Rodent management in Paddy

Introduction

- Rodents are one of the most important non - insects pests of agricultural crops, particularly rice.

Types of rodents

- Lesser bandicoot rat: *Bandicota bengalensis*
- Field mouse: *Mus booduga*
- Indian gerbil: *Tatera Indica*
- Soft furred field rat: *Rattus meltada*

Damage at different stages

- In India, rodents have been estimated to cause 5 to 10% losses in rice. Among the field crops, rice is the most vulnerable crop to rodents.
- In addition to tiller cutting, they also hoard ripened panicles inside their burrows.

Nursery

- The nurseries are drained out and the rodents run freely inside the bed spoiling all germinated seed. Later, they also cut the seedlings 1-2 inches above the water level.

Main field

- Some times the rodents pull out the transplanted seedlings and create gaps in the main field.
- Generally, their activity is confined to inside field leaving 2-4 meters on all sides of the field.
- In the initial stage, damage appears in patches and after some time, all these small patches become into one big patch. Damage increases with the onset of panicle initiation and continues up to panicle emergence.

Management of Rodents

- In Local traps called 'butta' are extensively used for the control of rodents in rice. These traps provide fairly good results when applied after chemical control operation.
- However when directly used, trapping will be costly affair and one can not manage entire population over large areas.
- Moreover, at certain crop stages, like primordial formation, rodents are not attracted towards raps.

Natural Smoke

- The main principle involved in this operation is simply filling the burrows with smoke, which causes suffocation to rodents ultimately leading to their death.
- The smoke liberated by burning rice straw mainly contains carbondioxide.

1) Chemical Control Fumigation

- The fumigants like Aluminum phosphide is effective and widely used for the control of field rodents living in burrows.
- The control of rodents using rodenticides is the more common way

1. Acute rodenticides (Single dose and quick acting), Eg: Zinc phosphide.
2. Chronic rodenticides (Multi dose and slow acting), Eg: Warfarin, Bromodiolone. Acute Rodenticides:

Among the acute rodenticides, Zinc phosphide and Barium carbonate are registered for use. Zinc phosphide is the onlys

Action plan for Rodent control

Day 1	Identify live burrows and place 20 g of pre-bait Material inside the burrow.
Day 3	Place 10 g Zinc phosphide poison bait inside the Burrow.
Day 4	Collect dead rats and burry them. Close all the Burrows.
Day 5	Eliminate the residual population through trapping or Burrow fumigation with burrow fumigator. Treat the opened burrows with aluminum phosphide 2 pellets per burrow.
Day 13	In dry black soils fumigation will not give results. Hence apply Bromodiolone 1 cake per burrow. Repeat Bromodiolone baiting.

Advantages of Zinc Phosphide

1. Quick killing
2. Small quantity of chemical is required
3. Single feeding
4. Population can be brought down immediately.

Disadvantages of Zinc Phosphide

1. Necessity of prebaiting,
2. Low killing around 40 - 50%,
3. Induce bait shyness.
4. Toxic to non target species,
5. Chances of secondary poisoning are more.

2) Chronic Rodenticides

- In order to overcome limitations and hazardous nature of acute rodenticides, lengthy baiting programme and possibility of resistance, new series of rodenticides have been developed and known as single dose anti-coagulants or second generation anti-coagulants. These rodenticides (Bromodiolone) combines better qualities of acute and chronic rodenticides.
- For effective and successful rodent control, the following programme should be adopted on large areas at a time on community approach.
- Chronic or multi-dose rodenticides (at present only anti-coagulants) are much safer than acute rodenticides because they are less toxic to the non-target species. But they have to be fed for 5 - 7 days to obtain desired results, which increases the cost of

Day-1: Identify live burrows and place 15 g bromodiolone concentrate bait inside the burrow.

Day-2: Repeat Bromodiolone baiting in active or live burrows

Day-3: Eliminate residual population through trapping or fumigation with burrow fumigator

Principles

- Grow same maturity group cultivars on large areas to restrict the vailability of the vulnerable stage (Reproductive) of the crop.
- Reduce the number and size of the bunds, keep them clean to locate burrows and avoid harborage.
- Rodent control operations should be taken up on large area at a time.

- It checks cross infestation or migration of rodents from untreated fields to treated fields.
- All the control operations should be completed before the crop attains primordial initiation stage since at this stage the rodents are invariably attracted to the rice crop.
- Rodenticides should be made available before beginning of the season.

Source : http://agropedia.iitk.ac.in