

RODENT

Newsletter

Vol. : 23 (3 - 4)

1999



ALL INDIA COORDINATED RESEARCH PROJECT ON RODENT CONTROL

Central Arid Zone Research Institute
Jodhpur - 342 003, India

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CONTENTS

1. Dr. Pratap Narain takes over as
Director, Central Arid Zone Research Institute, Jodhpur 9
2. Rodent out break in Gwalior Region, Madhya Pradesh
— G.S. Thakur, O.P. Dubey, S.K. Tiwari & Moni Thomas 10
3. Effectiveness of different grain based zinc phosphide baits against
Indian mole rat (*Bandicota bengulensis*) in tea gardens
of Himachal Pradesh 11
— R.M. Bhagat
4. Management of rodent pests in poultry farms 12
— Y. Saxena
5. Notes and News 14

WITH COMPLIMENTS

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

**Dr. Pratap Narain takes over as
Director, Central Arid Zone Research Institute, Jodhpur**



Dr. Pratap Narain, born on January 1, 1945, graduated from Agra University, Agra in 1964. He completed Master's and Ph.D. programmes (Soil Science and Agricultural Chemistry) at Indian Agricultural Research Institute, New Delhi from 1964-69. He was awarded Gold Medal for having secured highest grade point during Ph.D. After learning German Language at Goethe Institute, he pursued Post Doctoral research (1969-72) in the field of Soil Science at the Institute of Soil Science, Goettingen University, West Germany.

Dr. Narain started his professional career as Head of ICAR project on Use of Saline Water (1973-75) at R.B.S. College, Agra, India. He joined Central Soil and Water Conservation Research and Training Institute, Dehradun in 1975. Since then, he has been engaged in research on erosion processes and modelling, erosion prediction, rainfall simulation, use of saline water and water budgeting of rainfed crops through weighing type lysimeters. His thrust of work has been on erosion control, conservation strategies and management of natural resources on watershed basis. The research on Agroforestry for erosion control, dynamics of water and nutrients budgeting under different land uses involving crops, grasses, trees and land cover management for erosion control are some of his notable achievements. He has published many books, bulletins and papers in journals of National and International repute.

He acquired advance trainings in West Germany, U.K. and USA, participated in several International Conferences and represented India on F.A.O. and Commonwealth assignments. He was heading Division of Land and Water Resources, and Team of Excellence Projects on Agroforestry and Watershed Technology at CSWCRTI, Dehradun since 1985 to 1999. He has been honoured with several fellowships and awards including ICAR Team Award for the biennium 1991-93.

Dr. Narain took over as Director, Central Arid Zone Research Institute, Jodhpur on December 3, 1999. His endeavour would be for the management of Natural Resources of the arid zone. He has shown a great interest in various research and extension activities of AICRP on Rodent Control.

Rodent Newsletter family wishes him all success in his endeavours.

**Rodent out break in
Gwalior Region, Madhya Pradesh**

G.S. THAKUR, O.P. DUBEY, S.K. TIWARI & MONI THOMAS
Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur - 482004 (M.P.)

Rodents are not new to farmers of Madhya Pradesh, but news of tremendous outbreak of rodent population in Dabra & Bhitwar tehsils of Gwalior is first of its kind in the State. Public outcry and media have played a vital role in spread of news creating consciousness about rodent population explosion in these two tehsils. The news appeared in local dailies and caught the attention of rodentologists of Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur. The team of rodent experts from the University visited several affected villages of the area in September 1998.

Gwalior alongwith Morena, Bhind and western part of the Shivpuri and Guna District are located in the Gird Zone. Physio-graphically this zone is in the Northern plain and central highland region. In the Gird zone forest (Tropical dry deciduous) cover is just 0.76 mha of the jowar, soybean, sugarcane, urd, moong, til in kharif and wheat, mustard, lentil, barley, linseed, pea and gram in rabi are the main crops.

Dabra and Bhitwar are the command areas under Harsi dam. Paddy (kranti) and wheat (WH-147) is major crop cycle, primarily irrigated by canal system. During the kharif 1997-98, there were exceptionally more rains than the normal precipitation. The harvested paddy remained in the field for quite some time. In the meantime, excess water released from the Harsi dam also entered the fields through canal which further damaged the harvested paddy. Most of the farmers never cared to clean the field and remove rotting harvested paddy. Due to flooding, sowing of wheat was also delayed. The produce became chaffy thus uneconomic to harvest. Therefore, unharvested crops allowed to remain in the fields. Availability of enough supply of food and shelter resulted, in fast multiplication of field rodents. During June '98 farmers prepared nursery bed and sown paddy to raise nursery for coming season. Aroma of germinating seeds and fresh green crop attracted the field rodents already waiting for change in food. Since the nursery is raised in small area, and the rodent population was more per unit area, the nursery beds were completely destroyed by rodents. Resowing was done twice to obtain sufficient nursery for transplantation. The rodents shifted

to main fields in August to damage crop along the bunds and later moved into central safe area of the crop fields.

Panicked farmers applied zinc phosphide un-judiciously at a much higher concentration without pre-baiting. The sale of zinc phosphide by a single counter went upto almost two quintals. Initially, farmers succeeded in their battle with zinc phosphide, but later on the surviving rodents developed bait shyness and refused to eat poison baits subsequently. Frustrated farmers later opted to kill rats by beating sticks.

Survey of several fields in the affected tehsils revealed predominance of lesser bandicoot rat (*Bandicota bengalensis*). This is a ferocious stout grey brown coloured rat with blunt snout, small round ears and long thick hairs weighing around 350 gm. Tail is shorter or equal to the head and body length. It is a prolific breeder, good swimmer, burrower and detrimental to agricultural crops and other commodities.

Effectiveness of different grain based zinc phosphide baits against Indian mole rat (*Bandicota bengalensis*) in tea gardens of Himachal Pradesh

R.M. BHAGAT

Himachal Pradesh Krishi Vishwa Vidyalaya,
Palampur, Distt. Kangra (H.P.)

Indian mole rat, *Bandicota bengalensis* Gray and Hardwicke cause serious damage to tea plantation. Roots of Kangra local type tea (*Camellia sinensis*) bushes are seriously destroyed by them by making extensive burrows in tea gardens. Keeping in view the damage potential of this rodent, an experiment was conducted in tea orchard at Palampur in Kangra district by using grain based poison baits to check the menace of this rat species. Zinc phosphide @2 per cent was mixed separately with maize, rice, wheat and barley flour and some vegetable oil was also used to make small balls of the size of pea seeds. Bromadiolone wax cake (0.005%) ready to use was also used by putting 30gm bait in each burrow after weighing. The placement of poison bait in live burrows was done with long handle spoon after prebaiting (without using poison). After

using poison bait, the next day uneaten baits were collected and wed to know the consumption of bait.

Table revealed that wheat flour and maize flour based poisons of zinc phosphide 2 per cent were the most preferred by consuming 6 and 50 per cent respectively by the mole rats in tea orchards. Consumption of rice and barley based poison baits were 30 and 20 per cent respectively. However, bromadiolone 0.005 per cent wax cake was consumed 25 per cent by rats in one day. Since most of tea orchards are adjacent to agricultural fields and rodents are habitual of eating different cereals grown in the locality, it is advocated that poison bait should be prepared in the cereals grown in the fields adjacent to tea gardens so that the maximum bait is consumed.

Table : Consumption of different grain based zinc phosphide poison baits against *B. bengalensis* field rats in tea gardens.

Poison baits	Consumption of bait
Rice based poison bait of Zinc phosphide (2%)	30
Maize based poison bait of Zinc phosphide (2%)	50
Barley based poison bait of Zinc phosphide (2%)	20
Wheat based poison bait of Zinc phosphide (2%)	60
Bromadiolone (0.005%) (Wax cake)	25

Management of rodent pests in poultry farms

Y. SAXENA

Department of Zoology, Vedic Kanya P.G. College,
Jaipur - 302 004 (Rajasthan)

The management of rodents with entire feasibility and sustenance survival potential against their menace will form a base line protection of poultry birds and eggs. The poultry feed which is regularly consumed by the birds is a big attraction for rodent pests; besides rodents attack the eggs, nestling, weaker birds in the protected area in order to eliminate pest and minimise the losses, these studies were conducted in few poultry farms of Jaipur region. The pretreatment level of rodent infestation was estimated by adopting the burrow count method. The re-opened burrows were prebaited with 10 g unpoisoned bait (n:

flour + 2% ground nut oil + 2% sugar). The following day burrows of two poultry farms each were treated with bromadiolone (0.005%) brodifacoum (0.005%) and difethialone (0.025%). The ready to use pellets were placed in packets containing 20 gm bait in each burrow. Number of live burrows were counted on every day after treatment. The major rodent species identified in the area were *Rattus rattus*, *Mus musculus* and *Meriones hurrianae*.

The results indicate that treatment of bromadiolone (0.005%), brodifacoum (0.005%) and difethialone (0.025%) in three sets of poultry farms revealed 92.39, 94.54 and 92.69 per cent control success on seventh day after treatment (Table). Brodifacoum has yielded better results among the three used anticoagulant rodenticides. Despite the fact that concentration of difethialone loose bait is higher than those of brodifacoum and bromadiolone used, per cent control success achieved was almost same i.e. 92.69 on seventh day after treatment. Thus these findings suggest that maximum kill occurs on fifth day onward after treatment. Therefore, it may be concluded from the above that though brodifacoum yielded best results among three anticoagulant rodenticides, yet it can be inferred that all of the test anticoagulant rodenticides may be used for containing rodent menace in poultry farms.

Table : Relative efficacy of anticoagulant rodenticides in the poultry farms

Concentration of rodenticides	Pretreatment burrow count	Post-treatment burrow count		Percent control success
		Live	Dead	
Bromadiolone (0.005%)				
5th day	184	24	160	86.95
7th day	184	14	170	92.39
Brodifacoum (0.005%)				
5th day	165	15	150	90.90
7th day	165	09	156	94.54
Difethialone (0.025%)				
5th day	178	17	161	90.44
7th day	178	14	165	92.69

1. All India Group Meeting :

Tenth All India Group Meeting on Rodent Control was organised under the aegis of AICRP on Rodent Control at Central Arid Zone Research Institute, Jodhpur on October 6-7, 1999. The Group Meeting was inaugurated by Dr. R.L.Rajak, Plant Protection Advisor to the Government of India on 6th October 1999. Dr. Rajak highlighted the destructive role played by the rodent pests in Indian agriculture and described the significance of integrated approach for the management of pest rodents damaging a variety of crops and commodities in different agro-ecosystems in the country. He cautioned the rodentologists to be forearmed in view of possible bamboo flowering in NEH regions during 2005-07 A.D., which is believed to be a potent reason for rodent outbreak. Dr. O.P. Dubey, Assistant Director General (PP), ICAR presented the background of the AICRP on Rodent Control and expressed need for networking of all the AICRP centres in the form of an all India Programme. Dr. B.D. Rana, Project Coordinator presented the progress report of the Project and explained the future thrust areas of research. Dr.A.S. Faroda, Director, CAZRI, Jodhpur in his keynote address said about recent shift in rodent pest scenario *vis a vis* changing land use pattern and impressed upon the need for concerted efforts by the scientists in understanding the ecological takeover of new rodent species. Three Monographs/Bulletins viz., "Recent Advances in Coordinated Research on Rodent Control", "Rodent Pest Management in Poultry Farms" and "Quarter Century Research on Rodent Control at UAS Bangalore" were released by the honourable guests. Several recommendations for farmers, scientists and policy planners were made by the august house. valedictory Session was chaired by Dr. J.R.B. Alfred, Director, Zoological Survey of India, Calcutta.

2. Scientific Advisory Committee On Rodenticides

Central Insecticide Board in its 29th meeting held on 18.11.1999 constituted a "Scientific Advisory Committee on Rodenticides" under the chairmanship of Dr. B.D. Rana, Project Coordinator, AICRP on Rodent Control, CAZRI, Jodhpur. The committee would provide information on use of rodenticides to Central Insecticide Board. Other members of the committee are : Dr. V.R. Parshad, Dr. R.B. Dohrey, Dr. K. Srihari, Mr. D. Srinath and Dr. Brajendra Singh. Dr. A.M.K. Mohana Rao will act as Member Secretary of this committee.

3. Expert Committee On Rodent Control Formulated

Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India has set up an Expert Committee on Rodent Control under the chairmanship of the Plant Protection Advisor (Government of India)

- i. to advise Central and State Governments on various aspects of Rodent Pest Management.
- ii. to identify the areas requiring further investigations as also organizations to take up such work for improving the available know-how on Rodent Control Technology, and
- iii. to review periodically the progress made on Rodent Pest Management, its dissemination and implementation at field level.

The committee includes the following members :

Plant Protection Advisor (Government of India) Directorate of Plant Protection, Quarantine & Storage, NH IV, Faridabad - 121 001	Chairman
Asstt. Director General (PP) , Indian Council of Agril. Research, New Delhi - 110 001	Member
Joint Commissioner (Food) Ministry of Food & Civil Supplies, Krishi Bhavan, New Delhi	Member
Joint Director (Plant Protection) Directorate of Agriculture, Maharashtra	Member
Joint Director (Plant Protection) Directorate of Agriculture, Andhra Pradesh	Member
Joint Director (Plant Protection) Directorate of Agriculture, Orissa	Member
Joint Director (Plant Protection) Directorate of Agriculture, Uttar Pradesh	Member
Director Indian Grain Storage Management & Research Institute Hapur, Distt. Ghaziabad (U.P.)	Member
Project Coordinator AICRP on Rodent Control, Central Arid Zone Research Institute, Jodhpur (Rajasthan)	Member
Dr. M.P. Mishra Deputy Director (E), Directorate of Plant Protection, Quarantine & Storage, NH IV, Faridabad - 121 001	Member Secretary

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

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

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Central Arid Zone Research Institute, Jodhpur