

ENTOMOLOGY BULLETIN: NO. 31

PESTS OF COCONUT PALM —

THE ASIATIC RHINOCEROS BEETLE

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INTRODUCTION

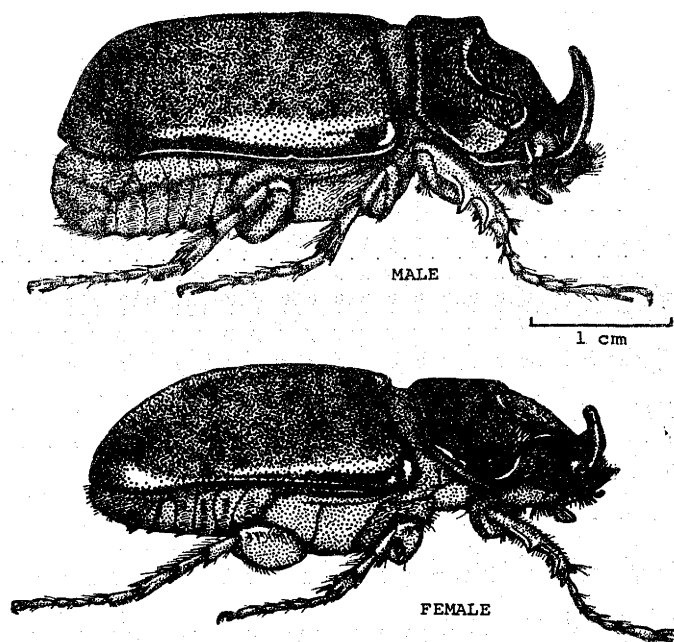
The Asiatic rhinoceros beetle, *Oryctes rhinoceros*, is a serious pest of mature coconut palms in Papua New Guinea. This insect was introduced to Papua New Guinea during World War II. It arrived first in East New Britain and later spread to the New Ireland and Manus Provinces. At present this beetle is still found only in these 3 provinces. It must not be allowed to spread into other coconut growing provinces in Papua New Guinea.

DESCRIPTION

Asiatic rhinoceros beetle adults are shiny dark brown to black. They are 44-49 mm long, 20-23 mm wide and have a large horn on the head. The males have longer horns than the females. The larvae (grubs) are creamy white and C-shaped and have 6 legs. They are normally found in rotting dead coconut logs.

BIOLOGY

Female Asiatic rhinoceros beetles lay eggs in rotting plant material or in dead palms, either still standing or after they have been felled. After about 2 weeks, larvae hatch from the eggs. The beetle larvae feed only on rotting



Adult *Oryctes rhinoceros*

palms. The larvae grow, moult (shed their skins) and pupate (enter the resting stage) in the breeding site. The longest times expected for each stage of growth of the beetle in the breeding site are:

First Instar larva	- 3 weeks
Second Instar larva	- 3 weeks
Third Instar larva	- 6 months
Prepupa	- 2 weeks
Pupa	- 1 month

After emerging from the pupal stage, adults remain in the breeding site for a period of 3-4 weeks before flying to live palms to feed. Mating and egg

laying occur after the first feeding. The adult can live and feed in the field for up to 6 months.

ECONOMIC IMPORTANCE

Damage and feeding habits

Asiatic rhinoceros beetles damage only palms over about 5 years old. The adults fly at night to the crown of the palm and burrow into it. They chew into the centre of the leaf axils, then make tunnels along the axils into the centre of the spear cluster. The beetles feed on tissue juices. Some of the crushed fibre is pushed outside the entrance hole.

The feeding activity damages the fronds while they are still at the spear stage. On opening, the fronds show characteristic V-shaped cuts. Sometimes in severe attacks, the growing point of the palm is destroyed and the palm dies.

The beetles are under control in provinces where they occur, but damage could become serious.

Host plants

Older coconut palm is the main food of the adult Asiatic rhinoceros beetles but other palms may also be attacked. Such palms include oil palm, sago palm, betel nut palm, nipa palm, fan palm, royal palm and sugar palm. Many other plant species (e.g. pandanus, sugarcane, pineapple, banana and taro) may also be attacked by the beetles. Except for banana, damage to these species is rare in Papua New Guinea.

CONTROL METHODS

It is best to control the Asiatic rhinoceros beetle by using several methods together.

Biological control

Biological control is the method of controlling pests by using their natural enemies. Although many organisms have been tried against the beetle, only one, a virus disease, is very effective. Adult beetles are infected with the virus disease in the laboratory and



Characteristic V-shaped cuts of coconut fronds by Oryctes rhinoceros

are released in areas where the beetle is a problem. The disease is passed onto healthy adult beetles as they feed or mate or in the breeding sites. Larvae in the breeding sites are also infected and do eventually die.

The beetles can also be infected with a fungus disease called the green muscardine fungus. This fungus is present in the field but at a very low level. Experiments on increasing the level of fungus and the best methods of application in the field are presently being tested at the Lowlands Agricultural Experiment Station, Keravat, East New Britain Province.

Cultural control

The most important cultural controls are strict hygiene and sanitation. Coconut blocks and plantations should be cleared of any dead coconut palms (either felled or standing). These should be removed, chopped, dried and burnt to restrict the availability of breeding sites.

Pueraria phaseoloides should also be planted in coconut blocks or plantations. This cover crop grows and covers any remaining dead coconut stumps or logs and makes it difficult for the beetles to find the breeding sites.

Chemical control

There is no recommendation for chemical control of the Asiatic rhinoceros beetle.

FURTHER READING

Gorick, B.D. (1979a). Using a virus against rhinoceros beetles. *Harvest*: 5(2): 84-91.

Gorick, B.D. (1979b). Control of the Asiatic rhinoceros beetle, *Oryctes rhinoceros* in coconuts. Lowlands Agricultural Experiment Station Information Bulletin No. 27. L.A.E.S. Keravat, East New Britain Province.

FURTHER INFORMATION

If damage from the Asiatic rhinoceros beetle is occurring, get advice from your nearest D.P.I. entomologist or didiman. Entomologists are based at:

PORT MORESBY
D.P.I., P.O. Box 417, Konedobu
Tel: 214699 Ext. 255

LAE
Bubia Agriculture Research Centre, P.O. Box 73, LAE
Tel: 424933

MOUNT HAGEN
Kuk Agricultural Research Station, P.O. Box 339,
MOUNT HAGEN
Tel: 551377

KIMBE
P.N.G. Oil Palm Research Association, P.O. Box 165, KIMBE
W.N.B.P.
Tel: 935204

RABAUL
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