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PESTS OF COCOA - USE OF CRAZY ANTS FOR CONTROL OF *PANTORHYTES*

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INTRODUCTION

Crazy ants *Anoplolepis longipes* can be used to control *Pantorhytes*, the most serious insect pest of cocoa in Papua New Guinea. Crazy ants attack adult *Pantorhytes* and eat their eggs. They can sometimes completely remove *Pantorhytes* from a cocoa block.

This bulletin tells you how to collect, introduce and establish crazy ants in your cocoa block.

DESCRIPTION

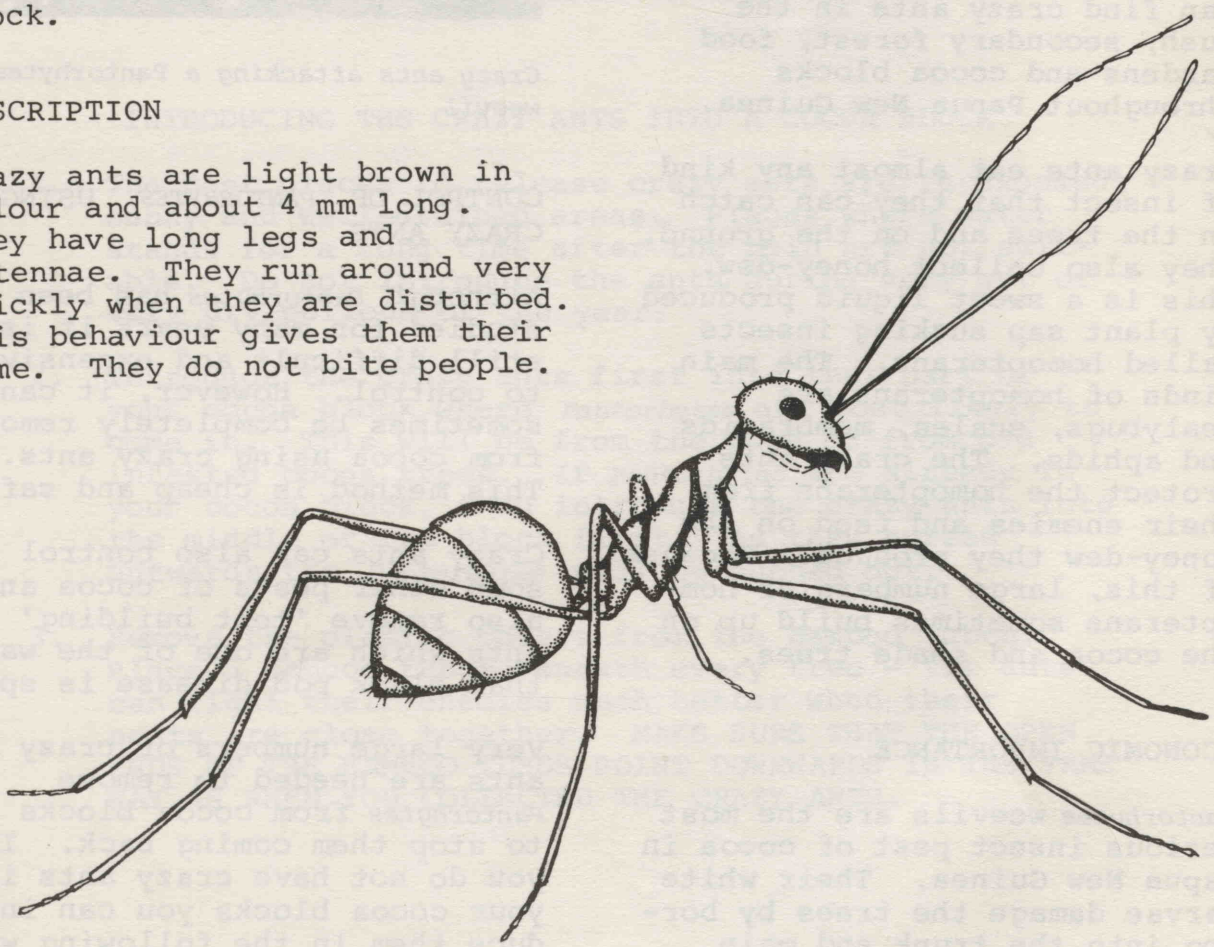
Crazy ants are light brown in colour and about 4 mm long. They have long legs and antennae. They run around very quickly when they are disturbed. This behaviour gives them their name. They do not bite people.

BIOLOGY

Crazy ants live in nests. There may be several thousand worker ants in a nest. It is the workers that you see on the trees and ground collecting food.

Each nest has only a few queens. The queens are much bigger than the workers, and stay inside the nest. Only queens lay eggs.

The larvae hatch from the eggs



A crazy ant, about 18 times natural size

after about 5 days. The larvae are fed by the workers for 2-3 weeks. They then pupate. Adult worker ants emerge from the pupae after about another week.

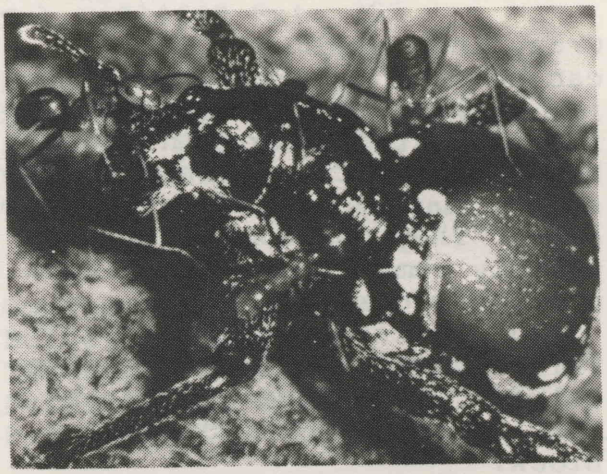
At certain times of the year, usually at the beginning of the wet season, winged queens and males emerge from the pupae. They soon mate, after which the males die. The new queens then leave the nest with small groups of workers and start up new colonies nearby.

Crazy ants like to build their nests near to one another. You can often find many thousands of nests containing millions of workers in a small area. The ants make their nests under leaf litter, logs, stones, palm fronds, coconut husks or any other place where they can shelter from the heavy rains. They also like to nest in pieces of giant bamboo. You can find crazy ants in the bush, secondary forest, food gardens and cocoa blocks throughout Papua New Guinea.

Crazy ants eat almost any kind of insect that they can catch in the trees and on the ground. They also collect honey-dew. This is a sweet liquid produced by plant sap sucking insects called homopterans. The main kinds of homopterans are mealybugs, scales, membracids and aphids. The crazy ants protect the homopterans from their enemies and feed on the honey-dew they produce. Because of this, large numbers of homopterans sometimes build up on the cocoa and shade trees.

ECONOMIC IMPORTANCE

Pantorhytes weevils are the most serious insect pest of cocoa in Papua New Guinea. Their white larvae damage the trees by boring into the trunk and main branches. The canopy (leaves) suffers, branches may be ring-barked and break off, pod production is reduced and a large number of trees may be killed. Bark canker fungus enters the wounds on the trees made by the larvae. This also kills trees, especially those over 10 years old. Cocoa growing in the Northern Province ceased in the 1960's mainly due to *Pantorhytes* attack. The only blocks that survived were those that contained crazy ants.



Crazy ants attacking a Pantorhytes *weevil*

CONTROL OF *PANTORHYTES* USING CRAZY ANTS

Although *Pantorhytes* has been studied for many years it is still difficult and expensive to control. However, it can sometimes be completely removed from cocoa using crazy ants. This method is cheap and safe.

Crazy ants can also control some other pests of cocoa and also remove 'tent building' ants which are one of the ways that black pod disease is spread.

Very large numbers of crazy ants are needed to remove *Pantorhytes* from cocoa blocks and to stop them coming back. If you do not have crazy ants in your cocoa blocks you can introduce them in the following way:

COLLECTING CRAZY ANTS

Crazy ants like to live inside pieces of giant bamboo Giant bamboo can be used to collect ants.

1. Cut sections of giant bamboo so that one end is sealed by the node and the other end is open.

2. Place some large, dry leaves into the bamboo; this keeps out the light which the crazy ants dislike.

3. Find an area where there are plenty of crazy ants and place the bamboo sections about 1 meter apart in this area. MAKE SURE THAT THE OPEN ENDS OF THE BAMBOO TUBES ARE LOWER THAN THE CLOSED ENDS TO PREVENT RAIN WATER ENTERING.

4. Collect the bamboo tubes when crazy ants have moved inside them. This should take about 2 weeks. Cover the end of the tubes with pieces of plastic and close them with string or rubber bands to stop the crazy ants escaping. If there are no crazy ants inside the bamboo tubes, leave them for a longer period or try another place.

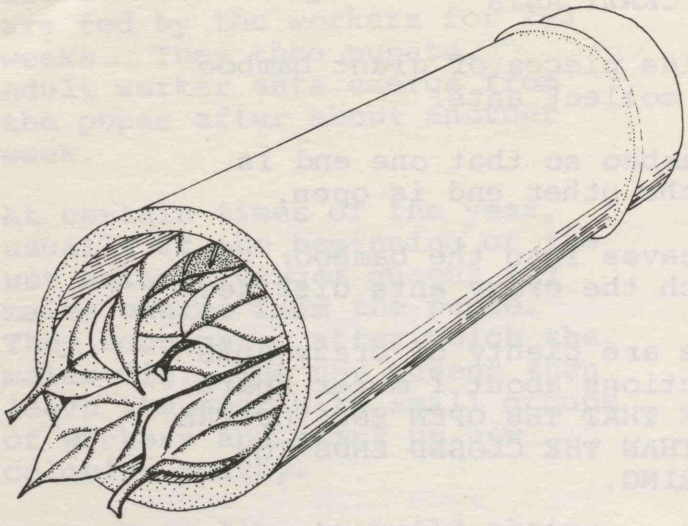
5. Try not to disturb the crazy ants when you are carrying them. If you use a truck, put the bamboo tubes on a bed of grass and cover them with grass or large leaves to protect them from the hot sun.

INTRODUCING THE CRAZY ANTS INTO A COCOA BLOCK

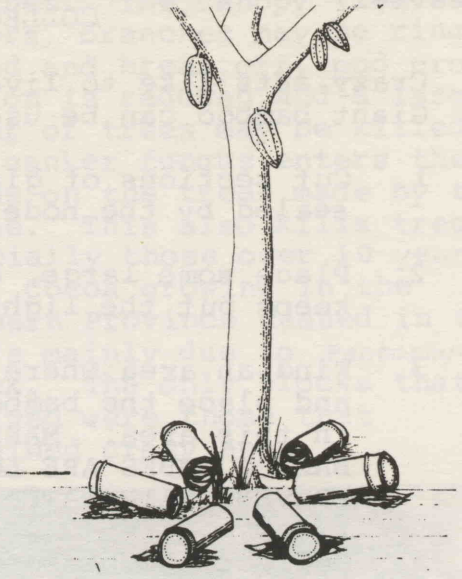
1. The best places to release crazy ants are in exposed, sunny and well-drained areas. Places where water stands for a long time after the rain are not suitable. Do not introduce the ants during very wet or very dry periods of the year.

2. Introduce the crazy ants first into that part of your cocoa block where *Pantorhytes* are most likely to come in. This will be from the bush or from old infested cocoa trees. If *Pantorhytes* are already in your cocoa block, then introduce the crazy ants into the middle of the block first. As they spread outwards the *Pantorhytes* will be pushed out.

3. Remove the plastic covers from the bamboo tubes. Place 5 bamboo tubes beneath every tree - the ants can fight their enemies much better when their nests are close together. MAKE SURE THAT THE OPEN ENDS OF THE BAMBOO TUBES POINT DOWNWARDS IN THE SAME WAY AS WHEN YOU COLLECTED THE CRAZY ANTS.



A section of giant bamboo suitable for collecting crazy ants



Bamboo tubes with crazy ants, in position at the base of a cocoa tree. Note that the open ends of the tubes point downwards.

WAYS TO HELP ESTABLISH THE CRAZY ANTS

1. Crazy ants will have a better chance of settling in the cocoa block and the *Pantorhytes* will be controlled more quickly, if very large numbers of ants are introduced. To do this you must place at least 500 bamboo tubes in your cocoa block.

2. Many of the homopteran insects that provide food for crazy ants live on *Gliricidia* shade trees. Plant *Gliricidia* shade trees in the block, particularly around the edges.

3. Large numbers of some other kinds of ant can sometimes prevent crazy ants from establishing (settling permanently). If the first crazy ant introduction does not work, it may be because of these other ants. These ants can be killed using insecticide sprays and baits. Contact your local D.P.I. entomologist to find out how to do this.

4. When the crazy ants have established themselves do not cut the grass and weeds very close to the ground as this disturbs the ant nests.

5. In blocks of young cocoa there are sometimes not enough suitable places for crazy ants to build their nests. The ants may then look for shelter in the ground directly under the tree trunks particularly during dry periods. This can damage the trees and cause them to fall over. You can make nest sites for the ants in blocks of young cocoa by piling up leaves, wood, shade prunings, etc. These heaps should be made in the cocoa lines to help good management.

INTEGRATED CONTROL

Pantorhytes is a difficult pest to control. It may take several years for the crazy ants to build up to large numbers and completely remove *Pantorhytes* from the cocoa block. In the meantime you can use other methods to control the pest. (See pp. 165-170 of this issue.) Hand picking of adults and 'channel painting' of larvae can be done without harming the crazy ants. Crazy ants will also live well in barrier strips of the cover crop *Pueraria* and beneath coconut shade.

Warning: use of chemicals

(a) Insecticides. Spraying insecticides over large areas of cocoa will kill crazy ants and the insects which crazy ants eat. You should therefore do all large scale spraying (for *Pantorhytes* adults, mirids or other pests) with a non-persistent insecticide several weeks before introducing the ants. (Non-persistent insecticides break down quickly on the trees and in the soil.) If you have any pest problems after the crazy ants have been introduced, spot spray only those trees that are being damaged.

(b) Herbicides and fungicides. Both these chemicals have little effect on crazy ants and can be used regularly.

SOME POSSIBLE BAD EFFECTS OF INTRODUCING CRAZY ANTS

1. Mealybugs. These insects can sometimes build up to large numbers on cocoa because the crazy ants protect them from their enemies. The mealybugs can then cause serious damage to the growing shoots of young cocoa. Mealybugs transmit diseases on cocoa in other countries, but these diseases are not yet found in Papua New Guinea. You can kill mealybugs easily by spot spraying the affected trees with the recommended insecticide (see p. 183 of this issue). If you cannot use insecticides, do not introduce crazy ants until the cocoa has branches, when the trees are about 9 months old.

2. Coconut pests. Some coconut pests such as *Tirabatha, Axiagastus* and *Amblypelta* have sometimes been found together with crazy ants. It is thought that the crazy ants have caused the pest outbreaks.

3. Domestic pests. Crazy ants have sometimes been reported as household pests. They do not bite but are a nuisance to people in their houses. Crazy ants have been present in Papua New Guinea for many years and it is unlikely that they will become a more serious problem when they are introduced in large numbers into cocoa blocks.

FURTHER INFORMATION

For further information and advice about controlling *Pantorhytes* using crazy ants contact your nearest D.P.I. entomologist or didiman. Entomologists are based at:

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Lowlands Agricultural Experiment Station, P.O. Keravat, E.N.B.P.
Tel: 926251 or 926252

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

KIMBE
Dami Oil Palm Research Station
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