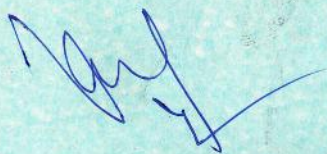


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**COORDINATING & MONITORING CENTRE
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Occurrence of mid ventral scent marking gland in long tailed tree rat, *Vandeleuria oleracea*

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Very few murine rodents possess the ventral scent marking gland. Earlier we have reported a well developed gland in the male *Rattus meltada pallidior*. It is now reported in yet another genus *Vandeleuria* belonging to the sub family Murinae. The males of long-tailed tree-rat, *V. oleracea* possess a well marked ventral gland on the abdomen which is an oblong structure measuring 11 mm in length and 4 mm in width. As per the absolute size of the gland, it is fairly small as compared to *Meriones hurrianae*, *Tatera indica* and *R. m. pallidior* but a comparison of its relative size, in relation to body weight, the ventral scent marking gland in *V. oleracea* is larger than that of *M. hurrianae* and *T. indica* (both sexes).

Efficacy of liquid brodifacoum (PP 581) against two Gerbils and House rat

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Liquid brodifacoum (0.05 concentration) was screened against gerbils-*Meriones hurrianae*, *Tatera indica* and house rat, *Rattus rattus* in laboratory conditions. The poison was exposed after diluting it with distilled water at 0.005% concentration. In each trial, equal number of healthy animals of both the sexes were housed individually in experimental cages.

During conditioning period, *ad libitum* water and bajra (*P. typhoides*) were provided, but during the

trial, water was replaced by liquid brodifacoum solution. Feeding tests were run for 1, 2 and 3 days with different groups of rodents.

In one day exposure to liquid brodifacoum 83, 80 and 90 per cent *M. hurrianae*, *T. indica* and *R. rattus* died respectively (Table 1). As a cumulative effect of two days exposure, 100 per cent *M. hurrianae* and *R. rattus* succumbed to the poison. It was, however, necessary to provide liquid brodifacoum to *Tatera indica* on the third day also.

to achieve 100% kill. The days to death varied from 5 to 7 days. As compared to powder form of brodifacoum, liquid form has been found to be more effective, though its consumption declined significantly on subsequent days.

Table 1. Efficacy of liquid brodifacoum at 0.005% concentration

Species	Exposure period (days)	Liquid brodifacoum (ml/100 g body wt.)	a.i. ingested (mg/kg)	Mortality	Days to death (Mean)
<i>M. hurrianae</i>	1	5.38 ± 0.19	2.64 ± 0.10	10/12	7.6
	2	10.49 ± 0.32	5.23 ± 0.32	12/12	7.2
<i>T. indica</i>	1	4.92 ± 0.51	2.69 ± 0.29	8/10	7.1
	2	6.19 ± 0.37	2.90 ± 0.43	11/12	6.4
	3	8.69 ± 0.30	4.34 ± 0.14	20/20	5.3
<i>R. rattus</i>	1	2.91 ± 0.63	2.16 ± 0.34	9/10	7.1
	2	7.01 ± 0.50	3.50 ± 0.18	12/12	6.9

Parturition in Indian Gerbil, *Tatera indica indica* Hardwicke

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Parturition in the *Tatera indica indica* (Hardwicke), was carefully observed in our laboratory. The observations are reported here.

12 females selected from colonies of wild-caught subjects, and housed in wire-mesh cages (1.32 x 1.00 x 0.32 m) or glass-aquaria (0.9 x 0.45 x 0.35 m) with access to unlimited supplies of food (cereals & cabbage) and water; were closely watched. Of them, actual births could be observed in only 3 subjects (body wt. 100g) during the day-time (9 A.M. to 2 P.M.) The litter

size varied from 2 to 5 young; but all events leading to parturition, actual births and after-events were accurately recorded. The processes connected with parturition belonged to four distinct categories, as described below.

1. *Contraction phase*:- Lying flat on the floor of the cage, with limbs extended outwards, the subjects scratched the floor vigorously.

2. *Delivery phase*:- In this phase, the gerbils assumed the "head between heels" posture; and remained in this position so long as the young

had not been pulled out.

3. *Post-delivery phase:-* The membrane over the young was bitten off, with birth fluids falling on the floor. The umbilical cord was broken, and placenta pulled out. Birth fluids were licked and placenta was eaten by the mother gerbils.

4. *Interval Between Deliveries:-* The mothers licked the young, retrieved them or stretched on the floor of the cage before the spasms started again leading birth of another young.

In the three females watched, the young were born at intervals of 5 to 10 minutes. The total time taken in parturition varied from 30 minutes (5 young), 21 minutes (3 young) to only 11 minutes (2 young).

After all the births, blood was discharged from vagina. This was also licked, before the mothers rested away from young for some time. On return, they collected the young and repeatedly "Crouched" above them. This was obviously to initiate sucking of milk by young.

Rodent damage in almond nurseries

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Rodents have been found to cause heavy damage in almond nursery in the field area of Punjab Agricultural University, Ludhiana. Trapping of rodents revealed the occurrence of *Bandicota bengalensis*, *Tatera indica*, *Golunda ellioti* and *Mus* spp. in and around the almond nurseries. Four nursery beds (15'x15' each) were randomly selected out of 88 beds in an area of 0.5 acre for assessment of damage to germina-

ting plants. Observations after 3 days and 15 days of sprouting revealed 26.8% and 14.9% damage to plants respectively. Epigeal germination is peculiar in almonds and the seeds come to the surface which seem to attract rodents. Because of this reason control of rodents with zinc phosphide bait was not successful in the almond nursery.

Estimation of losses in foodgrains caused by rodents

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The study was carried out in the area's of 14 Save Grain Campaign Offices located in different agro-climatic conditions of the country. Catch and kill method was adopted to assess the losses in stored foodgrains during the year 1980-81.

Total loss caused by rats/house/day was about 63.85g. of the loss, 90.05 per cent caused by rodents of above 50 g. body weight and rest by rodents of lower body weight. Range of food loss caused by both the categories of rodents varied considerably from one Centre to another. Even within the centre, variation of food loss at different selected villages was found considerably higher. However, out of 14

centres, at 7 centres, the loss of foodgrains was higher than that of the average of all the centres.

R. rattus did maximum loss i.e., 80.73 per cent of the total loss. *M. musculus* and *R. norvegicus* caused 8.70 and 9.66 percent of total loss respectively.

The loss of foodgrain is not a small quantity while estimates are made conservatively. When we take into account the additional foodgrains damaged by rats in the form of spillage, gnawing etc. which is much higher than that eaten by them than it become really a very serious problem to our developing country.

Bait acceptance and poison treatment of rodents in closed containers in poultry sheds.

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Comparison of daily bait intake by rodents (*Rattus rattus* and *Mus musculus*) from the open and closed containers placed in poultry sheds revealed that they consume bait

significantly in more quantity ($P < 0.01$) from the closed containers. The containers used for this study consisted of tin (33x22x22 cm) and wooden (28x20x17 cm) boxes

with three and two access holes of 6-6.5 cm diameter respectively. These containers were used to study the efficacy of 0.005% brodifacoum in bait mixture of wheat: maize: sugar: groundnut oil (47: 47: 2:2) and 0.005% bromadiolone in bait mixture of maize: sugar: groundnut oil (92: 2: 4). These studies were carried out in three poultry sheds. Two treatments of brodifacoum were given at an interval of 15 days in shed no. 1 and one each of brodifacoum and bromadiolone in shed No. 2 and 3 respectively. Pre- and post control food consumption was used as a census method to estimate the change in rodent activity. Single treatment of three days placing the brodifacoum and bromadiolone baits resulted in 97% and 81% reduction in rodent activity respectively in shed no. 2 and 3. Contrary to these results, single

treatment of brodifacoum resulted in only 56% reduction of rodent activity in shed no. 1 in which second treatment after 15 days resulted in about 89% control success. The results of present studies indicate that brodifacoum and bromadiolone are effective for rodent control in poultry farms, but the number of treatments would vary depending upon the population as the precontrol population in shed 1 was relatively higher than other sheds. Although during these studies no chance was taken for contact of poultry birds with bait containers but the absence of any spillage of baits outside the boxes, and acceptance of poison baits from the closed boxes by the rodents suggest that brodifacoum and bromadiolone baits can be safely used in closed containers.

Effectiveness of Bromadiolone and Warfarin wax cakes against rats damaging coconut palms in South Gujarat

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Coconut (*Cocos nucifera* L.) is an important remunerative fruit crop in South Gujarat. Rats (*Rattus rattus*) cause a great deal of damage to tender as well as mature nuts in this area. A field

trial was conducted to study the effectiveness of bromadiolone and warfarin wax cakes against rats damaging coconuts.

The trial was taken at Fruit Research Station, Gujarat Agricultural

tural University, Gandevi, District Valsad. The ready to use 0.005% bromadiolone embeded wax cakes and 0.025% warfarin embeded wax cakes were obtained from Pest Control (India) Pvt. Ltd., Bombay. Two rows each of 20 cocount trees situated considerably apart from each other were selected for the trial. Before starting the trial, the rat damaged fallen nuts at the base of the palms in each row were removed. So as to know the relative damage of rodents before treatment, the fresh rat damaged nuts were again collected after a week from each row and their numbers were recorded. Crown baiting was done once in the last week of November, 1983. Both the types of cakes each in one row were placed at the base of the panicle of all the coconut palm. Observations on fallen nuts were made at weekly

interval after crown baiting. Percentage reduction in the falling of nuts was worked out on the basis of the number of nuts fallen a week before treatments (Table 1).

It can be seen from Table 1 that after commencement of the poison baiting with bromadiolone wax cake 90. 9, 95. 4 and 97. 7 percentage reduction were observed one, two and three weeks after the treatment respectively, while with warfarin wax cakes, the percentages reduction in nut falling were 47. 6, 42. 8 and 61. 9 one, two & three weeks after the treatment respectively. Bromadiolone (a single dose anticoagulant) wax cakes were found to be more effective in checking the rat damage in coconut as compared to warfarin (A multidose anticoagulant) wax cakes. However, this study needs further confirmation at another place.

Table 1. Number of Coconuts damaged by rats in a row of twenty coconut palms.

Period	Treatments	
	Bromadiolone wax cakes	Warfarin wax cakes
One week before treatment.	44	21
One week after treatment.	4 (90.9)*	11 (47.6)
Two weeks after treatment.	2 (95.4)	12 (42.8)
Three weeks after treatment.	1 (97.7)	8 (61.9)

*Figures in parenthesis are percentage reduction in nut falling.

Evaluation of Bromadiolone in Paddy Fields

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Concentrate (powder) and wax block baits of Bromadiolone supplied by M/s Pest Control (India) Pvt. Ltd., Madras, were evaluated for their efficacy against field rodents in a village where 5-10% damage was reported in paddy fields. Packets containing 20 g bait material (with 0.005% bromadiolone) each were used. The ready to use wax impregnated baits each weighing 25-30 g were also tried. The control success was achieved by comparing the pre and post control rodent infestation using 'hole blocking' technique.

Out of 456 live burrows observed, 264 were treated with bait packets (loose bait material) while

the remaining were treated with wax containing bromadiolone bait. Since mortality of rodents with anticoagulants is generally noted 40 hrs after treatment, the observations were recorded from two days after treatment and lasted up to 7 days. The species wise number of live burrows counted in the seedling & intercrop and harvest crop before and after poisoning is given in Table.

The results show that Bromadiolone in either loose bait or cake form may be used as a potent single dose anticoagulant in paddy fields since a single day feeding of the same resulted in more than 70% control of the rodent species.

Treatment	Stage of the crop (each covering 5 acres)	No. of live burrows before control operation				No. of live burrows after control operation			
		(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
Bromadiolone in loose bait	Seedling & inter crop	41	30	41	11	8	11	53	3
	harvest crop	25	42	55	19	5	11	7	5
		(264)				(55)			
Bromadiolone in cake form	Seedling & inter crop	36	21	26	9	13	6	5	4
	Harvest crop	19	23	46	12	7	7	8	4
		(192)				(54)			

a : *Mus booduga*, b : *Bandicota bengalensis*, c : *Bandicota indica*, d : *Rattus meltda*

Effect of bromadiolone wax cake against *Mus musculus* in amini island of Lakshadweep

V.M. Shamsuddin and P. Kunhi Koya

Department of Agriculture, Lakshadweep

A trial was conducted with 0.005% Bromadiolone embedded in a mixture of cereals and Paraffin wax to find its efficacy in 15 selected Households. In households, the population of *Mus musculus* was more than *Rattus rattus*, the trial commenced on 2.8.82 and in each house about 125 g of Bromadiolone cakes were kept on the first day and subsequently no cake replenishment was made but regular observations were made. Next day it was noticed that most of the cakes were eaten by rats. On the 3rd day from 8 houses 25 dead rodents (17 *M. musculus* and 8 *R. rattus*) were collected. On the

4th day 12 *M. musculus* were collected from one house alone and on the 5th day 4 more were found dead. Thereafter no dead rodents were found.

It was also observed in all the houses that the entire quantity of Bromadiolone cake was consumed by rodents except in two houses where very little quantity of cakes was left uneaten. During the second and third week of observation it was noticed that there was no activity of rodents in houses but some activity of *Mus musculus* was seen in two houses.

Notes and News

Dr. Ishwar Prakash, Professor of Eminence, CAZRI, Jodhpur has been awarded the degree of D. Sc. by the University of Rajasthan on his thesis entitled "Ecology of Mammals of the Rajasthan desert with special reference to rodents and

their management".

Dr. A.P. Jain, Rodent Ecologist, has taken over at the Project Coordinator, All India Coordinated Project on Rodent Control as CAZRI, Jodhpur w.c.f. 25 January, 1985.

Rodent damage to yam cultivated in South Gujarat

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Navsari 396 450

The tuber crop, Greater yam, *Dioscorea* L. (Dioscoreaceae: Dioscoreales), is cultivated in Surat and Valsad district of South Gujarat. It contains upto 28% starch which constitutes an important source of food for human beings. It is used as a vegetable as well as good feed for live stock. Items like chips and flakes are prepared from boiled tuber yam. Yam tubers are also pounded or mashed or made into flour after boiling.

This important tuber crop was reported to be heavily damaged by rats in one of the farmer's field near Vankal village (District Valsad).

Nature of Damage :

The damage was observed in the month of February 1984 which is the harvesting period of the crop. The soil was found excavated around the yam tubers initially, and then the internal contents of the tubers were found to be eaten up by rats making the tubers hollow. The permanent burrows of the rats were located under the hedges around the yam field. The excavated soil from the burrows was heaped in the form of mole-hills which covered the opening of the burrow completely.

This indicated that the damage was caused by *Bandicota bengalensis*.

Estimation of Damage:

In order to estimate tuber weight loss due to rat damage each of damaged and undamaged ten tubers of approximately similar sizes were weighed individually. The mean weight of the undamaged tubers was 1.375 kg while that of the damaged tubers was 1.068 kg. Statistical analysis by the paired 't' test indicated highly significant difference in weight between the undamaged and damaged tuber. The average weight loss of tubers due to rat damage was 22.36 %. Out of 297 tubers as many as 63 were damaged by rats indicating a 26.92 % loss in the number of tubers produced. Moreover, the market value of the damaged tubers is practically nil. Thus the loss is very high.

The present market price of yam tuber is about Rs. 7 to 8 per kg. and tuber production per hectare ranges between 5000 to 10,000 kg.

In view of the economic importance of crop for the people of South Gujarat, it is necessary to take early effective steps to control rodent damage to this tuber crop.

Comparative efficacy of silmurin and zinc phosphide against domestic rodents

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Comparative efficacy of silmurin (1% formulation) and zinc phosphide was tested in a group of 10 houses in Ludhiana. Silmurin was applied in the form of pills (semi solid bait) at 0.05% a.i. level while zinc phosphide as dry bait at 2% a.i. level in 10 houses each. Known quantity of both poison baits was kept in the houses at selected places after 2 days

of pre-baiting.

It was observed that zinc phosphide bait consumption (20.27g per house) was more as compared to that of silmurin (11.5g). Accordingly 2.8 and 0.6 *Rattus rattus* and *Mus musculus* respectively succumbed to zinc phosphide poisoning as compared to silmurin (1.8 *R. rattus* and 0.2 *M. musculus* per house).

Trials of Wax-blocks of brodifacoum (WBA 8119) against desert rodents

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Wax blocks of brodifacoum (0.005%) were screened against *Tatera indica*, *Meriones hurrianae*, *Rattus meltdada* and *Rattus rattus* in no choice tests under laboratory conditions. The observations revealed that: 1. The wax blocks knocked down all the experimental rodents after one day exposure except in case of *Rattus meltdada* which required two days exposure for complete kill, 2. The acceptance of wax-blocks was superior when

compared with the available data on the consumption of the brodifacoum poison bait, 3. The average range of days to death varied from 3 to 15 which is expected as different species of rodents are involved in this study but minimum of 70% experimental rodents died between 4 to 8 days period, 4. The LD 100 for various species of experimental rodents ranged from 4.27 mg/kg to 7.45 mg/kg. (Table 1).

Table 1: Exhibiting results of exposure of brodifacoum wax blocks on various species of desert rodents

Species	Feeding period (days)	Consumption of Wax block (g)	Ingestion of poison (mg/kg)	Mortality (%)	Days to death Mean	(Range)
<i>T. indica</i>	1	10.73 ±1.19	5.53 ±3.56	100	6.4	(4-10)
<i>M. hurrianae</i>	1	5.80 ±0.68	4.27 ±0.60	100	8.5	(5-15)
<i>R. rattus</i>	1	6.85 ±0.50	4.45 ±1.00	100	7.5	(4-13)
<i>R. meliada</i>	1	3.87 ±0.33	3.48 ±0.50	80	5.5	(3-10)
	2	8.84 ±0.48	7.45 ±0.74	100	4.5	(4-9)

Laboratory evaluation of Racumin Flussig (0.8% Coumatetralyl) against house rat, *Rattus rattus*

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Efficacy of Racumin Flussig (liquid formulation containing 0.8% coumatetralyl) was tested in the laboratory against house rat, *Rattus rattus* with 3 days, 4 days and 5 days no-choice feeding. The rats were caged individually and kept for one week on plain bait before starting the poison baiting. In poison bait the active ingredient was maintained at 0.04% level and it was offered in the form of dry bait. The mortality times (Table-1) indicate 100% mortality in the *R. rattus* in 5 days of exposure while 3 days and 4 days of poison baiting yielded 50% and 83.3% mortality respectively.

Table-1 Efficacy of Racumin Flussig (0.04% a. i.) against house rat *Rattus rattus* (N=6 for every trial)

Feeding period (days)	Average body weight of the rats	Percentage kill	Average poison ingested mg/kg	Average days to death Mean (Range)
3	86.5	50	143.3	3.6 (3-6)
4	83.2	83.3	166.4	5.7 (4-7)
5	89.5	100	216.0	6.5 (5-8)

Conditional Effects of Poisoning on Choice for Sucrose Solution in 'Roof' Rats, *Rattus rattus* L.

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Conditional effects of poisoning on choice for a test solution of 10% sucrose in water were studied in 'roof' rats, *Rattus rattus*. Adult rats (body weight > 100g) trapped in Aligarh city, were housed individually in wire-mesh cages; and maintained on a laboratory diet with *ad lib* water.

In expt. 1, the rats ($n = 14$; 2 for each test) were given a taste of 10% sucrose; and 30 min after it, injected in hip muscles with a semi-lethal dose of any one poison-sodium flouride, thallium sulphate, copper sulphate, potassium cyanide, strychnine sulphate, arsenic oxide or lithium chloride. In expt 2, the rats ($n = 14$) were first poisoned by the same method and poisons; and only 2 hours after poisoning given access to sucrose solution. Controls of both experiments ($n = 28$) were injected with distilled water.

Following treatments, each rat's intake of sucrose and water given in measured amounts in separate glass dishes in home cages was measured daily for 7 days. Consumption of

alternative fluids was calculated in percent of total daily intake. Results were statistically analysed.

The rats of expt 1 became completely averse to consuming sucrose ($P < 0.05$) though it was preferred to water by corresponding controls ($P < 0.01$). In contrast, rats of expt 2 developed an increased preference for sucrose; and it was ingested thus in relatively larger amounts than by the controls ($P < 0.05$). However, rats treated with potassium cyanide and strychnine sulphate developed greater choice for test solution than rats treated with other poisons.

Thus, unlike 'aversion' developed by rats of expt 1, reciprocal responses of 'increased preference' were acquired as a result of poisoning by rats of expt 2.

It may be concluded that 'roof' rats, *R. rattus*, readily learn to associate taste cues with poisoning or to relief from its effects. The response which follows is of 'avoidance' as in expt 1 or of 'increased preference' as in expt 2 (taste-aversion conditioning and appetizing conditioning respectively).

Further specimens of the Indian Gerbil, *Tatera indica* Hardwicke from West Bengal

Ajoy Kumar Mandal & S.R. Dey Sarker

Zoological Survey of India, Calcutta - 700 087

In the course of survey collection trips for mammals made by the Zoological Survey of India in West Bengal, particularly in and around Calcutta, Hughly and 24-Parganas, the Indian Gerbil, *Tatera indica* has never been encountered. During a recent mammal survey tour, undertaken in September 1984, three specimens (2 m, 1 f) of *Tatera indica* were caught (by trapping and digging the burrows) at Chandra and Garhbeta in Medinipur district, West Bengal and observations made in the area indicated that this

rodent is present in profuse number in the northwestern part of the district. A large number of burrows were seen under shrubs adjacent to the cultivated fields. A rough estimate of the number of live burrows is 25/hectare. The forest cover of the collecting sites comprises mainly secondary sal forests and the soil is red (laterite). The other species of rodents occurred in the same habitat are *Bandicota bengalensis*, *Mus booduga*, *Mus cervicolor* and *Mus platythrix*.

Record of *Bandicota bengalensis* from Imphal, Manipur

K.S. Subiah & Kh. Dharendra Singh

Pest Control (India) Pvt. Ltd., Madras, and Director of Agriculture, Imphal

A survey was undertaken in the State of Manipur in order to study the prevailing rodent species and to suggest a suitable control strategy for Jhum cultivation, wet rice cultivation in the valleys (Plateau) and also in the homesteads.

During this survey, *Bandicota bengalensis* were collected. It is alarming to note that this destructive rodent is building up its population in Imphal, Capital of Manipur.

It is ascertained through senior residents including farmers and Govt. officials that this rodent was not found in Manipur 8-10 years ago. This was first noticed in the suburbs of Imphal at Mantripukhri mechanized farm where the Govt. Poultry farm and Govt. Seeds godown are situated. In the Poultry farm this rodent is a severe pest and it is reported to be killing on an average 30 chicks a day and

causing an enormous loss to poultry feed. It has also migrated to the nearby Paddy fields. In Imphal proper, they are found to be building up their population along the Imphal river near the State Guest House and at the eastern side of the same river where they are invading the houses also. These rodents have made extensive burrow systems causing collapse of the specially

built mud embankments which prevent the flood water entering the low lying area of Imphal.

It is also interesting to note that *Bandicota bengalensis* is localised only to Imphal town but has not been noticed or heard from areas such as smaller towns and Wet Rice Cultivation fields in the valleys, which are almost free of rats.

The Annual Reproductive Cycle of the Lesser Bandicoot Rat, *Bandicota bengalensis* in and Around Bangalore District-Karnataka

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AICRP on Rodent Control

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Bandicoots, *Bandicota bengalensis* exhibit an active reproductive phase during August to May (80%) and a low breeding activity during late May and onwards. During these periods, the gonads and the accessory reproductive structures showed seasonal changes both in weight and histologically. The peak reproductive activity was evident during the months of September, October and November. The environmental factors of high rain fall and low temperature seemed to favour the breeding intensity of these bandicoots, during monsoon months. The litter size ranged from

3 during May, to 11-12 during October/December with an average of 7.5. The prevalence of pregnancy was 0.07 during April and 0.85 during October. Though unilateral implantation was common, there was no preferential distribution of embryos between the uterine horns. The annual productivity of bandicoots was calculated to be 67 young per female per breeding season. The ratio between male and female bandicoots was not significant. Male bandicoots generally exhibited heavier body weights when compared with their counterpart.

Rat damage to Vilayti ambli (*Pithecolobium dulce*) in South Gujarat

R. C. Jhala and A. H. Shah

Gujarat Agricultural University, Navsari - 396 450

Vilayti ambli, (Family-Leguminosae) is a small-branched tree grown near human dwellings and in the hedges of fields in Gujarat. It produces fleshy twisted pods in the months of January-March. These pods are marketable when mature. The flat, black seeds are covered with a white, or red when ripe, firm sweet edible pulp. In the fruiting season, i.e. January-March, the mature pods of the tree were reported to be damaged by the house rat, *Rattus*

rattus in Abrama Village in Navsari taluka of South Gujarat. It has been observed that the rats come out of the human dwellings during the night, climb on the tree and eat away the sweet and red edible pulp of the pods leaving behind the twisted rinds hanging on the terminal branches. Other pests reported damaging the pods are squirrels, birds and monkeys, although maximum, damage were caused by the house rats.

A study on rodent losses in tomato crop

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Rodent pests cause great damage to this crop, especially of the fruits. It has been observed that field rats prefer green, unripe and solid berries in comparison to ripe, pulpy and red berries. The animal gave a cut of 1.5 cm. to 3 cm. width to epicarp and mesocarp portion of the berries and eat the seed's portion (endocarp). In the field the rats leave much of the part of the berry as such. Such berries are of no use and get spoiled within 5 days to two weeks period by fungi. During a season a tomato plant yielded 0.5 kg. to 4.320 kg (2.150 kg on average) out of which 166 g to 335 g (270 g on average)

has been destroyed by the field rats. The total losses come out to be 12.56%. Storage of berries in burrows was not noticed though partially eaten berries were seen just inside burrow opening.

The losses in summer crop are more as compared to winter crop. This may be due to two facts, (1) In summer season no other crops are there in the field and thus the tomato crop bear the direct attack of field rats, and (2) the fleshy berries directly meet the water requirement of the rodents during the summer period.

Efficacy of brodifacoum against house rat, *Rattus rattus*

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Efficacy of brodifacoum 0.25% liquid formulation was tested in the laboratory against house rat *Rattus rattus* at 0.01% a.i. level in the form of dry bait in no-choice feeding test for a period of 1 to 5 days. The rats, six for each test were caged individually and fed on wheat flour and water for one week before starting the experiment. After different period of poison baiting the rats were provided normal feed till death.

Poison baiting period	Average weight of rat (g)	Days to death Average Range	Poison bait consumed in g. per 100 g body wt.	Active ingredient ingested in mg/kg
1	102.6	10.8 7-21	9.7	9.7
2	62.1	10.0 6-16	28.2	28.2
3	92.8	8.5 6-16	31.4	31.4
4	71.1	7.8 6-12	53.3	53.6
5	101.1	7.5 5-9	47.8	47.8

In all the tests, 100 per cent mortality was observed. However, in 1 day feeding period average days to death were highest, declining gradually with the increasing days of poison feeding. Comparatively more intake of poison bait was recorded in young rats than the older ones.

A Limerick

P.K. Ghosh

CAZRI, Jodhpur

*Man is so stupid, mused the Rat
That he should miss the simple fact -
That Rodents are here to stay.
Sillier it is, that Man should choose
The sluggishly reproducing Lion or the Moose,
As his symbol in the voting fray.*

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