

CONTROL OF THE COCONUT BEETLE (*ORYCTES RHINOCEROS*)
IN BANGKOK.

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The eradication of this pest is one of extreme difficulty and would be possible only by loyal co-operation between the market and fruit gardeners and all private people having palms in their gardens, but failing this ideal there is no reason why individuals should not do all in their power to control the pest and protect their own trees.

The Rhinoceros Beetle is known to attack not only the coconut trees but also the palmyra palm,* the talipot palm,† the date palm, African Oil palm and many other kinds of palms, but it has not been found in the areca palm.

The adult beetle lays eggs in rotting vegetable matter, stable manure and rubbish of all kinds, or in dead and decaying palm logs and stumps. After from 10-17 days the eggs hatch out and a white grub with a brown head and strong jaws is produced. This grub feeds on the refuse for 3 or 4 months, growing to a length of 2½ inches and then it makes itself a nest by gluing together small pieces of wood. Here it shrinks in size very considerably and casts its skin, becoming what is known as a pupa. For a period of 17 days to three weeks the insect remains quiescent in this condition and finally changes into the full grown beetle. After resting for a few days the beetle flies away on its work of destruction.

The beetle is most active about dusk and after dark, during the day it may be found in the crowns of palms, in decaying palm stumps and logs and in heaps of manure and other refuse.

Damage done.

The adult beetle bores in the crowns of healthy young palms, and also older palms in bearing, for the purpose of feeding on the sweet juices of the sap. If it fails to kill the tree itself the wounds made

* Talipot palm = *Corypha umbraculifera*.

† Palmyra = *Borassus flabellifer*.
= Sugar palm.

are a convenient point of entry for the Red Weevil; this insect will lay its eggs in the openings made and the resulting grubs will sap the vitality from the strongest growing palms. The result of the damage done by the Black Beetle may be seen in the ragged appearance of the leaves and fronds, which are often badly notched, sometimes on both sides. Leaf stalks may be pierced with large holes near the base so that they sometimes break in high winds. This characteristic notching of the leaves and piercing of the leaf stalks results from the beetles having bored through portions of the young leaves and leaf stalks while these were still closed up within the heart of the palm crown.

REMEDIAL MEASURES.

Prevention.

A mixture of sand and coarse salt may be poured into the crown of the trees. This works under the hard casing of the beetle and ultimately kills the insect when it penetrates into its soft tissues.

Collection and destruction of the beetles.

Catch the beetles by spearing them with a slender barbed piece of iron, by hooking with a piece of stout wire, or by digging out. This must be done very carefully or it will do more harm than good as the wounds may be enlarged, thus making the entry of the Red Weevil easier. The beetles should be carefully extracted and the wound plugged with coconut fibre soaked in tar, or with a mixture of sand and tar, and the hole stopped up with clay.

In the Dutch East Indies the hole is filled with a mixture of 1 part coarse salt and 2 parts sand. The hole is then closed with clay. Place here and there wide-mouthed vessels filled with water and substances with an attractive smell, such as fermenting toddy or rice or fermenting rape or mustard cake. The beetles fall in these and being unable to get out can be collected and destroyed if not already drowned.

Experiments have shown that where coconut trees are severely injured by beetles, it is a good practice to pull off all fruits and allow no flower spikes to develop beyond the falling of the staminate blossoms. Remove the pistillate blossoms which at this time resemble small nuts. This procedure will often save the life of a tree.

Measures against the grubs.

Keep all coconut plantations and gardens and private compounds as clean as possible. Split up and burn all decaying palm logs and stumps and kill the grubs and other stages of the Black Beetle found therein. Clean out the holes beneath old decayed palm stumps and fill these in with earth or sand to prevent further breeding of grubs. Cut down all old standing dead and dying palms to ground level, split up and burn the stems, and dig up or cover over the stumps with earth or sand to a depth of at least 6 inches. Remove and burn all young palms killed by the Red Weevil or by disease, as these will soon breed the Black Beetle grubs. Clean up every three months all manure and coconut and other refuse lying in pits or in trenches and kill all the grubs found therein. Use the manure on the land and burn the refuse at frequent intervals.

All palm stems which are to be used for building purposes, fence posts, temporary bridges, etc., must be split up within three months after cutting. Whole logs can only be used for posts, etc., if the ends are tarred thoroughly or protected from rotting. If preferred, fallen logs could be poisoned with arsenate of soda at the rate of 1 lb. to 40 gallons of water; this will kill the insect at all stages of growth. The solution is poured into holes bored into the logs.

Trap pits.

Compost heaps constructed as traps in suitable locations attract the beetles if the rest of the garden or estate is kept perfectly clean. Make pits 3-4 metres wide and 0.75 metres deep. Fill with palm trunks, decaying wood, leaves and manure until it forms a mound 30 cm. above the ground. Here the beetles gather and deposit their eggs.

Open the pits once every two months and kill the larvae. If the pits were lined with clay in the bottom and on the sides, the larvae could be readily destroyed by pouring bisulphide of carbon into the pits at intervals as stated.

If the measures indicated above could be made compulsory by legislation and enforced by a system of inspection, the coconut beetle would soon be a thing of the past, but as long as the remedies are practised only by an enlightened few the growing of coconuts will always be a doubtful speculation.

In the compilation of this article the following publications have been freely drawn upon:—The Tropical Agriculturist; Philippine Agriculture Review; Suppl. No. 14, Burma Dept. of Agriculture; and Memoirs of the Dept. of Agric. India.

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