

RODENT

Newsletter

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**ALL INDIA COORDINATED
RESEARCH PROJECT ON
RODENT CONTROL**

Central Arid Zone Research Institute
Jodhpur - 342 003, India

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CONTENTS

1. Beware ! Rodents are Multiplying - Intensify Rodent Control Research 8
- **Ishwar Prakash**
2. Rodent damage assessment in soybean crop 9
- **O.P. Dubey, G.S. Thakur and S.K. Tiwari**
3. Evaluation of bioefficacy and acceptability of two rodenticides against 10
field rodents
- **O.P. Dubey, G.S. Thakur And S.K. Tiwari**
4. A new package of practices for rodent management in potato fields 12
- **G.P. Singh, C.R. Yadav, R.P. Singh and Birendra Singh**
5. Notes and News 13

AICRP on Rodent Control
Central Arid Zone Research Institute
Jodhpur - 342 003, India

Beware ! rodents are multiplying - intensify Rodent Control Research

ISHWAR PRAKASH

Zoological Survey of India, Jodhpur - 342 009

Man is concerned with these dreaded rodents since the Vedic time. Almost 5,000 years have passed and man has neither been able to minimise losses inflicted by them nor has been successful in controlling their population below a threshold level. The major reason is that the rodents are highly versatile, omnivorous, polyoestrus and polytocous. They have invaded every habitat, ecosystem and continent over this planet disregarding heat, cold, and heavy monsoon. This is the success story of rodents. Since *Homo sapiens* altered its life style from wanderer and gatherer to consuming cooked food, growing and storing crop products, the rodents prudently associated themselves with man and have gradually assumed a pest status of a unsurpassable magnitude. Man's efforts to combat their alliance as carrier of most calamitous plague (the black death of 14th century in Europe), and latter as agricultural pest have not materialised in achieving desired results. On the contrary, due to intervention of man in the natural ecosystems mainly by expansion of irrigated agriculture, the rodents are invading newer areas. The sylvatic rodents (*Bandicota*) have moved to urban areas and the commensal ones have ventured out into the crop fields (*Rattus* and *Mus*). This ecological intermingling of the two categories is a severe threat to public health. Moreover the rodents are attacking and damaging fibre optic cables, electronic equipments even in the aircraft.

Scientific efforts all over the world have not culminated into discovering formidable attractant or repellent to fight their menace. A near-correct method for censusing the rodent population is yet to be developed. When we applied three census methods (burrow count, surplus baiting and live trapping) the results were significantly different from each other at 1% level. The application of acute rodenticides (red squill, barium carbonate, zinc phosphide, etc.) was successful in reducing their population to 50 to 80 percent and the surviving animals evolved cues to detect the poison in the food and to transfer the learned behaviour, poison aversion, to the suckling young through mother's milk. It has been

observed that in a poisoning campaign in a crop field, about 70 percent rodents migrate out of the poisoned area after consuming sub-lethal dose and the operator register them as "killed" since they do not show up in the post-control census. When Government restricted use of acute toxicants and also to win over the poison-shy rodents, first generation anticoagulants were developed but the rodents evolved resistance to them. The second generation anticoagulants are being found to be very effective but they are being sold in the form of bait formulations (mixed with food or as wax cakes). These are fairly expensive for the farmers. Moreover, our experiments in the field have revealed that they are more efficacious ($P < 0.001$) during summer months in the desert as compared to monsoon when *ad libitum* green food is available to rodents. We have also investigated that freshly prepared poison baits are more effective than those of commercially available products. For seeking remedies to these problems more research is needed but, paradoxically, the science of rodent pest management has not picked up momentum throughout the world. The recent resurgence of plague at Mamlu and Surat (1994) should also wake up the epidemiologists in the country.

Rodent damage assessment in soybean crop

O.P. DUBEY, G.S. THAKUR AND S.K. TIWARI

Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur - 482 004 (M.P.)

A survey of rodent damage was conducted in kharif season 1996-97 on the farmer's fields in soybean crop in Katangi Block of Jabalpur district. The varieties grown by the farmers were PK-472, JS-335, JS 75-46, JS-72-44 and JS-80-21. Five villages namely, Soortalai, Murrai, Pondi, Bhilonda and Kheri were selected for the study. In each village five soybean fields were selected. Ten samples, in each field (each of 1m² cropped area) were observed for loss assessment. The total area under the study was about 16.5 ha. The rodent damage was studied (Number of cut branch/pods) at green seed stage of the crop. The observations on number of plants/m² and pods/plant were also recorded.

Rodent damage in soybean crop varied from field to field and village to village. The mean number of damaged pods/m² varied from 2.74

to 9.72 pods in soybean fields. The estimated yield losses to soybean crop ranged from 0.31 to 0.99% in different villages of Jabalpur district with a mean of 0.6% (Table).

Table : Assessment of rodent damage in soybean at farmer's fields.

Villages	Field x sample	Number of damaged pods/m ² (Mean ± SD)	Estimated yield loss (%)
Soortalai	5x10	2.74 ± 04.56	0.31
Murai	5x10	8.48 ± 16.72	0.90
Pondi	5x10	3.26 ± 03.52	0.34
Bhilonda	5x10	3.00 ± 03.74	0.32
Kheri	5x10	9.72 ± 16.76	0.99
Mean		5.48 ± 09.06	0.57

Evaluation of bioefficacy and acceptability of two rodenticides against field rodents

O.P.DUBEY, G.S. THAKUR AND S.K. TIWARI

Jawaharlal Nehru Krishi Vishwa Vidyalyaya, Jabalpur - 482 004 (M.P.)

A trial was conducted in Randomised Block Design (RBD) with three treatments including control at Adhartal Farm of JNKVV, Jabalpur during 1996-97. The main objective of the study was to know the effectiveness and acceptance of new anticoagulants against field rodents in wheat crop. Two rodenticides namely, bromadiolone (0.005% wax block) and difethialone (0.0025%) were tested. The wheat variety 'Sujata' was sown in the month of November and normal agronomical practices were given. Three wheat fields of 1 ha each were selected and divided in to three parts by leaving 10 m distance from replication to replication. One complete field was left between each treatment to avoid the mixing effect, as rodents are very mobile animals. Ready to use wax blocks were used @ 15 g wax block/bait point. To achieve the desired concentration 30 ml of difethialone (0.125% liquid concentrate) was mixed thoroughly with 1470 gm of water soaked wheat. The poison application was made at equidistance of 8-10 m @ 100 bait point/ha at prematurity stage of crop.

The pre and post treatment damage was recorded randomly in 10 samples at two diagonals/plot by counting the number of cut tillers. The cut tillers at the time of pre treatment observation were removed to avoid the mixing effect in the post treatment observation. Each sample measured 1m² cropped area. The data was transformed into $\sqrt{X+0.5}$ value and statistically analysed. The percent acceptability of rodenticides and reduction in rodent damage was also calculated and presented in Table.

The rodent damage in wheat crop was reduced due to application of rodenticides and they were also significantly superior over control. Although there was no significant difference between the two rodenticides yet difethialone treatment recorded lesser (1.49) number of cut tillers/m² than that of bromadiolone (1.72). The maximum (3.83) of cut tillers/m² were recorded in control. Baiting points which showed response of rodents for bromadiolone and difethialone were 83.33% and 100% respectively. The reduction in rodent damage to wheat crop was 41.09% in bromadiolone treatment and 58.61% in difethialone treatment, whereas the losses in control (untreated) increased upto 12.97%.

Table : Field efficacy and acceptability of two rodenticides in wheat crop.

Treatments	Mean number of cut tillers/m ²		Poison bait acceptability (%)	Reduction in rodent damage (%)
	Pre treatment	Post treatment		
Bromadiolone	12.00 (2.92)	3.62 (1.72)	83.33	41.09
Difethialone	13.22 (3.60)	2.37 (1.49)	100	58.61
Control	12.25 (3.39)	16.25 (3.86)	-	(+) 12.97
CD (P=0.05)	NS	1.32	-	-

Figures in parentheses are $\sqrt{X+0.5}$ transformed values

A new package of practice for rodent management in potato fields

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Field trials were conducted, during postmonsoon season of year 1998 and 1999 at village Rewansa, in Barahani Block of district Chandauli (U.P.), to develop an effective package of practices for rodent management in potato fields. Rice-Wheat cropping system is a highly remunerative cropping sequence of the investigated area and the rodent pests damaging the standing crops through out the year are *Bandicota bengalensis*, *Mus platythrix* and *Rattus rattus*.

The main objective of the present study is to find out, the ways to minimise the rodent population during postmonsoon season; which is the most potential period for their breeding. The investigation was conducted in three different experimental plots of 25x15m size with variety Kuferi Sinduri. The test plots were located at nearly 500 m apart. The field operations and inputs (other than preparatory tillage and interculture) used in the plots with varied package of practices are listed in Table 1.

Table 1. Field operations/inputs used in three different package of practices (P₁, P₂, P₃)

Field operations/inputs	P ₁	P ₂	P ₃
1) Basal dose of manure and fertilizer per ha			
Farmyard manure	6t	-	-
Ammonium chloride	-	-	25 kg.
Diammonium phosphate	-	-	100 kg.
Zinc sulphate	-	-	5 kg.
Neem cake	-	500 kg.	-
2) Foliar spraying			
Urea	5kg/500l water	similar to P ₁	similar to P ₁
3) After care			
Application of Aluminium phosphide in live rodent burrows and plugging with wet soil	4 g applied once per burrow	2 g applied once per burrow	similar to P ₁

It is evident from the data (Table-2) that the crop yields significantly good with cent percent rodent control under P₂ minimum poisoning. On the otherhand P₁ and P₃ were effective to extent of 80 and 84 percent control, respectively which followed about poisoning.

Table 2. Mean effect of different package of practices on p yield and rodent control.

Treatment	Total yield (g/ha)	rodent control (%)
P ₁	204*	80
P ₂	200	100
P ₃	215*	84

* includes cut tubers also.

It is therefore, concluded that incorporation of potato as a crop, between rice - wheat cropping system, may enhance the production. Moreover, it will reduce the infestation of pest rodents in the crop field where due to phenology of wheat and rice crops, its successful management is quite difficult. Application of neem (P₂) may also adversely affected the rodent population. Thus, neem cake as biofertilizer and (as anti rodent?) and application of aluminium phosphide fumigant may be advocated for rodent management in rice - wheat areas of eastern Uttar Pradesh.

Notes and News

When the phones don't ring, smell a rat

By SMEETA MISHRA PANDEY

New Delhi : Guess who is giving telecom officials sleepless nights? Rats. Wild rodents that are nibbling away at the underground optical fibre affecting telecom links between cities.

Last month the underground lines between Delhi and Patna were eaten up by wild mice twice, in the Agra and Varanasi sectors respectively. Telecom engineers were dragged out of their beds at midnight by system managers who detected disappearing fibre in several sectors. When the affected areas were dug up, hordes of rodents jumped out.

"The Delhi-Mumbai lines often face the wrath of the rodents," says MTNL General Manger (Operations) Ashok Kumar Sinha. "Specific sectors linking the Capital to Gujarat, Rajasthan, Maharashtra and Madhya Pradesh, have also suffered at the hands of the mice."

The optical fibre linking cities run through high-density polythelene pipes that look like plastic. The rodents enter the network through these pipes, lured by a specific smell that the fibre emits. "Once inside, they don't have a way out," points out Divisional Engineer, Ravi Gandhi. "And the only thing they can feed on when trapped inside the pipes is the optical fibre." The "aroma" obviously helps.

The anti-rodent chemicals sprayed regularly by the Telecom Department have not helped since the rodents seem to have developed a resistance to it. "No anti-rodent substance lasts forever," argues a Telecom official.

The situation has worsened now due to the ongoing All-India Telecom Officers' strike. "Whenever the rats attacked, our officers would rush to the spot and tackle the menace," remarks Sinha. "But with the government's decision to appoint administrative officers in technical posts that should have been reserved for telecom official with a technical background, our officials are demotivated to fight the rodents." Sinha who is also the President of Indian Telecom Services Association spearheading the stir, said the officials are no longer duty-bound to fight the wild mice.

- Courtesy : The Times of India, New Delhi (7.6.2000)

Contributions for inclusion in the Newsletter may please be forwarded alongwith 1 - 2 good black and white photographs to :

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