

Prevent Rat Damage to Tender Coconut by Bromadiolone Baits

S. Keshava Bhat and A. Sujatha

Central Plantation Crops Research Institute
Kasaragod - 670 124, Kerala

Rat damage to tender coconuts is a persistent problem in almost all the coconut growing countries. The intensity of damage varies from region to region and from garden to garden. In south Kerala, 24% damage to tender coconut is reported, whereas in northern parts of the State the damage is around 21-28%. In Andhra Pradesh the damage varies from 9 to 15%. In Andaman and Lakshadweep islands the problem is much more severe with 35% and 50% loss respectively.

SPECIES RESPONSIBLE

The black rat, *Rattus rattus* Linn. is the rodent responsible for tender nut damage in coconut in India. It is a medium sized (80-120g) rodent (Fig. 1) commonly found in houses, godowns, shops and coconut and cacao plantations. Two sub-species of this rat, *R. r. wroughtoni* and *R. r. rufescens* are known to cause damage to tender coconuts.

HABITS AND HABITATS OF THE PEST

The black rat is an active climber. In coconut plantations it lives mainly on the crowns of the palms by constructing nests either in the interspaces of nuts or inside stipules in the

spindle portion of the palm. They move from one palm to the other through the frond. They rarely come to the ground for foraging. Coconut being a perennial crop provides abundant food and water to these animals throughout the year. In Lakshadweep, coconut meat is the major food item of this

pest. This rat breeds almost throughout the year with less intensity during summer. In coconut plantations the population of this rat varies from 40 to 98 animals/ha.

TYPE OF DAMAGE

Tender coconuts, 3-6 month-old, are preferred by these

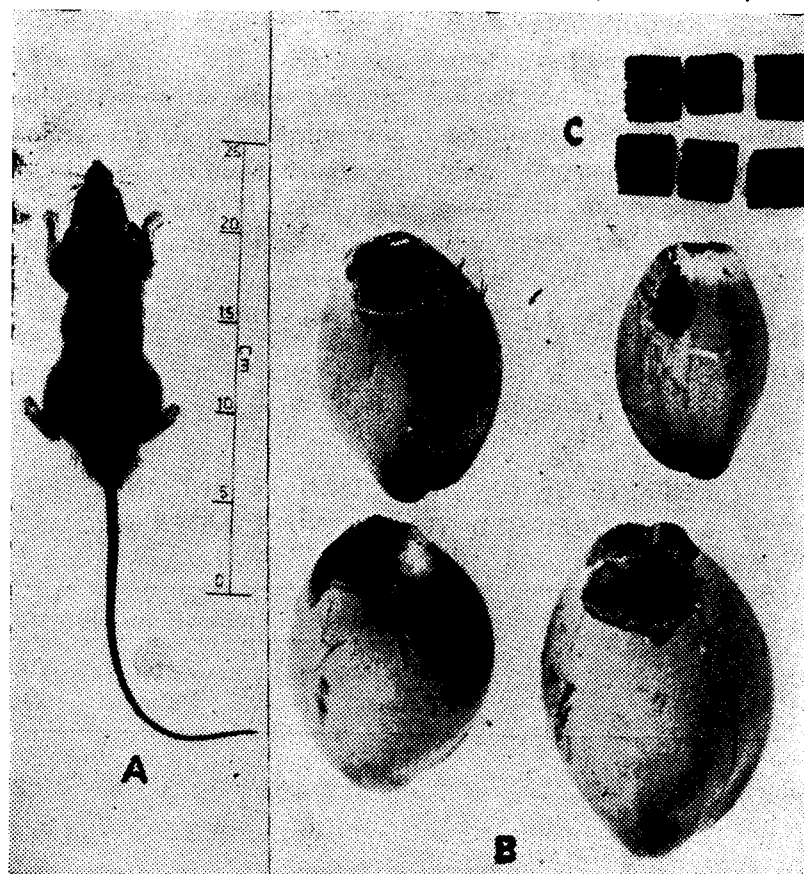


Fig. 1. (A.) *Rattus rattus*, (B.) Damaged tender coconuts, (C.) Bromadiolone Cakes

palms still showing infestation will completely control the damage.

BAITING TECHNIQUE

If all the palms show uniform damage one palm out of every 6 palms (@ 30 palms/ha), is

to be selected for baiting. In case the damage is confined to a few palms here and there only such palms need baiting. While keeping bait on such palms, one bait block (approximately 10g) of bromadiolone is to be placed on the crown as

the activity of the pest is mainly confined to that region. After 10-12 days of first baiting, if the damage still persists, such palms need one more round of baiting. The total cost of bait material for both the operations per ha comes to less than Rs. 25 (Table 2).

TABLE 2

COST OF THE POISON BAIT (0.005% BROMADIOLONE) FOR TREATING / HA COCONUT GARDEN AGAINST BLACK RATS

Poison bait required for 1st baiting	: 30* × 10 = 300 g
Poison bait required for 2nd baiting	: 6** × 10 = 60 g
Total requirement of poison bait for both the operations	: 360g or say 400g
Cost of the poison bait @ Rs. 55/ = per kg	: Rs. 22 or say Rs. 25

* 30 bait points (palms) are sufficient for one ha.

** After 1st baiting only 18-20% palms showed symptoms of rat infestation.

CONCLUSION

Bromadiolone is a second generation single dose anti-coagulant recently introduced in India for rodent control

operations. Studies on the field efficacy of this poison against rats infesting tender coconuts have revealed that it is possible to control rat damage

effectively by applying 10 g bromadiolone (0.005%) wax cakes, two times, at an interval of 12 days, on the crown of the rat infested palms. □

SUBSCRIPTIONS REVISED

Owing to unprecedented increase in the cost of production of the Indian Coconut Journal and Indian Naliker Journal, we have revised the subscription rates of the Journals from 1st June 1989 as given below:-

	<i>Life subscription</i>	<i>Annual subscription</i>	<i>Price per copy</i>
Indian Coconut Journal (English)	---	Rs. 20	Rs. 2
Indian Naliker Journal (Malayalam)	Rs. 150	Rs. 10	Rs. 1

: Editor

rats. However, damage to buttons and mature nuts is not rare. In severe stages of infestation, damage to leaf stalks, unopened spathes, female flowers, etc. is also seen. A typical rat damage to tender coconut consists of a small hole (about 5 cm. diameter) near the perianth region (Fig. 1). In Minicoy island, rats have been observed to gnaw the centre of the nuts. The reason for such a shift in position preference is not known. The damaged nuts usually detach themselves from the bunch after 2-6 days of infestation. In some cases, even the incomplete penetration of the tender nuts will cause their shedding. Hence, when damaged shed nuts are noticed at the base of the palm a few more will be remaining on the bunch itself unnoticed. The rat regu-

larly visits nuts in the same bunch. Only after completing all the nuts in that bunch the rat moves to the adjacent bunch or the palm. Further, the rats show some sort of a marked preference for certain palms. The reason for such a preference is not clearly understood.

CONTROL OF THE PEST

The introduction of the second generation rodenticide, bromadiolone to India has made the task of rat control in coconut easier. This poison, unlike warfarin and fumarin, is a single dose anti-coagulant. The main advantage of this poison over the first generation multiple dose poisons (warfarin and fumarin) is that with bromadiolone bait the rats consume the lethal dose within 24 hours. Further, there is no problem of bait shyness also as

the death occurs after a period of 4-6 days.

In a comparative study on the effectiveness of warfarin and bromadiolone against rats infesting tender coconuts, the latter was found more effective than the former. Warfarin and fumarin are effective against rats if the baits are kept three times continuously. The total bait requirement in such case was always more than 200g per palm. By application of 10g bromadiolone (0.005%) wax cakes, two times, at an interval of 12 days on the crown of rat-infested coconut palm, it is possible to control the damage effectively. Baiting once with 10g poison bait on 45 rat-infested palms has reduced the number of infested palms and the damaged nuts by 82.2% and 79.6%, respectively (Table 1). One more baiting on

TABLE 1
PERCENTAGE OF REDUCTION IN RAT INFESTED COCONUT PALMS AND DAMAGED TENDER NUTS AFTER BROMADIOLONE BAITING

Plot	No. of rat infested palms/tender nuts					
	Pre - control Palms	Nuts	After 1st baiting Palms	Nuts	After 2nd baiting Palms	Nuts
Treated	45	103	8 (82.2%)	21 (79.6%)	0 (100.0%)	0 (100.0%)
Untreated	16	47	23	78	22	60

Percentage of reduction is shown in parenthesis.