

CONTROL OF RODENTS IN COCONUT PALMS

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HISTORY AND EXTENT

The damage that rodents (rats, squirrels, etc.) cause to coconuts is not a new or unknown problem. Rodents cause heavy losses to coconut crops in almost all countries where they are grown.

Damage has been found in each of the major coconut-producing areas of Colombia. It varies from 4% on the Atlantic Coast to 32% on the Pacific Coast and 77% on San Andres Island and has caused a tremendous impact on the economy of the coconut industry.

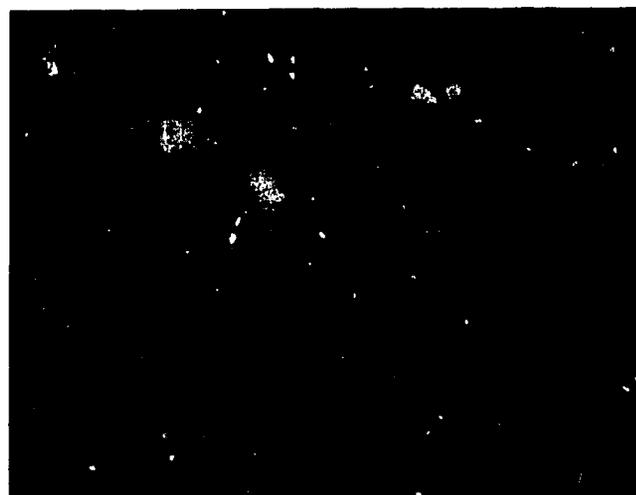
NATURE OF THE DAMAGE

Coconuts damage by rodents range from the size of an orange up to the water-nut stage when the nut is nearly full-sized but still immature.

Very small immature and large mature nuts may also be attacked but are not preferred.

The damage varies from superficial scarring to complete penetration of the husk and soft shell. Moderately scarred nut will remain on the tree until maturity but once the inner shell is penetrated the nut will soon fall.

Damage by rats is different from that caused by squirrels (see figures).



Rat damage to coconuts.

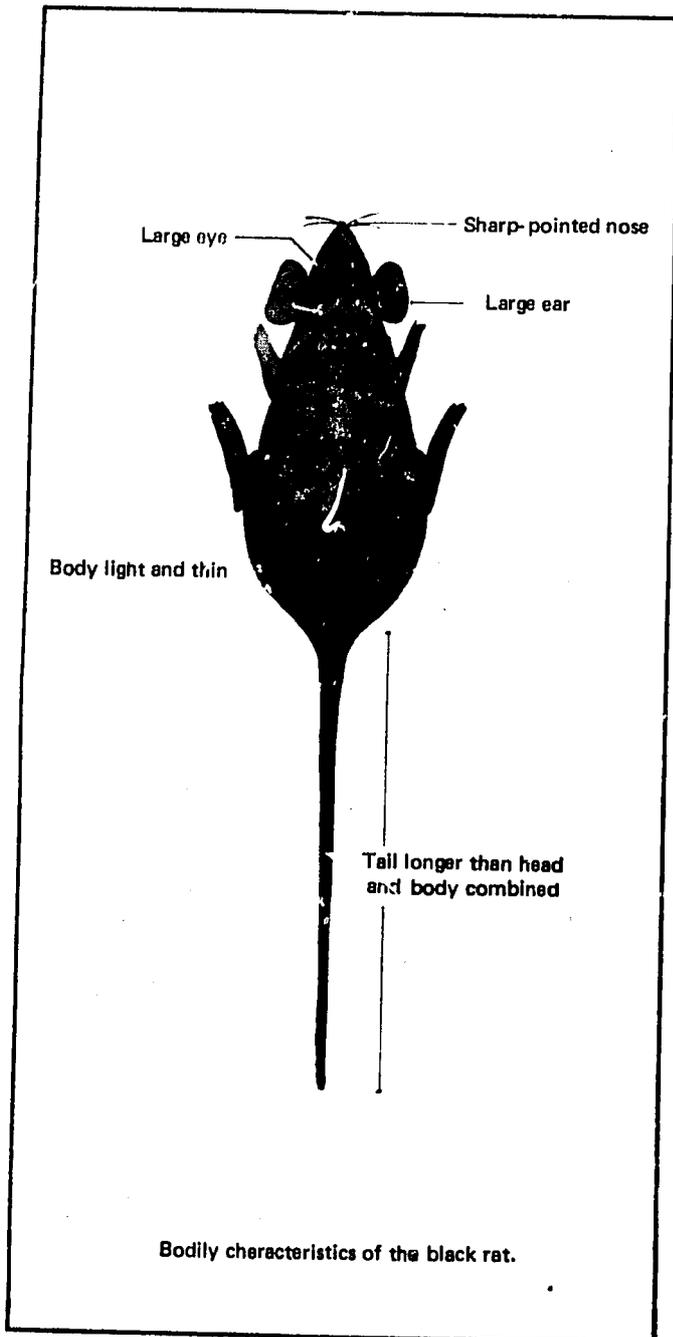


Squirrel damage to coconuts.

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DAMAGE CAUSING SPECIES

The black rat (*Rattus rattus*) is the specie that causes damage in San Andres Island and in San Juan de la Costa (Nariño). The black rat is the most important species in this problem; it is capable of climbing very tall palms and, in fact, may nest in the crowns of the trees.



Although other species of rodents, such as the domestic mouse (*Mus musculus*) and the Norway rat (*Rattus norvegicus*), may be present in coconut plantations, they have not been proven to cause damage to this crop.

The rodent which causes damage in the Santa Marta area is a tree squirrel (*Sciurus granadensis*).

METHOD FOR MEASURING THE DAMAGE

Before beginning a control program, it is necessary to measure the amount of damage. Without this information one cannot obtain information on economic loss or the feasibility of a control program.

The damage can be easily measured following these steps:

1. Select 100 palms at random throughout the plantation and mark them for identification. Remove all damaged nuts found on the ground under the marked palms. One week after selecting, marking and cleaning the area under the palms, count and record the number of new damaged nuts found under them. Then remove these damaged nuts from the site. Continue these counts for a period of 3 weeks. Then add the numbers recorded to obtain the total.

2. Average number of damaged nuts per palm per year:

To calculate this, multiply the total number of damaged nuts (obtained by following step 1) by 17 and divide the result by 100.

3. Percent of damage in relation to production:

This is calculated by dividing the average number of damaged nuts per palm per year (step 2) by the annual production per palm. In the majority of cases, 50 nuts per palm is considered a reasonable production.

4. Total number of nuts damaged in the plantation per year:

This can be calculated by multiplying the total number of palms by the number of damaged nuts per palm per year.

5. Economic losses.

The monetary losses are calculated by multiplying the total number of nuts damaged per year (step 4) by the average local price per coconut.

Example.

The plantation contains 300 palms. The number of damaged nuts counted during the survey (step 1) was 150. The average price for coconuts is \$0.80 each.

Step 1. Number of damaged nuts counted under 100 palms during 3 weeks = 150.

Step 2. Calculation of number of damaged nuts per palm per year:

$$\frac{150 \times 17}{100} = 25.5 \text{ damaged nuts per palm per year}$$

Step 3. Percentage of damage in relation to production:

$$\frac{\text{Damaged nuts per palm per year}}{\text{average annual production}} = \frac{25.5}{50} = 0.51 ,$$

that is to say 51%

Step 4. Total number of nuts damaged in the plantation:

300 palms x 25.5 = 7,650 nuts damaged per year in the plantation.

Step 5. Economic losses:

7,650 damaged coconuts x \$0.80 = \$6,120.00 per year.

METHODS OF CONTROL

A variety of techniques and methods have been used to control rodent damage to coconuts. Among these are poisons, physical barriers and biological control.

Many observations suggest that the use of poison bait is probably the most effective method of rodent control.

In general there are two types of poisons:

- a. The acute poisons which act quickly with a single dose; they are very dangerous both for humans and domestic animals and must be handled with extreme care.
- b. The chronic poisons which act slowly and require many doses; among the chronic or slow acting poisons are the anticoagulants such as diphacinone, warfarin, and coumatetralyl. These are not as dangerous as the acute poisons and in general are less expensive. They are easily available on the open market in bait form in plastic bags.

For these reasons, anticoagulant rodenticides are recommended.

Recommendations for the control of rodent damage in coconuts.

1. Initially, all aspects of a control program should be carried out as a joint effort. This will help to avoid the difficulties that may arise if one coconut grower initiates a control program and his neighbor does not.

A program of this nature could be designed, coordinated, and directed by a committee composed of representatives of interested government agencies and the coconut growers. Later, each grower can maintain the program on his own land.

2. Good sanitary practices are probably the most important aspect in rodent control, regardless if the problem is rural or urban. For this reason, it is essential to make an effort to eliminate all garbage piles and similar locations which provide food and shelter for the rodents. These good sanitary practices must be permanent.

3. Before using any type of rodent control, it is advisable to evaluate rodent damage. The evaluation can be made by following the instructions and procedures described earlier. If the damage is greater than 36%, then treatment of each and every palm is justified in the initial phase. Later, treat only palms where damage is occurring and possibly adjacent palms.

4. The use of anticoagulant rodenticides (poisons for rats) is recommended. Compared with acute toxicants, these materials are less dangerous for humans and domestic animals. However, it is necessary to remember that these products are poisonous and must be handled according to the instructions given by the manufacturer.

5. The bait should be placed in the crown of the palm, in the axis of the leaves. In the majority of cases, the palms are very close together and the rats can pass from one palm to another without coming down. One bag of bait is sufficient for each palm.



Rats can pass from one palm to another across the leaves without coming down to the ground. Therefore it is necessary to put the bait in the crown.



The rodenticide-bait placed in the axil of the leaf.

It is probable that, after the treatment, few dead rats will be found. This should not be interpreted as a sign that the treatment is not effective. The apparent lack of dead rats is because the slow action of the poison gives them time to look for refuge in holes, caves or other hiding places before they die.

Whenever dead animals are found they should be burned or buried deeply.

6. Rodents can never be completely eliminated. Therefore, it is very important to constantly check on the cleanliness of the area; continue to look for damage and use the rodenticide whenever rodent activity is noted.

If this is not done, the rodent population will increase rapidly and damage will be a serious problem again.

The personnel of ICA and AID are doing research aimed at improving the technique described so that the best possible damage control can be obtained using the smallest quantity of bait. Consult them to obtain the best rodent damage control for your coconut groves.

Protect your coconuts against the rats.

Begin your rodent control program now - today.

It is not good to wait: rats multiply fast.

Normally one pair of rats produce 50 offspring each year.

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**This English version, written by the same author, is especially dedicated
to the coconut growers in the San Andres and Providencia Islands.**
