Silkworm Diseases and Their Management

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Sericulture is an important agro-based industry, providing employment and income to millions of rural households in India, particularly in Karnataka. The productivity and quality of silk depend heavily on the health of silkworms (*Bombyx mori*). Silkworms are highly sensitive to environmental conditions and are susceptible to a variety of diseases caused by protozoa, viruses, bacteria, and fungi.

Diseases in silkworms can result in stunted growth, poor cocoon quality, and high mortality, leading to significant economic losses for farmers. Among the most common silkworm diseases are Pebrine, Grasserie, Flacherie, and Muscardine, each affecting larvae at different stages and requiring specific management strategies.

Effective management of silkworm diseases relies primarily on preventive measures such as maintaining proper temperature and humidity, feeding fresh and uncontaminated mulberry leaves, ensuring clean rearing environments, and using certified disease-free layings (DFLs). Early detection, proper sanitation, and timely intervention can significantly reduce disease incidence and improve cocoon yield and quality.

Understanding the types of silkworm diseases, their symptoms, and management practices is therefore crucial for successful sericulture and sustainable silk production.

1. Pebrine (Protozoan disease)

Causal organism: *Nosema bombycis*

Symptoms

- Uneven growth of larvae
- Black pepper–like spots on larvae and eggs
- Poor spinning and flimsy cocoons
- High mortality in all stages

Management

- Use certified disease-free layings (DFLs) only
- Destroy infected larvae and cocoons immediately
- Disinfect rearing house and appliances with 2% **formalin**
- Mother moth examination (MME) is compulsory

2. Grasserie (Viral disease)

Causal organism: Nuclear Polyhedrosis Virus (NPV)

Fig. 1. Grasserie disease: caused by *Bombyx mori* Nuclear Polyhedrosis virus (*Bm*NPV)

Symptoms

- Larvae become swollen, shiny, and translucent
- Larvae burst and release milky fluid
- High mortality in late instars

Management

- Maintain optimum temperature and humidity
- Avoid overfeeding and excess moisture
- Remove and destroy diseased larvae
- Apply bed disinfectants regularly

Fig. 2. FLACHERIE is a syndrome associated with bacterial diseases

Flacherie (Bacterial disease)

Causal organisms: *Streptococcus*, *Staphylococcus*, *Bacillus* spp.

Symptoms

- Sudden death of larvae
- Soft body with foul smell
- Diarrhea and vomiting of gut juice

Management

- Feed fresh, clean mulberry leaves
- Avoid feeding wet or stale leaves
- Maintain good ventilation
- Use recommended probiotics and disinfectants

4. Muscardine (Fungal disease)

Causal organism: *Beauveria bassiana*

Fig. 3. A. White muscardine: caused by a fungus, *Beauveria bassiana*. and Aspergillosis; B. **Green muscardine**: Aspergillosis, occurs during CHAWKI stage caused by *Aspergillosis flavus, A. tammari & Nomuraea rileyi*

Symptoms

- Larvae become stiff and hard after death
- White or green fungal growth on body
- Occurs mostly in cold and humid conditions

Management

- Reduce humidity during late instars
- Improve ventilation and sunlight exposure
- Dust slaked lime or bleaching powder in rearing house
- Follow strict sanitation practices

General Preventive Measures

✓ Disinfect rearing house before every crop
✓ Maintain stage-wise temperature and humidity
✓ Use clean rearing equipment and mountages
✓ Practice proper spacing and bed cleaning
✓ Wash hands and feet before entering rearing house
✓ Follow recommended feeding schedule

Conclusion

Silkworm diseases can be effectively controlled by adopting preventive and hygienic rearing practices rather than curative measures. Scientific management ensures healthy larvae, quality cocoons, and higher economic returns to farmers.

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