

# Diseases and Pests of Silkworms

## Diseases of Silkworms

### 1. Pebrine

Pebrine is also known as **pepper disease** or **corpuscle disease**. The disease is caused by a sporozoan, *Nosema bombycis* (family Nosematidae). The main source of infection is food contaminated with spores. Infection can be carried from one larva to another by the spores contained in faeces or liberated in other ways by the moths carrying infection. Pebrinized eggs easily get detached from the egg cards. They may be laid in lumps. The eggs may die before hatching. The larva shows black spots. They may become sluggish and dull, and the cuticle gets wrinkled. Pupa may show dark spots. Moths emerging from pebrinized cocoons have deformed wings and distorted antennae. The egg laying capacity of the moth becomes poor.

### 2. Flacherie

Flacherie is a common term to denote bacterial and viral diseases. It has been classified into following types:-

- i.) **Bacterial diseases of digestive organs:** Due to the poor supply of quality mulberry leaves, the digestive physiology of the silkworm is disturbed, and multiplication of bacteria occurs in the gastric cavity. Bacteria like *Streptococci*, *Coli*, etc. have been found associated with this disease. Symptoms, like diarrhoea, vomiting, shrinkage of larval body may be seen.
- ii.) **Septicemia:** Penetration and multiplication of certain kinds of bacteria in haemolymph cause septicemia. The principal pathogenic bacteria are large and small *Bacilli*, *Streptococci*, and *Staphylococci* etc.

Symptoms like diarrhoea, vomiting, shrinkage of larval body may be seen. Appearance of foul odor is also a common symptom.

**iii) Sot to disease:** It is caused by toxin of *Bacillus thuringensis*. The larvae become unconscious, soft, and darkish and rot off.

**iv) Infectious Flacherie:** It is caused by a virus called *Morator Virus* which does not form polyhedra in the body of silkworm larvae. The infection occurs mainly through oral cavity. The virus multiplies in the midgut and is released into the gastric juice and is excreted in faeces.

**v) Cytoplasmic polyhedrosis:** It is caused by a virus called *Smithia* which form Polyhedra are formed in the cytoplasm of the cylindrical cells of the midgut. The larva loses appetite. The head may become disproportionately large. Infection occurs through the oral cavity.

### **3. Grasserie**

The disease is also known as Jaundice or Nuclear Polyhedrosis It is caused by a virus called *Borrelina*, which form polyhedra in the nuclei of the cells of fatty tissues , dermal tissues, muscles, tracheal membrane ,basement membrane , epithelial cells of midgut and blood corpuscles. The infected larvae lose appetite, become inactive, membranes become swollen, skin becomes tender and pus leaks out from skin. The larvae finally die.

### **4. Muscardine or Calcino**

It is of 3 types

**i) White Muscardine:** It is caused by the fungus, *Beuveria bassiana*. The larva loses appetite, body loses elasticity and they cease to move and finally die.

ii) **Green Muscardine:** It is caused by *Metarrhizium anisopliae*. The larva loses appetite, appears yellowish, becomes feeble and dies.

iii) **Yellow Muscardine:** It is caused by *Isaria farinosa*. Many small black specks appear on the skin. Larvae lose appetite and dies.



*Muscardine*



*Grasserie*



*Flacherie*



*Pebrine*

## **Pests of Silkworms**

- 1. *Tricholyga bombycis***, a dipteran fly of the family tachinidae, commonly known as **Uzi fly**. It is a serious pest of silkworm larvae and pupae. It parasitizes Mulberry and Tasar silkworm.
- 2. Dermestid beetles:** These insects belong to the order Coleoptera, family dermestidae. This family contains many genera and a large number of destructive species. Some of them are: *Dermestes cadverinus*, *D. valpinus*, *D. vorax*, *D. frishchi*, and *Trogoderma versicolor*. The larvae bore inside the cocoon and eat the pupa. These pests cause great damage and economical loss, as the damaged cocoons cannot be reeled.
- 3. Mites:** *Pediculoides ventricosus* (order Acarina, class Arachnida) damage the larvae. The toxic substance produced by the mite kills the silkworms.

In addition, ants, lizards, birds, rats and squirrel also cause considerable damage to silkworm larvae as well as the cocoons.