



UNIVERSITÀ  
CATTOLICA  
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# PRODUCTION OF APPROPRIATE FOOD: sufficient, safe, sustainable **Ecologically Based and Sustainable Rodent Control Strategies**

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## OBJECTIVES

Rodents are the biggest vertebrate problem in Africa because they consume and damage large quantities of stored grains and food and damage crops in the field. They carry diseases that can be transmitted to humans (Leptospirosis and Toxoplasmosis). Control of rodents requires an integrated approach since no single method is completely effective. It should be focussed on creating an unfavourable environment and excluding rodents from stored grain. Methods used to minimize the damage caused by rodents include good housekeeping, proofing, repelling, trapping and poisoning.

## OPERATIVE INSTRUCTIONS

**PRINCIPLES OF CONTROL:** monitoring and cooperation

### Monitoring

An important element of any rodent control programme is monitoring. It means surveillance for the presence of rodents. Monitoring should be organised formally and regularly, maybe once a week to a superior on the situation. The good monitoring should include the following aspects:

- number and positions of signs of rats (faeces, urine and grains gnawed);
- condition of the building (broken pipes, walls, state of goods, tidiness or cleanliness);
- conditions immediately outside the building with respect to potential infestation points;
- number of any bait stations used and their positions;



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Control of a rodent infestation is rarely completely successful; but if it is, it is usually only for a very short period. Therefore there is a need for continuous monitoring even after a successful control campaign regardless of the techniques and bait used. If an area is made rat-free due to good management and/or effective control measures, rats from near-by areas will migrate into it. It is therefore more efficient if control campaigns are conducted in several adjacent areas simultaneously. In the case of a village all households should be motivated and organised to control rats at the same time.

### **PREVENTIVE MEASURES**

The maxim: 'Prevention is better than cure' is just as true for rodents as it is for other pests and diseases. Therefore the prime objective of any rodent control campaign should be to create environmental conditions which will discourage or prevent the pests from reentering an area after its rodent population has been removed by one means or another.

#### **Sanitation**

Rodents require food and shelter. Therefore it is most important to reduce the availability of these two key factors. In the case of buildings the most effective method of rodent prevention is the improvement of hygiene or sanitation in and around them. The store should be kept clean inside and outside and easy to inspect. Primarily this means sweeping the store and keeping both it and the surrounding area neat and tidy, i.e. free from any objects such as empty containers, idle equipment or discarded building materials, which could provide cover or nesting places for rodents. In a tidy store any infestation will be noticed at a very early stage, making other control measures far more effective. With reduced access to food and no places to hide, rats will not become established, that is live and breed, inside a building. Rats avoid clear spaces. Therefore by keeping a strip of two or more metres around a building clear of vegetation will reduce the chance of rats entering the building. Branches overhanging the building should be lopped off to prevent climbing species to enter from above.



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### Proofing

Since it is not practical to remove all food from stores and households, it is necessary to restrict access by rats. This is accomplished by proofing buildings or keeping food in rat proof containers. If the building itself cannot be made rat proof, then foods and other valuables should be kept in earthenware containers or metal drums with good lids. A good example of this is from the application of FAO metal silos that keeps the product away from insects for many months (fig. 1).



*Figure 1*

When rodent-proofing a building only materials which they cannot gnaw through should be used. Also, it should be remembered that some rodent species are good climbers and jumpers, and most can squeeze through surprisingly small holes and cracks (young mice need no more than a 0.5 cm wide crack to gain access). Hard metal strips should be fitted to the bottom edges of all wooden doors and their frames. Steel rat guards fitted to drainpipes and other attachments to the building should be at least one metre above ground level (fig. 2).

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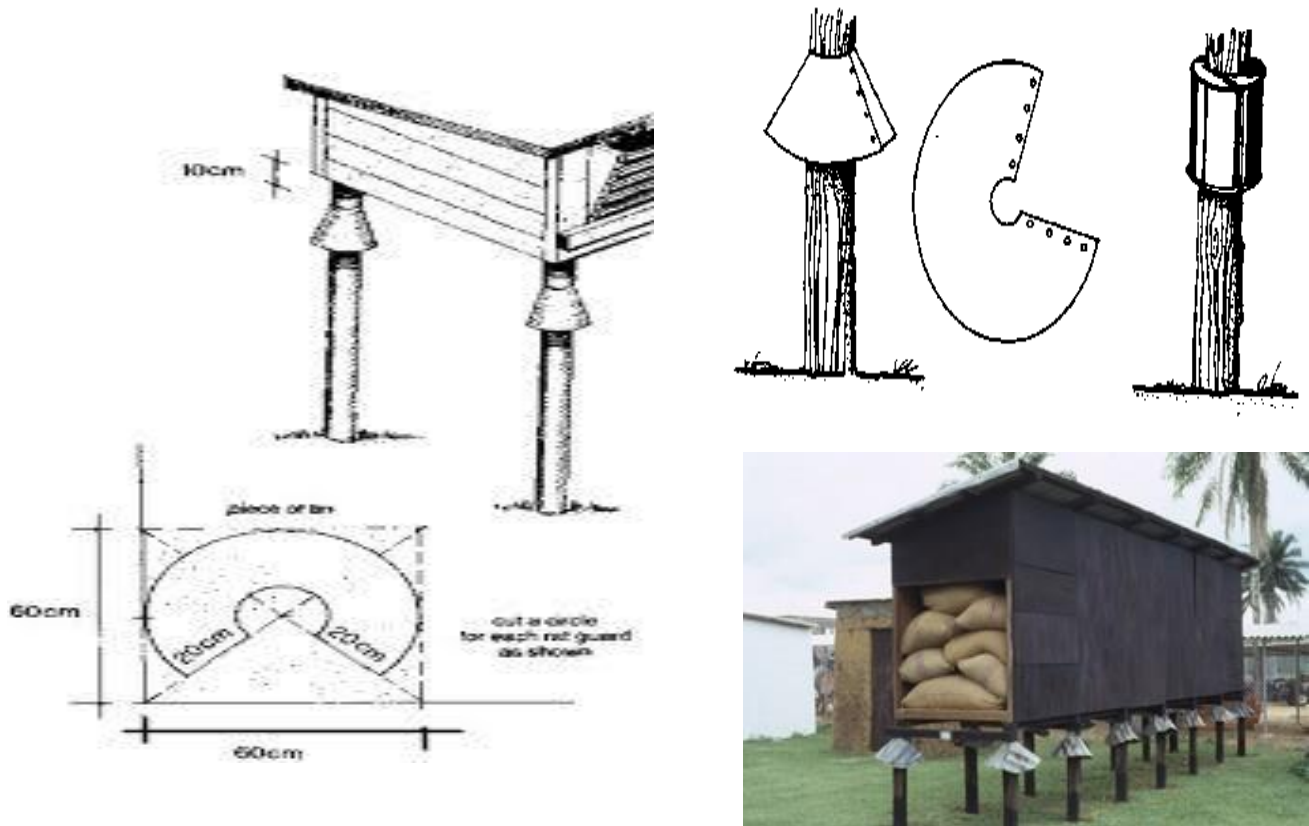


Figure 2

Door hinges and similar fittings should be so placed or protected that rats cannot use them for climbing. Floors and walls should be kept in good repair. New holes dug by rats should be filled in immediately, with cement reinforced with pieces of crumpled chicken wire (fig. 3). If cement is not immediately available a temporary seal can be effected with tightly packed earth between the wire mesh.



Figure 3



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The important point is that repairs should be carried out as soon as the damage is noticed, which should be within a few hours of it being done if the building is inspected daily. Although rats are active mainly after dark, they will move about during day as well when there is no human activity. Therefore doors of stores should stay tightly shut during the day as well, when the store is not in use. There are many construction details to keep away the mice:

- ❑ local granaries, cribs and other small stores can be made rodent-proof if the floor is raised to a minimum of 90 cm from the ground and if the legs are equipped with conical ratguards made of metal sheets (fig. 4);

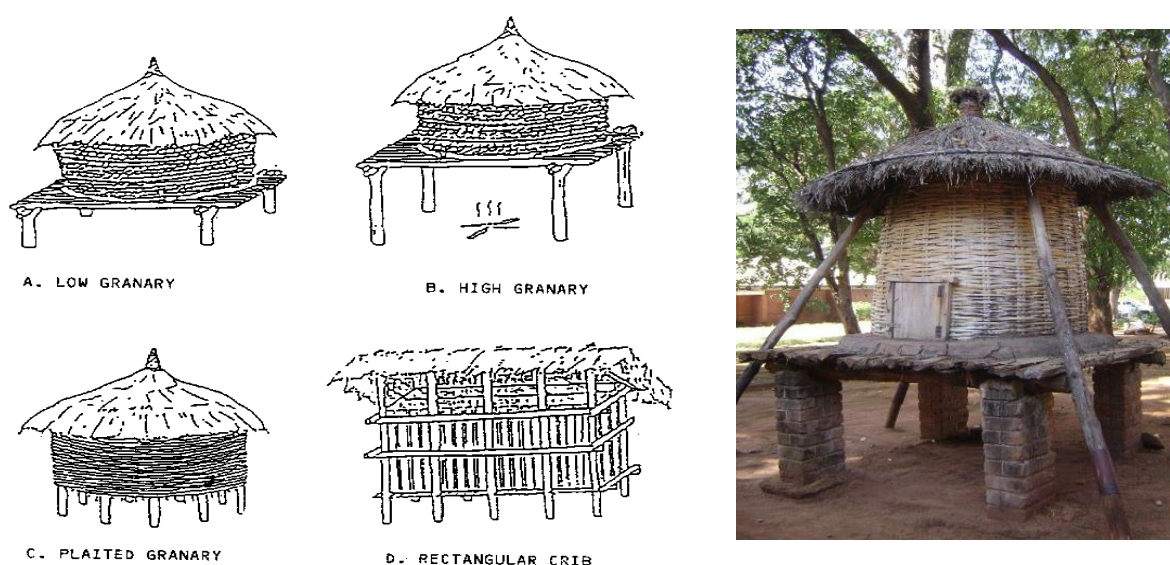
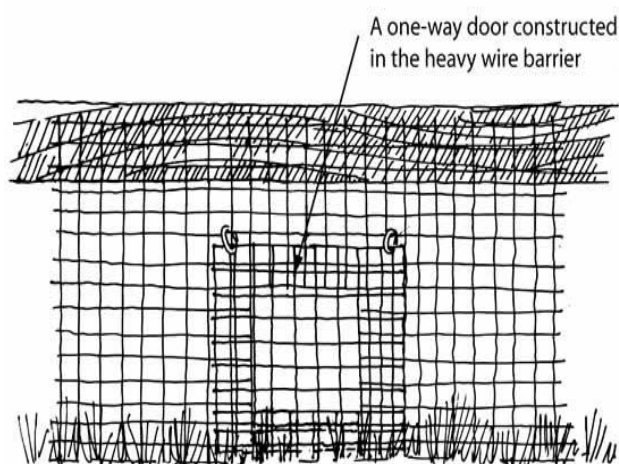


Figure 4

- ❑ all openings between the floor and the walls should be closed. This is especially important in warehouses with walls of corrugated iron sheets. The floor should be of strong concrete to avoid rodents from coming up;
- ❑ the door should fit closely to the frame and covered with sheet metal for added protection. Boards dropped vertically into slots on either side of the door, about 50 cm high, will form a barrier while the door has to be kept open;
- ❑ windows should be covered with wire mesh with openings not exceeding 12 mm. This will also form a barrier against birds (fig. 5);



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*Figure 5*

### **Natural Prevention (predation)**

Normally predation will not keep rats and mice at economic population levels. One exception is the keeping of cats. Cats do not directly control rats and mice by feeding on them. It is their presence, which keeps most rats and mice away.

### **Mechanical Control**

Often local traps are available and in some cultures people are very good at using them. They should be placed where rats move regularly. Sticky or glue traps are another way of catching rats and mice. They are boards made of wood, hard or cardboard covered with very sticky material. The boards are placed in the same way as traps, and normally there is no need for bait to attract rats. These traps should be checked daily but are not regarded as very 'humane'. Flushing rodents out of their burrows, with smoke or by flooding them with water, can be very effective and suitable in some situations.