

## Major Pest of Grainage, *Dermestes Ater* (Coleoptera: Dermestidae) And their Management

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### Introduction

Grainages are the places where disease free layings are produced under the technical supervision. Silkworm eggs are very important basic material for the production of silk. Good quality seed can be defined as that which is free from pest and disseises. Any (insect or non-insect) organism, which interferes with human welfare, leading to economic loss is termed a pest. Two important pests are found to cause economic loss of silkworm crop. The silkworm in larval stage is attacked by a tachinid fly (*Exorista bombycis*), commonly known as uzi fly, leading to considerable decline in cocoon yield. In cocoon stage (seed / stifled /moth pierced cocoons), the silkworms are attacked by demested beetles (*Dermestes spp.*) These beetles are commonly referred to as carpet beetles. They are reported to cause considerable reduction in egg production in silkworm egg production centres. The most important species of dermestid beetle prevalent in egg production centres is *Dermestes ater*.

#### i) Identification of pest

Adults of *Dermestes ater* are black in colour, elongate oval in shape and about 7 mm in body length. Grubs (larvae) are also black in colour and are covered with bristles.

#### ii) Life cycle

The female lays 150-250 eggs in the floss of the cocoons.

Egg hatching duration: 3-6 days.

Larval (grub) duration (5-7 instars): 28-40 days.

Pupal duration: 7-8 days.

Total life cycle: 38-54 days.

### iii) Period of Occurrence

The pest prevails throughout the year.

### iv) Symptoms of pest attack and extent of damage

- The grubs cause more damage than adults.
- The infested cocoons (especially seed and stifled cocoons) show the presence of multiple irregular holes on them.
- Though they show preference for feeding on the left over/dead matter in the cocoons, they do attack the green cocoons as well as the egg laying moths whenever their population gets increased.
- The estimated damage level due to the beetle attack to the pupae is 16.62% and moth 3.57% with 20.19% reduction in egg production in grainages, especially those coming under government sector.

### v) Factors responsible for pest outbreak

Storage of large quantities of moth pierced as well as stifled cocoons over a long period of time (more than 6 months).

### vi) Management

#### Preventive measures

- Storage of rejected cocoons and perished eggs in the grainages for long period should be avoided.
- The cocoon storage rooms should be cleaned periodically.
- Before and after emergence of silk moth, the grainage premises should be kept clean and tidy.
- Provide wire mesh to doors and windows in Pierced Cocoon (PC) storage rooms to avoid free movement of the beetles and grubs from PC storage room to grainage operation rooms.

#### Control measures

##### 1) Mechanical

- Collect the grubs and adults either by sweeping or by using a vacuum cleaner and destroy them by burning or dipping in soap solution.

##### 2) Physical

- Exposure of beetle infested (grubs and adults) pierced / stifled cocoons packed in HDPE (black) bags to sunlight for a period of 6 hours.



### 3) Chemical

- Wooden articles of the cocoon storage room and grainage should be dipped in 0.2% Malathion solution for 2-3 minutes.
- After 10 days, the trays should be thoroughly washed in water and sun dried for 2-3 days before reusing.
- Store pierced cocoons in Deltamethrin treated bags (bags soaked in 0.028% Deltamethrin solution and dried in shade).
- Spray 0.028% Deltamethrin solution on walls and floor of PC storage room once in 3 months.
- Sprinkle commercial grade bleaching powder @ 200 gm/m<sup>2</sup> in the PC storage room (close to wall) to prevent migration of grubs from PC storage room.

### Conclusion

The infestation of *Dermestes ater* was observed in the grainage house. Both the grubs and adults were found feeding on the pupa and ovipositing moth. The dermestid beetle causes considerable damage in the seed production. The important control measures explained comprises all possible methods which are economical and user-friendly as well as easy to implement, which ultimately reduce the income loss.

### References

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