm to feed on its tissues.

- **Symptoms:** Presence of a small black scar where the maggot entered. The silkworm usually dies before spinning a cocoon or produces a "pierced" cocoon.
- **Management:**
 - **Mechanical:** Fix nylon nets or wire mesh on windows and doors of the rearing house.
 - **Chemical:** Use **Uzicide** (benzoic acid) to kill eggs laid on the silkworm's skin.
 - **Biological:** Release the parasitoid *Nesolynx thymus*, which attacks uzi fly pupae.

B. Dermestid Beetles

These beetles attack silkworm cocoons, especially in storage (grainages).

- **Damage:** They bore holes into the cocoons to eat the pupae, ruining the silk filament and reducing egg production.
- **Management:**
 - **Storage:** Store cocoons in bags treated with **0.028% Deltamethrin**.
 - **Cleanliness:** Periodically clean cocoon storage rooms and remove rejected cocoons.

Summary Management Table

Disease/Pest	Primary Control Method	Key Symptom
Grasserie	Bed disinfectants (Vijetha)	Milky fluid, swollen segments
Flacherie	Ventilation & Leaf quality	Flaccid body, vomiting
Muscardine	Humidity control (Slaked lime)	Chalky white mummification
Pebrine	Mother moth testing (DFLs)	Black pepper spots
Uzi Fly	Nylon netting & Uzicide	Black scar on skin