

**NATIONAL PROGRAMME FOR RODENT PEST  
MANAGEMENT**



ICAR

**RODENT NEWSLETTER**

Vol. 2 No 3

August, 1978

**COORDINATING & MONITORING CENTRE  
CENTRAL ARID ZONE RESEARCH INSTITUTE, JODHPUR**

# Rodent Damage to Cacao in South India

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Cacao, *Theobroma cacao* is a newly introduced commercial crop of south India and it is damaged by rodents. The species involved are the House rat, *Rattus rattus*; Western ghats squirrel, *Funambulus tristriatus*, and South Indian palm squirrel, *Funambulus palmarum*. House rat, being nocturnal, feeds on the cacao pods during night time and Indian striped squirrels, being diurnal, feeds on the cacao pods during day time.

Rodents damage both mature and immature cacao pods but prefer mature ripe pods. They make holes on the cacao pods and feed on the sweet mucilage surrounding the beans. In a severely infected cacao

garden plenty of scattered cacao beans, in different stages of germination, can be seen round the base of the trees.

A survey has been conducted in the major cacao growing areas of Kerala, Karnataka and Tamil Nadu, in the month of September and December 1977, to assess the intensity of rodent damage to the cacao pods. Each ripe cacao pod was considered as a unit and the number of mature pods including the rodent damaged (fresh) fruit was counted to assess the extent of damage (table below). It can be seen that the percentage of pods damaged range between 8.0 to 51.3.

Table. Rodent damage to cacao

State and District	Number of gardens observed	Percentage of pods damaged
Kerala		
Kozhikode	5	10.5
Palghat	4	17.6
Cannanore	3	30.5
Trichur	2	15.1
Ernakulam	1	51.3
Kottayam	3	33.3
Quilon	2	14.7
Trivandrum	3	8.0
Tamil Nadu		
Kanyakumari	2	30.2
Karnataka		
South Kanara	4	20.2

## Rat control campaign in Graineries and Houses of three villages in block shivrajpur, Distt. Kanpur (U P)

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The department of Entomology, C.S. Azad University of Agriculture and Technology, Kanpur launched a rat control campaign in three villages viz., Daleep Nagar, Bojha and Bisen in Block Shivrajpur, Distt. Kanpur during June, 1977 with a view to save the food grains and house hold articles from rat damage.

A team of technical personnel approached the villages and convinced the inhabitants about the control drive against rats. Before launching the campaign, a meeting was organised to train and to make the villagers conversant with the techniques and precautions to be followed pre-, post and during operational periods.

Table 1. Showing the detail of rat control operation

Villages Operated	Period of operation	Nos of house operated	Nos of dead rats	Rodenticide consumed during campaign
Bojha	3.6.77 to 7.6.77	81	722	0.300 kg.
Bisen	8.6.77 to 12.6.77	94	1,430	0.500 kg.
Daleep Nagar	17.6.77 to 21.6.77	46	380	0.200 kg.
Total 3 days	5 days campaign period	221	2,532	1.00 kg.

- i) Average consumption of rodenticide per house : 4.5 gm.
- ii) Average number of rats per house: 11.
- iii) Cost of operation per house: 60 paisa.

Prior to control operations, the population of rats (*Rattus rattus* Linn. and *Mus musculus* Linn.) ranged from 10 to 20 rats per house. 2% poison baits of zinc phosphide,

prepared by mixing edible oil and molasses in the cereal, were placed in the natural path ways made by the animals.

This operation offered very promising results. On the next day of operation, the house owners reported the death of rats in large numbers. The dead rats were collected and buried. The operation was repeated after an interval of four days with a view to eradicate the whole rat population from the houses.

The poison baits were placed in the houses lats in the night and their fragments were collected early in the morning to avoid the chances of accidental hazards to human beings specially children and domes-

tic animals. As a result of effective training imparted to the villagers, not a single case of poison accident was reported. The domestic animals were kept out of the reach of poison baits during control operations. The details of campaign are summarised in the table.

From the foregoing observations, it is obvious that to get rid of the rat menace at a large scale, cost factor is certainly not a hinderance but it is only the technical competence and the active co-operation of villagers required during the control campaign.

## Some prevalent methods for eradicating rats adopted in a Tamil Nadu village

By K S. Subiah

Pest Control (India) Pvt. Ltd, Madras

The main crop in Tamil Nadu is paddy and three crops are harvested in a year. The damage caused by 'Bandicota bengalensis' is great and it starts when the tillers are in the boot leaf stage (40-50 days old). According to the local farmers, the pre-harvest rat menace is at its peak during February-March, June-July and October-November, thus covering the three crop phases in a year.

A few try the gimmick of placing screw-pine leaves along the edges of the paddy field hoping that the rats would mistake the serrated leaves for snakes. The well-to-do farmers

employ traditional rat catchers, who use the famous Thanjavur-bow-traps. Each rat fetches the Rat Cather Rs. 0.75.

Some farmers try with much success, the illegal and dangerous method of electrocuting the rats. A path about 22 cm wide between the paddy growth and the bund is cleared and levelled. Tiny bamboo pegs 15 cm high are fixed 1 to 1½ m apart on the ground along the cleared path. These pegs hold a thin zinc wire which is fixed all around, about 4 cm from the ground level. To this wire, is connected the

phase (positive circuit) from the mains of the pump sets and is switched on for the whole night. When this dangerous switch is on, four to five people keep a nightly vigil over the entire area with torch lights to warn off men or cattle. Every time the electrocuted animals cause short-circuit, the fuse gets blown off and then the men remove the dead animal with a dry stick and set the fuse again for the kill.

The next morning a lot of dead creatures are found, including plenty of rats, mongoose, jackals, dogs, snakes, frogs, crab, turtles etc. Cases of human deaths are also not uncommon, which are possibly suppressed.

### Brief progress report of rodent control project, Sidhpur

G.C. Chaturvedi

Rodent Control Project, Sidhpur (N. Gujarat)

The project started in 1970, with financial aid of USAID, and the activities are being carried out by Farmer's Friend Association. The project (phase II) was launched in May 1972 on completion of earlier project (Phase I) under which 82 villages and 2 towns of Sidhpur taluka were completely covered for demonstration operations in 58,709 houses having 230924 people with 282,741 rodents reported killed by

A farmer, I have been informed, had collected over 600 dead rats during four consecutive nights in his eight acre paddy field, during the last season before the paddy harvest.

Considering the efficacy of rat control by electrocution and the popularity of this method among the farmers, it would be feasible to regularize the entire process and make it legal, subject to safety measures to be adopted. Since rural electrification has reached even the remotest village, it is suggested that by means of transformers, the voltage in the zinc wire may be so regulated as to give a fatal or repellant shock, only to small creatures such as rats and would not be lethal to larger animals.

using anticoagulant baits. It was followed by sustenance operations in 84 villages. In field operations 29353 acres of land was covered with local involvement. 1298 persons from various disciplines were trained regarding control techniques. To improve storage capacity and render it rodent proof, 556 bins have been issued and 7838 modification were installed.

Besides this, extension work, pilot studies experiments related to use of anticoagulants have been carried out. The project also organised several extension seminar including prestigious "All India Rodent Seminar-75" which was attended by over 150 delegates from country and abroad. Project officer of the project represented in National bodies like

"Central Rodent Control Advisory Board" and "Expert committee on Rodents". He is also adviser to the "Rat Control Evaluation Group" of Gujarat State and Municipal Corporation of Greater Bombay. The Project, has also been recognised as one of the training centres under National Rodent Pest Management Programmes launched by ICAR.

### "Ecology and control of *Bandicota bengalensis* Gray"

Rachhpal S Gill

P.A.U., Ludhiana

Studies on ecology and Control of *Bandicota bengalensis* were carried out from November 1976 to February 1978 in the fields of Ludhiana and those of adjoining villages. Laboratory studies were carried out in the Rodents Laboratory of the Department.

It was revealed that the percentage of various murid species viz., *Rattus melstada* (Gray); *Mus musculus bactrianus* (Blyth); *Mus booduga* (Gray); *Mus platythrix* (Bennett), *Bandicota bengalensis* (Gray); *Tatera indica* (Hardwicke) and *Golunda ellioti* (Gray); was 39.07, 26.14, 5.53, 0.20, 8.15, 8.88 and 2.00 respectively. Maximum individuals of rodents i.e., 146.48 per hectare were trapped in the month of October.

Both biotic (crop and stages of crop, food and shelter) and abiotic

(environmental temperature and rainfall) factors have marked influence on the relative abundance of the murids. The correlation co-efficient between mean environmental temperature and the murids trapped per hectare was found to be statistically significant except for *G. ellioti*, whereas it was found to be non-significant for relative humidity. The regression of environmental temperature on activity is highest for *B. bengalensis* and least for *G. ellioti*.

Most complicated burrow was found in a field after harvesting of wheat crop. In wheat and groundnut crops length, breadth and depth of burrow increased with the age of crop. Maximum length i.e., 1230 cm of burrow was found along pathways.



Using wonder traps for control of rodents, 81% population was trapped during the month of November from a sugarcane field whereas 73% population was captured in wheat crop during 15 days of trapping during the first fortnight of February.

While comparing the efficacy of two rodenticides viz. zinc phosphide and vacor, latter was found to be more effective at low concentrations (.5%, 1%, 1.5%). No significant difference between the two rodenticides has been observed at 2% concentration.

(Work done for M.Sc. (Hons) degree under the Supervision of Dr. M.L. Sood)

### Efficacy of Aluminium Phosphide to field rodents of Karnataka

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University of Agricultural Sciences, Bangalore

Of the several methods of rodent control, fumigating them to death is found to have several advantages like simpler method of using, lower cost of operation, since it does not involve prebaiting, shorter time to death and high percent kill of the pest. The present investigation tested the efficacy of aluminium phosphide fumigation on three wild rodent species of Karnataka viz. *B. bengalensis*, *Tatera indica* and *Mus booduga* in laboratory. Field trials in both wet and dry lands were also conducted.

Cent percent mortality was observed within one hour of fumigation with aluminium phosphide tablet (0.5 g). Symptoms of general distress

and respiratory difficulty were observed within 15-20 minutes of introducing the animal in the fumigant containing chamber. Death occurred significantly earlier when humidity was higher. The least weighing *Mus booduga* took less time than the heavier *B. bengalensis* which took longest duration to die. Males of all the three species took longer time to succumb than females except the gerbils. In wet lands infested with *B. bengalensis* 87 percent of the population was reduced while in dry lands the percent reduction achieved was 81 suggesting the dependency of al. phosphide on atmospheric humidity.

## National Week of Rodent Control

The last week of May was observed as the National Week for Rodent Control. The campaign was organised in selected areas in various states in collaboration with the Youth organisations, Social Welfare

Board, Bharat Krishik Samaj etc.

Adequate publicity of this campaign through mass media (AIR/TV Film shows) for the community participation in the programme was also made.

### Notes & News

An OECD/FAO/WHO Expert Consultation on rodent problems, control and research was held at OECD headquarters at Paris on 2-5 May, 1978. The Consultation identified the major problems on a regional basis and made recommen-

dations for the development of suitable projects and other activities at reducing crop losses caused by rodents. The major agricultural rodent problems were identified in the following areas :

- A. *Rattus argentiventer* Damaging Growing Rice in South-East Asia.
- B. *Bandicota bengalensis*, the Lesser Bandicoot Rat, as a Pest of Rice and as a Disease Reservoir in South Asia.
- C. *Arvicanthis* and *Mastomys* Spp. Damaging various Food Crops in Africa South of the Sahara.
- D. Cricetid Rodents Damaging various Food Crops in Latin America.
- E. *Meriones* Spp. and Other Gerbillids Damaging Crops in Arid and Semi-Arid Areas from Morocco to India.
- F. Cosmopolitan Species of *Rattus* Damaging Various Crops on Caribbean and Oceanic Islands.

Dr. Ishwar Prakash, Coordinator & Principal Animal Ecologist, participated in this Consultation.

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The next issue will appear in Nov., 1978. Contribution for inclusion in the Newsletter may please be forwarded to :

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Published by the Coordinator of the National Programme for Rodent Pest Management, ICAR  
CAZRI, Jodhpur and printed at  
Rathi Printers, Pungalpara, Jodhpur-342001