



Coconut Research Institute of Sri Lanka



Advisory Circular No B 4

THE BLACK BEETLE AND ITS CONTROL

The Black beetle or the Rhinoceros beetle, scientifically known as *Oryctes rhinoceros* is a major pest occurring in all coconut growing areas in Sri Lanka. Although its damage to adult palms is not serious, it causes considerable retardation of growth in young palms and seedlings and occasional death of seedlings (Picture 1).

Nature and identification of damage

The damage is caused by the adult beetle which bores and enters into the soft areas at the base of the bud, continues feeding on the soft tissues, resulting damage to the folded leaves and their petioles. When these leaves unfold they exhibit characteristic geometric cuts. If the damage to the petiole is extensive, breaking of the flag leaf could occur. Also the damage often causes choking of the developing leaves in seedlings, resulting in the formation of crooked and malformed leaves (Picture 3). The black beetle damage to the growing tip of seedling is fatal.



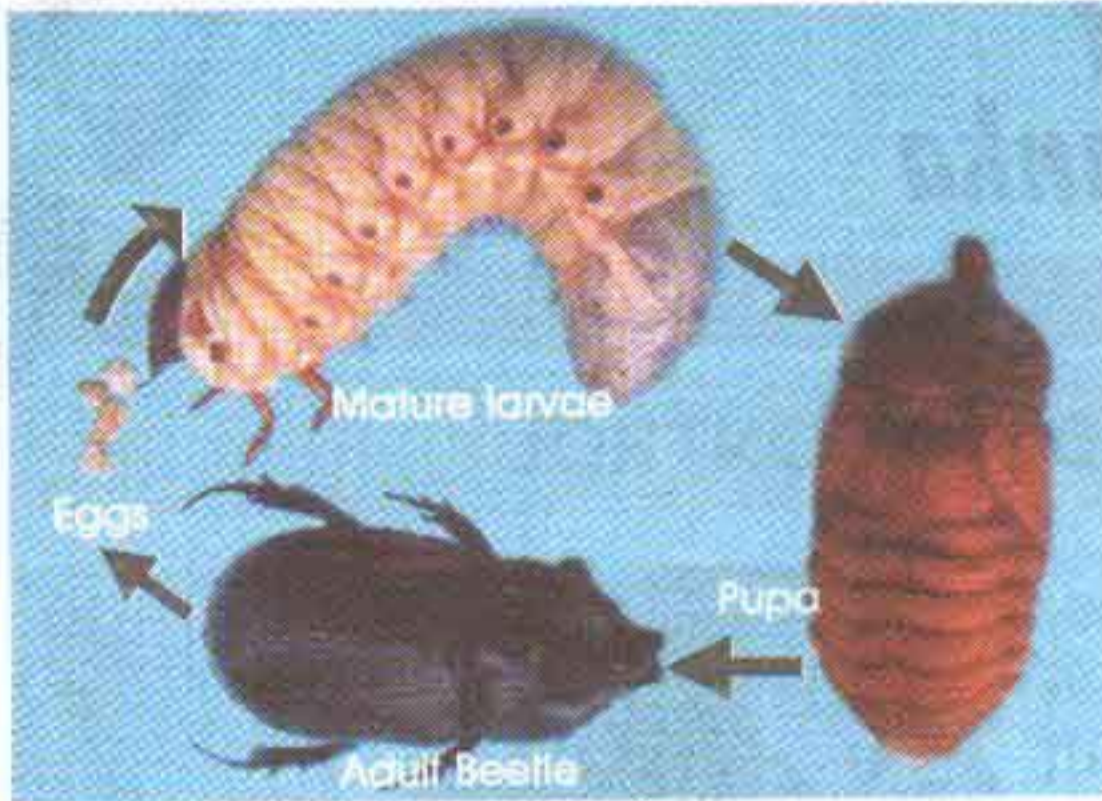
Picture 1: A young palm damaged by black beetle



Picture 2: Entrance of a feeding hole of black beetle



Picture 3: A seedling damaged by black beetle



Picture 4: Life cycle of black beetle

Description and life Cycle of the pest

The adult beetle is black in colour and about 30-40mm long. The head bears a characteristic prominent backwardly directed tapering horn. The female beetle lays small whitish globular eggs in decaying organic matter such as decaying coconut logs, organic manure heaps, fiber dust heaps etc. The grubs or larvae that hatch out grow feeding on the organic matter. The grub

has a whitish body bearing three pairs of legs and a dark brown head. It has a characteristic 'C' shape when resting. Fully grown grub is about 60mm long. The grub stage lasts for about 3 months. This grub eventually makes a hard spherical shaped cocoon using soil and organic matter and pupate inside it. After about 3-4 weeks, adult black beetle emerges from the cocoon. The adult beetle lives for about 3-4 months (Picture 4).

Control of the pest

It is essential to integrate of all possible control measures to control the pest effectively.

1. Mechanical method

Seedling and young plantations should be examined frequently for black beetle damage. The chewed up fibrous matter or 'frass' at the base of the bud and around the entry hole are indications of the damage. It is likely that adult beetle is inside the bud if fresh frass is present at the entrance hole. In such instance, the beetle should be removed using a pointed metal hook (Picture 5). This method is compulsory for the young plantations located near fiber mills, saw dust heaps and coconut rafter processing centers.



Picture 5: Removal of adult black beetle using a metal hook

2. Cultural methods

Decaying coconut logs and stumps should be removed and burnt. The breeding media such as organic manure heaps (Picture 6) and Coir dust heaps should be properly disposed or should be well earthed up with the soil, if using as manure. Beetle could also breed in small numbers on the decaying husk and

coconut leaves used for mulching of coconut seedlings. The mulch should be periodically checked and remove grubs or replaced with fresh materials.

3. Chemical methods

- To repel beetles, apply coal tar or used engine oil on leaf axils around the bud region. Repeat at 1 - 2 month intervals. It is important to use used engine oil not mixed with kerosine oil. Do not pour engine oil into the bud.
- Place naphthalene balls into each of the inner most leaf axils. (6 balls per palm/seedling). This method is more suitable for home gardens.
- If the black beetle damage is severe a systemic granular insecticide should be applied to kill beetles .



Picture 6: Black beetle grubs living in cow dung

Recommended insecticides and their dosages are as follows:

- Carbofuran 3% at the rate of 15 g and 30 g for seedlings and young palms respectively.
- Carbosulfan 10% at the rate of 10 g and 15g for seedlings and young palms respectively.

Method of application

Mix the recommended dosage of one of the granular insecticides with equal amount of sand and placed the mixture into the leaf axils around the bud. Repeat the insecticide treatments at monthly intervals.

Carbofuran is sold in many trade names such as Furadan G, Curator, and Carbofuran 3 G and Carbosulfan as Suscon and Marshal.

Note: All insecticides are toxic and should be handled with care.