

b. *Hygiene and sanitation*: Food should be kept in rat proof containers. Waste foods and empty food tins should be thrown in dustbin with tightly fitting lids. Food stocks should be stored in such a way that they can be inspected from all sides at frequent intervals. Piles of rubbish, timber and bricks should not be allowed to accumulate in or near the godowns. Best time for removing rubbish is just before taking temporary control measures. By using rat repellent in stores.

c. *Use of ultrasonic devices*: Sound waves emitted by ultrasonic devices are unbearable by rats and mice and are unheard by humans. These are reported to repel the rats without producing any harm to human beings. However, so far effective equipment is not available.

2. Mechanical:

a. *Trapping*: It reduces the population but does not control further multiplication. It is effective only when the population is low. Trapped rats should be killed by drowning cages in ponds and dead rats buried. Break back traps kill the rats while trapping. Placing of trap and selecting of bait play an important role of controlling rodents in fields, houses and godowns. The tanjore bamboo bow traps, pot traps and break back trap type are very useful in controlling field rats. In warehouses/ houses the physical methods adopted are plugging the holes with glass pieces and cement plastering, having snugly fitting doors, constructing a plinth of 75 cm high without any steps or ladder and rat proofing by fixing metallic sheets at the bottom of doors and use of box trap and wonder trap.

b. *Killing of solitary rats* by sticks, brooms and some other ways by individual.

3. Cultural

a. *Deep ploughing*: Ploughing upto 18" (45 cms) will unearth rat burrows and the pest will be exposed to enemies, like dogs, cats, kites etc. But it can be done only once before sowing operations. Due to their high rate of multiplication rats recover the same population level.

b. *Flooding the fields*: Burrows in the fields can be flooded with water, which kill the rats.

c. *Formation of narrow bunds*: Rodents prefers broader bunds for making burrows.

4. Biological

a. *Predators* : Snakes and mongooses are well known predators of rats. Fixing bamboo poles near the rat burrow. Birds like owls, eagles etc come and sit on them. As and when the rat comes out they catch and kill. Keeping cats in houses also checks the rat population.

b. *Parasites*: *Salmonella* sp. of virus can be used for rodent control but not recommended due to health threat to non target species.

II. CHEMICAL: Compounds, which kill the rats by their chemical action, are known as rodenticides. These poisonous rodenticides can be divided into two groups.

a. *Acute/ Single dose poison*: Zinc phosphide, Barium chloride, Red squill, Thallium sulphate are some of the compounds which have been used as rat poisons. These are