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MANAGEMENT**



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



Evaluation of rodent glues*

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Toxic baits are the most common means of controlling rodents in crop damage situations. However, there are instances in which an alternative, nontoxic method may be more desirable or necessary. For example, in situations where abundant food is available, rodents may not be attracted by baits. In other situations they may have ingested sublethal doses, become bait-shy, and simply will not accept toxic baits.

We are exploring several alternative, nontoxic methods of rodent control in field crops. One of these possible alternatives is rodent glues, substances that are currently used in commensal rodent control. The concept is simple; the glue, on a glue board or similar carrier, is placed where rodents will walk on it. They become

stuck, unable to extricate themselves. They may then be removed and destroyed. Several of these substances are available commercially and may have application in certain field situations.

We tested three of these products in the laboratory. A test chamber, approximately 240 cm x 25 cm x 25 cm was designed to hold about 4 cm of water (to simulate a rice paddy) and a glue board. Five Philippine rice rats were tested with each glue. In every instance, the test animals were held fast (even though they were wet) and remained so during the 2-h test period. While these results are favourable, they are preliminary and further testing, both in the laboratory and under field conditions, is necessary.

* Reprinted from Vertebrate Damage Control Research in Agriculture. Annual Report 1978. Denver Wildlife Research Centre U.S. Fish and Wildlife Service Agency for International Development.

Efficacy of super caid (Bromadiolone) against five rodent pests

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Data presented in the table indicate that a single exposure of poison bait (Super caid 0.005%) resulted into 100 per cent mortality of *Rattus rattus* and *Tatera indica*, and a 91 per cent kill of *Mus musculus* (Table). But there was no effect on *Golunda ellioti* and *Rattus cutchicus australis*. Interestingly, all *R. c. australis* fed on poison treated wheat after removing the seed coat on which the poison was adhering. Therefore, they

escaped death. Hence, for baiting the Rock-rats, crushed or cracked bait should be used since they are efficient in de-husking. The time to death varied from 3 to 17 days.

Liquid baits were also tried for 3 days in a poultry farm. 60 ml of liquid master mix knocked down 42 *Rattus rattus* in 6-12 days period. However, it was not as successful as the liquid warfarin.

Table. Efficacy of Bromadiolone against five rodent species

Species	Poison bait consumption g/100 body wt.	mg/kg	Average day to death	% mortality
<i>Rattus c. australis</i>	8.15 (4 to 7.49)	15.30 (10 to 17)	—	—
<i>Rattus rattus</i>	5.95 (3.5 to 9.5)	2.98 (1.70 to 4.29)	7.5 (3-17)	100
<i>Mus musculus</i>	8.5 (5 to 16.1)	4.27 (2.5 to 8.0)	8.1 (7-12)	91
<i>Tatera indica</i>	4.0 (2.7 to 6.1)	2.0 (1.3-3.0)	9.5 (6-16)	100
<i>Golunda ellioti</i>	7.9 (6.3 to 9.4)	19.8 (15.4 to 23.5)	—	—

Figures in parentheses indicate range

Evaluation of "silmurin" (Scilliroside) against field and domestic rats

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The rodenticidal properties of Silmurin, which is a ready to use bait containing 0.05 percent of pure, stabilized and micronized scilliroside (A steroid-glucoside), were tested against the field rats viz., *Bandicota bengalensis bengalensis* and *Tatera indica*, and the commensal rat—*Rattus rattus*. Silmurin was provi-

ded *ad libitum* (50 grains to each animal) to the animals. The observations recorded 24 hours after the administration of this poison revealed that all the species under experimentation were dead. Number of grains fed by them are given in the following table,

Test animal	No. of animals tested	No. of grains provided per animal	No. of grains consumed/animal	Mortality
<i>Bandicota bengalensis</i>	5	50	17.5	All dead
<i>Tatera indica</i>	5	50	14.8	—do—
<i>Rattus rattus</i>	5	50	16.7	Three dead & two were found unconscious but died after 48 hours.

During the observational period, it was noticed that the test animals after feeding the poison manifest the peculiar diagnostic symptoms of poisoning. In the initial stages, they become sluggish and drowsy and after the lapse of few hours, they develop tendency of passing the poison through urine

repeatedly. The colour of the urine was blue which was very similar to the colour of scilliroside consumed by the rats. Besides, they were observed passing faecal matter also very frequently. The detailed investigations on the efficacy of this compound in the field conditions are under way.

Rodent control campaign at research station, Masodha

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A rodent control campaign was organised by the Department of Entomology, N.D. University of Agriculture and Technology, Faizabad at its Research Station, Masodha in the second fortnight of January 1980. The farm area was divided into 3 parts of 26, 22 and 38 acres

respectively. After baiting with zinc phosphide follow up action was also taken to kill the remaining rats by way of fumigating live burrow with the help of Aluminium phosphide one tablet per burrow. The results are as follows :

Table 1. Showing the details of Rodent Control Campaign in Farm area.

Block	Area	No. of burrows	No. of opened burrows	No. of dead rats collected	Chemical used
A	26 acres	102	65	17	360 gms
B	22 "	205	130	21	Zinc phosphide
C&D	38 "	268	146	22	
A	26 acres	85	61	—	Fumigated by Aluminium phosphide
B	22 "	140	120	—	tablets
C&D	38 "	162	139	—	

Offensive odour of female *Rattus rattus*

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A wild female *Rattus rattus* was caught in one of our 'wonder' traps. Since it was female, the rat was retained in order to test whether female odour in the trap would attract the males. Cottonwool as

bedding material was provided along with sufficient food and water. The next day the rat in the trap littered six young ones and all were alive. To our dismay, within two days the female had devoured all her young

ones. We kept on feeding this rat almost for a month in the same trap. After emptying the contents of the trap, this wonder trap was set in a tea shop with banana as bait. This tea shop had heavy rat infestation. No rat had fallen for 12 nights though we tried baiting with different bait materials. Later another cage

was used in the same place with banana as bait and the first night two rats were caught.

It is possible that the odour of the female rat that littered in the 'Wonder cage' trap must have been "offensive" and hence, it did not attract any rats.

Use of aluminium phosphide for the control of gerbils

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ICMR Plague Enquiry, Kolar (Karnataka)

Preliminary field trials were undertaken on the efficacy of a fumigant, aluminium phosphide for the control of gerbils *Taiera indica* (Hardwicke) in Kolar, Karnataka State. Aluminium phosphide marketed commercially (0.5 gm) was used for the trials. Only the positive gerbil burrows based on the presence of

plugging in the movement hole/s and the main entry with the emergency exit/s intact were selected. The selected burrows were divided into three groups and each group was treated with one, two and three pellets per burrow. The efficacy of the fumigant was measured on the basis of the following criteria.

- Total kill : Movement holes or the emergency exit/s not opened and all rodents found dead inside.
- Partial kill : Either the movement holes or the emergency exit/s opened and some rodents found dead.
- No effect : Either the movement holes or the emergency exit/s opened and no gerbils found dead inside.

Sixty four gerbil burrows were treated; with one pellet each in 24 burrows, two and three pellets in 20 burrows each (Table 1).

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Table 1. Efficacy of Aluminium phosphide in gerbil burrows

Category	Number of pellets per burrow		
	1 Number of burrows	2 Number of burrows	3 Number of burrows
Total kill	4	3	5
Partial kill	6	5	9
No effect	14	12	6

It appears that a more effective performance of the fumigant might be achieved in gerbil burrows by increasing the number of pellets

per burrow, preferably introduced in all the movement holes simultaneously in a single operation.

Control campaign against the Hairy-footed gerbil, *Gerbillus gleadowi* in the Indian desert

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An outbreak in the population of the Hairy-footed gerbil, *Gerbillus gleadowi*, was observed during 1971 in the desert area. The gerbils devastated the sown seeds and sapling of *Kharif* crops, especially *bajra* (*Pennisetum typhoides*).

Control campaign was organised by the Rajasthan Government (Department of Agriculture) in association with Panchayat Samities in Barmer district and Sancho

tehsil of Jalore district. This is the first record of control of this gerbil in India on a large scale in the desert area to save the *Kharif* crops.

Control operations were started from 12th July, 1971 on fairly extensive scale and continued upto the end of August. Poison baiting without any prebaiting was the method of control. Zinc phosphide 2 to 5% was mixed with boiled

seeds of *bajra*, broadcasted at the rate of about 1 kg per hectare in the cultivated fields just after dusk which gave excellent and spectacular kill of this species within 12 hrs viz. from midnight to morning. Baiting with flour as carrier did not give good results and proved to be comparatively costlier. Baiting with kuchla, *Nux vomica* and coumarin derivatives (anticoagulant rodenticides) was also used at several places by the farmers using boiled

seeds of *bajra* as carrier which reduced the population of rodents considerably but did not give the desired results as were seen in case of zinc phosphide baiting. Aluminium phosphide fumigation was not possible due to difficulties experienced in locating the burrows of this species which were found always blocked with sand. In all about 3330 hectares were treated with 785 kgs of raticides in addition to kuchla seeds.

Notes & News

Apex Level Training at CAZRI (12-13 June, 1980)

A two day Apex Level Training was organised at this National Center on 12 and 13 June 1980. It was attended by 21 participants from Agricultural and Conventional universities, Agriculture Departments, Forest Department, Plant Protection Directorate and S.G.C. Offices (Govt. of India). Programme included details of rodent pest management, strategies, care in

handling of rodenticides, bait formulations, rodent proofing etc. Practical demonstrations were conducted for identification of live burrows, bait preparation, placement of baits, burrow fumigation, evaluation of control success using trap index. Films and other audiovisual aids were freely utilised to blend class room lectures with actual field conditions.

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The next issue will appear in Nov , 1980. Contributions for inclusion in the Newsletter may please be forwarded to :

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