

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

Endemic problem of rodents in urban areas

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The present study reports the occurrence of two destructive endemic rodent species, i.e. Indian mole rat (*Bandicota bengalensis*) and house rat (*Rattus rattus*) in District Ketchehari compound and main market area of Varanasi city. During the survey it was found that the damaging adults are much vigorous and fearless. During survey, it was found that the rodents take shelter inside the covered drainage passages during the Ketchehari working hours.

Few months back the shop owners contacted us and told that the blackish brown rats have created terror in the shop and destroyed not only the papers, files and electric wiring but also the machines too. The rats entered the shop through the dug holes, which were connected with the drainage passage, and gnawed some fine points of the machines.

Use of poison as baiting was recommended. In our supervision one hundred poison baits were put at various spots but to our surprise the rodents ate not a single bait; when the shop was opened on next day in morning. It was also noted that rats regularly visited the shop in night and jumped from one corner to other. Lastly, we suggested to cover machines with iron cabinet during non working periods and also use the mechanical cages to catch them. It may be possible that they take their food material from the adjoining restaurant and are not eager even to taste the poisoned baits. It is an alarming situation to the urban area; hence, we suggest to trap them mechanically to save the costly machines and other commodities.

Some Observations on the incidence of rodent damage in the pulse crops of arid region.

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A survey was conducted during October 2001 for assessing the extent of damage in mixed cropping system of moong bean and cowpea at pod maturity stage in a farmer field (0.5 ha) around Jodhpur. To assess the rodent damage a quadrat of 1 sqm. was taken diagonally at every 10m intervals. Number of cut and uncut pods

as well as plants were counted to find out the extent of damage. Two trap lines of 20 traps each were also fixed diagonally for 3 days to study the species composition of rodents.

The incidence of rodent damage was recorded in cowpea and moong to the tune of 56.60% and 61.50% respectively. Some of plants were cut down from the stalk as a result dried up completely. Seed portion of pods were also found to be nibbled and removed. The remaining cut pods, leaves and tender branches were found in and out side the burrows and on the runways. The burrows of *Tatera indica* only were recorded in the middle area of the crop field having 50 to 55 kg of excavated soil around the burrow openings. However, Bush rat, *Golunda ellioti* was seen moving around in the crop field during day times.

Trapping data indicated that Indian gerbil, *Tatera indica* was predominant (51.61%) followed by bush rat, *G. ellioti* (32.25%). Indian shrew, *Suncus murinus* (16.21%) were also trapped as one of the associates.

Observations on infestation of five-striped squirrel, *Funambulus pennanti* Wroughton, in the forest nurseries of arid and semi-arid zone.

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While conducting regular periodical surveys in different forest nurseries in and around Jodhpur it was observed that the five-striped squirrel, *Funambulus pennanti*, Wroughton, exhibited severe infestation to the germinated seeds of a numbers of forest trees species at AFRI and other forest nurseries in and around Jodhpur Forest Division. The seed sowing is a routine annual practice of the nursery management in order to maintain healthy seedling stocks for the purpose of future plantation programmes.

The squirrels have been observed to construct their nest above the ground on different trees and in crevices of the fencing wall of the nursery by using the fragments of cloth rags, leaves, human hairs etc. Though, this rodent species has regularly been encountered around the houses, gardens and trees, but its population has been predominantly concentrated near the kitchen gardens and fruit trees.

In the forest nurseries, the young ones and the adults of this species actively feed and damage germinated seeds of various tree species, such as *Prosopis cineraria*, *Acacia nilotica*, *A. senegal*, *A. tortalis*, *Delonix regia*,

Dalbergia sissoo, *Tecomella undulata*, *Cassia fistula*, *C.siamea*, *Albizia lebbeck*, *Salvadora persica*, *S. oleoides*, *Pongamia pinnata*, *Ailanihus excelsa*, *Moringa oleifera*, *Eucalyptus sp.* and *Azadirachta indica*. During the seed sowing time (February), pre monsoon (June-July) and post-monsoon (October-November), damaging attitude of this species increased in comparison with that of rest of the months. They start their activities from morning to evening but the spectacular damage used to be inflicted in the nursery when no field worker was present in the vicinity between 13.00 to 14.30 hrs and after 1600 hrs up to 1800 hrs.

It was observed that the sown and germinated seeds of gulmohar (*Delonix regia*) is the most preferred food for *F. pennanti*. The *Albizia lebbeck*, *Pongamia pinnata* and *Salvadora sp.* are the next preferred food whereas the neem (*Azadirachta indica*) is the least preferred. 15-30% damage has been recorded in case of the germinated seeds of *D.regia*; 10-20%, to *A. Lebbeck*, *P. pinnata* and *Salvadora sp.*; 8-15% to *P. cineraria*, *A. nilotica*, *A.senegal*, *A.tortilis* *C.fistula*, *C.siamea*, *D.sissoo*, *A.excelsa*, *M.oleifera*, *T.undulata*, *Eucalyptus sp.* and 3-5% of *A.indica*. It has also been noticed that the ber, pomegranate and guava fruits are also infested by this rodent species. Amongst the medicinal plants, raised in the AFRI nursery, the seedling of *Asparagus receamus* is the most susceptible toward the damage caused by *F.pennanti*.

The damage caused by *F.pennanti* to the nursery stocks is too heavy to combat the situation without the application of certain remedial measures. For effective management the nursery beds can be covered with 1x1 cm wire-meshed iron nets fitted in a portable iron frame (1.15 x 0.75x10 meter) in order to protect the sown seed and seedlings in the nursery beds.

Ruminants ration and roaming rodents

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Since the dawn of human civilization the eco-equilibrium has had been reflecting the socio-economic status of the society accordingly. On the other hand, various socio-religious norms and beliefs decide significantly the nature of ecological acts. Due to the use of more hazardous plant chemicals contaminated food and polluted ecosystem resulted in the reduction of population of predatory birds, mammals and reptiles causing an increase of the population of rodents.

In Hindu Mythology, the house mouse (*Mus musculus*) are taken as real vehicle of Lord Ganesh and who is known as the only "destroyer of every

hindrances (Bighan Haran). Almost in every Hindu residential building Lord Ganesha statue along with house mouse is being seen with the wall printed slogan "Sri Ganesh Ji Sada Sahaya". Due to such a feeling the majority do not prefer to control them biologically with the help of predators like pet dogs and cats.

Present study was confined only on the dominance and damaging capability of *Mus musculus* inside the cattle sheds. After launching of the operation flood, adoption of cattle-cross breeding programme as well as the use of rich dietary concentrate ration for growth and milk production is in practice. For production requirement, the selective cattle breeds require more dry matter mixture by adding the crushed pulses, grains, millets, oil cakes, minerals, sugar and salts. During the survey, it was seen that the newly built cattle sheds along with thrashed dry fodder chamber and concentrate ration rooms are at some distance from the residential quarters. It was also noted that the house mouse migrates in large numbers from the grain godowns to the newly built cattle sheds; where they roam freely without any disturbance and danger. Overall damage in the houses is also minimised due to free hunting of rodents by cats and dogs inside the cattle sheds.

In most of the Indian families, the cows are believed as the mother and the house mouse are representative of Lord Ganesh. In fact the women, who have the deciding role in family and dairy managements are not agreed to use the rodenticides because of their traditional religious values. It is concluded that overall economic, social, religious and environmental values are in favour of developing biological means for controlling house mouse.

Technical approach for Rodent management in NEH Region in context with bamboo flowering

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The Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India worked out the technical approach for various action points for rodent management in the region in consultation with concerned technical officers of the Department of Agriculture of NE States during December, 2000 at Guwahati. The approach as finalized is as under:

(i) Survey of sporadic bamboo flowering areas:

Joint survey teams drawn from the respective State Agriculture and Forest Departments may conduct surveys of bamboo flowering areas, especially of

bamboos with a record of associated rodent outbreaks. One district survey may be able to be completed in 15 days time by the local forest and Agriculture Department officials. Two such surveys may be undertaken during one year. Each District-wise survey team may have 4 officials for this additional specialized activity. The concerned District Agriculture Officer may monitor these operations. Chief Principal Conservator of Forest of each State may be associated for identifying the bamboo flowering pockets.

(ii) Surveillance of rodent incidence:

Rodent pest monitoring and forewarning system assumes significance as the farmers are not familiar with the changing pest scenario in their fields and they remain ignorant until serious damages are caused. Forewarning would help farmers to take timely corrective measures. Once the pockets of bamboo flowering areas are identified in different districts, surveillance teams may be constituted with trained technical personnel. Non-technical persons may not be assigned the surveillance work. Therefore, the rodent pest monitoring shall be undertaken in the following manner:-

(a) *Block /Sub divisional levels:* Only technical officers from the State Departments of Agriculture/Horticulture/Soil Conservation, who are technically trained, are to be involved in these teams and each team may have 4 local officials. Six surveys for rodent surveillance may be undertaken based on the rodent incidence in jhum/wetrice cultivation (WRC) situations.

(b) *District Level:* In order to monitor the surveillance activities performed by the surveillance teams at Block/Sub-Divisional levels, concerned district Agricultural Officers and his team of four members may go for two surveys during an year.

(c) *State Level:* Similarly, a State Level team may be formed for monitoring survey for a total duration of 15 days during one year.

(iii) Awareness campaigns:

All the members of the Surveillance teams are required to be trained in monitoring as well as control of rodents in jhum fields and homesteads in the bamboo flowering zones. Hence human resource development for monitoring of rodent incidence may be undertaken to develop core group of master trainers. For field level lower extension functionaries at Block/Sub-Divisional Levels, peripatric training by the Master Trainers of the respective States may be organised.

Programmes for farmers' training may be included for peripatric training programmes at village and Block levels on rodent pest management of one-day

duration by the trained officers of the State Department of Agriculture. Farmwomen may also be provided such training. Leaflets and video films as per local situation on rodent pest management may be produced for giving wide publicity.

(iv) Rodent pest management measures:

(a) Local traps are highly effective to kill the migrating rodents from forest areas to jhum fields. Hence they may be popularized. 25 bamboo traps per hectare in jhum and WRC areas may be advocated to control immigrating rodents from forest areas. The traps may be advocated for use in the boundaries of jhum/WRC areas to tackle effectively the immigrating rodents.

(b) Rodenticide treatments may be planned with a provision of using safer anticoagulant rodenticide on unit hectare/homestead basis. These safer anticoagulants include bromadiolone 'c' for jhum/WRC fields and coumatetralyl in homesteads for treating the infested areas. All precautions for avoiding any accidental or secondary poisoning are required to be taken. During severe infestations, zinc phosphide baiting may be resorted.

(c) Bounty payment system should be minimized as far as possible. Globally it is experienced that this system will not give tangible results on long range.

(d) Evaluating the rodent control operations should be done at District and State level.

NOTES AND NEWS

Alert on Rodent Problem in Hot Spot Areas of The Country.

Directorate of Plant Protection, Quarantine and Storage (Govt. of India) has shown serious concern about the prevailing drought conditions in the country. Rodent attack in the multiple cropped areas is expected to cause severe damage to the kharif crops and later may pose a serious threat to the ensuing rabi season crops. Plant Protection Advisor to the Govt. of India has alerted all the States and Union Territories representing the hot spot zones of the country to take remedial measures so that the drought ravaged crops be saved from the rodent depredations and be fore armed for the forth coming rabi season. following table details the endemic pockets of rodent pests in the Country.

ENDEMIC POCKETS OF RODENT PESTS IN THE COUNTRY

State/U.T	Areas	Major crops affected	Pest species
A. FIELD CROPS			
Uttar Pradesh	South-Western	Wheat, Sugarcane & Rice	<i>Bandicota bengalensis</i> , <i>Millardia meltada</i> , <i>Tatera indica</i>
Punjab	Eastern Punjab	Sugarcane, Wheat & Rice	<i>B. bengalensis</i> , <i>Nesokia indica</i> <i>M. meltada</i>
	Western Punjab	Wheat	<i>T. indica</i> <i>M. hurrianae</i>
Rajasthan	Western Rajasthan	Wheat, Bajra & Vegetables	<i>M. hurrianae</i> <i>T. indica</i>
Haryana	Eastern Haryana	Surgarcane & Wheat	<i>B. bengalensis</i>
	Western Haryana	Wheat	<i>T. indica</i> <i>M. hurrianae</i>
Gujarat	Saurashtra	Groundnut & Wheat	<i>T. inica</i> <i>M. meltada</i> <i>B. bengalensis</i>
Assam	Kamrup	Wheat & Rice	<i>B. bengalensis</i>
Chhattisgarh	Chhattisgarh	Rice	<i>B. bengalensis</i>
Maharashtra	Kolhapur Area	Rice	<i>B. bengalensis</i>
Karnataka	Northern Karnataka	Wheat	<i>T. inica</i>
	South Karnataka	Sugarcane & Rice	<i>B. bengalensis</i>
Andhra Pradesh	Krishna-Godavari basin	Rice	<i>B. bengalensis</i>
Tamil Nadu	Kaveri basin	Rice	<i>B. bengalensis</i>
Pondicherry	Karaikal	Rice	<i>B. bengalensis</i> <i>M. meltada</i>
B. PLANTATION CROPS			
Andhra Pradesh	Krishna-Godavari basin	Coconut	<i>Rattus rattus</i>
Tamil Nadu	Coastal areas	Coconut	<i>R. rattus</i>
Karnataka	South-Western Karnataka	Coconut, Cocoa & Oilpalm	<i>R. rattus</i>
	Entire State	Coconut & Cocoa	<i>R. rattus</i>
Lakshadweep	All Islands	Coconut	<i>R. rattus</i>

Contributions for inclusion in the Newsletter may please be forwarded along with 1-2 good black & white photographs to :

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