

## Forewarning...

### HOW TO MANAGE GRASSERIE DISEASE DURING SUMMER SEASON?

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Silkworm crop during summer is easily prone to diseases and calls for extra care and maintenance during rearing. Summer in tropics is characterized by high temperature, dry, hot, dusty environment and rainfall is scarce. These conditions hamper mulberry cultivation and silkworm rearing activities. At high temperature and low moisture conditions, the silkworms become weak and susceptible to infections and further outbreak of diseases. Among the silkworm diseases, Nuclear Polyhedrosis (Grasserie) poses a major threat to silk cocoon production during summer season. Hence, it is important to manage the disease effectively during summer season and to reduce the crop loss.

**Causative agent:** Grasserie in silkworm is caused by a virus known as *Bombyx mori* Nuclear Polyhedrosis Virus (BmNPV)

**Source of infection:** The milky white fluid released by the grasserie larvae, contaminated silkworm rearing house and appliances are the sources of infection. Silkworm gets infected when it feed on contaminated mulberry leaves with the polyhedral bodies of BmNPV.

**Predisposing factors:** High temperature, low humidity in silkworm rearing environment and poor quality mulberry leaves are the pre-disposing factors for outbreak of grasserie disease.

#### **Symptoms:**

- The skin of infected larva becomes shining and fails to settle for moult.
- Inter segmental swelling appears and the colour of the body becomes yellowish (Fig. 1) .
- The infected larva move restlessly in the rearing bed/ along the rim of the trays.
- Infected larval body ruptures easily and milky fluid (haemolymph) oozes out (Fig. 2). This fluid contains large number of hexagonal or pentagonal structures of polyhedra of BmNPV (Fig.3) and contaminate the mulberry leaf and rearing environment.
- At the time of death most of the organs are observed to have degenerated (fatty degeneration disease), liquefied and the larvae appear to be a bag of polyhedral bodies.
- The diseased larva sometimes hangs upside down on the mountages (Fig. 4).

#### **Management:**

- Conduct thorough disinfection of rearing house, its surroundings and appliances with any recommended disinfectant (0.05 % Asthra / 2.5 % Sanitech or Serichlor in 0.5 % slaked lime solution / 2 % Bleaching powder in 0.3 % slaked lime solution).
- Perform additional disinfection with 0.3 % slaked lime solution.
- Practice personal and rearing hygienic measures during the chawki as well as later instar rearing.
- Collect the diseased larvae carefully before rupturing of the skin and dispose them properly.
- Maintain optimum temperature and humidity in the rearing house.
- Provide optimum spacing to the silkworms and feed quality mulberry leaves.
- Provide good ventilation in the rearing house especially during late age rearing.
- Apply bed disinfectant, Ankush / Vijetha as per schedule and quantity.
- Feed Amruth as per schedule to suppress/control of grasserie disease.
- Also follow DO'S and DON'TS as mentioned below:

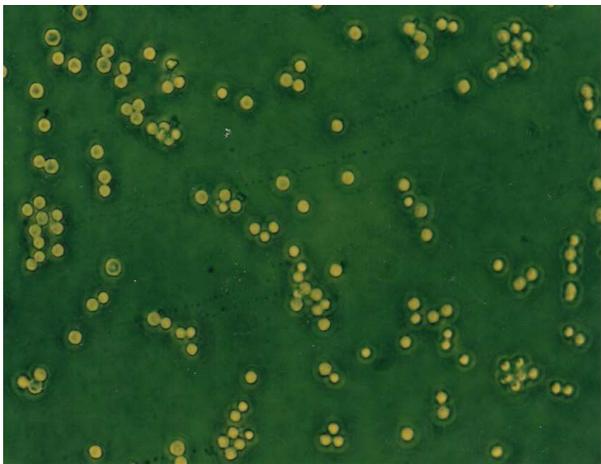
<b>Sl. No.</b>	<b>DO'S</b>	<b>DON'TS</b>
1	Assess the availability of water for irrigation of mulberry plot once in 4-5 days. If there is water shortage, then work out the area of mulberry plot that can be irrigated and take cocoon crop from the portion of the mulberry plot. It is best to adopt drip irrigation system.	Don't take silkworm crop from un irrigated and un cultivated portion of the plot.
2	Harvest mulberry only during cooler hours. Store harvested mulberry leaves/shoots covered with wet gunny cloth in a dark and humid room. Frequently sprinkle water on the mulberry stored.	Don't feed silkworms with leaves having low moisture content.
3	Raised shade trees around the rearing house, cover the roof top with coconut leaves, grass or palm leaves. False roof may also be provided on the inner side of roof.	Don't rear silkworms in asbestos or tin roofed rearing house.
4	Rear silkworm hybrid meant for summer season.	Don't rear silkworm hybrid having low tolerance to high temperature conditions.
5	Incubate the silkworm eggs under optimum conditions of temperature and humidity (25°C and 80 % RH). Incubate the eggs in earthen pot with facilities for cooling and humidification.	Don't expose the eggs to high temperature/low humidity or fluctuating temperature and humidity during incubation period.
6	Cut the chawki leaves larger than the normal size.	Don't cut leaves to smaller size for chawki worms. Don't pile up the trays after feeding.
7	Rise humidity in the silkworm rearing house during hot period. Provide wet gunny cloth screen from outside the door and windows. Spray water to the screen as and when it dries up. The inner side as well as outer side of the wall of the rearing house may also be sprayed with water.	Don't close all the door and windows during hot period.
8	In rearing house, besides windows install ventilators at about a foot from the floor as well as six inches from the inner side of the roof. Keep the floor level ventilators closed during hot period of the day.	Don't open the floor level ventilators during hot period of the day
9	Adopt shoot rearing method and increase the frequency of feeding to 3-4 times a day from 2-3 times.	Don't pile up the mountages after mounting the silkworms.
10	Feed reduced quantity of leaves during noon and more during night. During hot period, cover the bed after feeding with old news paper for 1½ - 2 hours.	Don't transport the cocoons during hotter hours of the day.
11	Apply bed disinfectant as per schedule.	Don't use the bed disinfectant after expiry date. Don't preserve the bed disinfectants near to pesticide/toxic chemicals. Don't pile up the trays after dusting the bed disinfectant.



**Figure 1. Grasserie larva**



**Figure 2. Oozing of milky fluid**



**Figure 3. Polyhedra of BmNPV**



**Figure 4. Hanging of diseased larva**