

# RODENT MANAGEMENT IN ZOOTECHNICAL FARMINGS

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## 1. INTRODUCTION

From all 2,000 species known of rodents distributed around the world, 125 are classified as a plague and 3 species represent a great importance to human, *Mus musculus* (mice), *Rattus norvegicus* (norway rat) e *Rattus rattus* (black rats, roof rats). These species occurs isolated, however in some situations it is possible to find more than one species infesting a same area. In Brazil were describe more than 200 species of rodents native. Eventually occurs presence of native rodent in the farm.

## 2. IMPORTANCE OF INFESTATION

### 2.1 Transmission of diseases

- Animals: Salmonella
- Farm staff: leptospirosis, hantavirus
- Others relevant diseases and ectoparasites (mites, fleas, ticks)

## 2.2 Consume and contamination of animal food

- Rodent populations consume significance amount food in large infestations
- Rodent broke the sacks of food
- Rodent excreted feces and urine in the ambient

## 2.3 Structural damage

- The incisive teeth can to gnaw many materials PVC tubes, aluminum, wood and brick
- Energy cables
- Broking canvas in poultry houses
- To gnaw treadmill and cables in equipments
- Damage in ducts
- Rodent induced fires from damaged in electrical panels

## 2.4 Animal stress

The elevate infestation caused stress in confined animals

## 2.5 Quality standards

The food hygiene legislation requires measures to prevent pests.

### **3. BIOLOGY AND BEHAVIOR**

They have a high reproductive capacity, limited only by some factors as diseases, unavailability of food and shelter. They have several sensorial and physical characteristics. The sense of smell is a sensorial ability very refined in rodents. They mark the ways to demarcate areas and to detect favorable conditions to mating.

The rats are adapted to human odor. The hearing is very sensible to strange sounds, as an important characteristic due to nocturnal habits, but can adapt to noise and also ultra-sounds. Rodent pest species are omnivorous and the taste is very developed and to discriminate different flavors, rejecting spoiled food and identifying baits mixed in food. Most activity takes place during the hours of darkness, and most their feeding activity.

The roof rats have an excellent equilibrium, moving vertically and horizontally with extreme ability to walk in small spaces as tubes, pipes and conduits.

The sewerage rats are excellent diggers and construct galleries to pass and get access to nests and food sources. The presence of interdigital membranes in feet of sewerage rats give to animals the ability to swim, become excellent swimmers and divers. Because of these characteristics they live in wastewater and fluvial water.

The mice live in small and visiting a number of different food sources. These groups construct nests inside of wall, buildings, derelict sewerage system, gardens with accumulated materials (papers and cardboards).

## **4. RODENT CONTROL**

The presence of rodents is associated to food, water available and shelter. Added to these factors, the behavior and reproduction characteristics of animals lead to a control situation where the result is obtained with an integrated management. The integrated management of rodents involves basically the follow steps:

### **4.1 INSPECTION**

The inspection is done in all area to be protected against these rodents, besides the analysis of external factors (neighbor) is necessary to evaluate if the area contribute to infestation. Efficient rodent control require a person responsible.

### **4.2 SANITARY PROCEDURES**

- Sanitation must remain in the forefront of any rodent control, inside and outside.
- To keep the external area clean: without garbage, accumulate materials (wood, pipes, tiles), to cut brush and grass.
- To eliminate or protect the sources of water: ditch, puddles, trenches, artesian well, water tank, etc.
- To keep in good conditions the sewerage and hydraulic system.

### **4.3 ENVIRONMENT MANAGEMENT:**

- Proofing the building: regular, even if simple, repair and other improvements.
- To block all holes in external wall with cement.
- To install apparatus to close automatically the doors more used.
- To protect spaces in doors and windows with metal sheet or netting.
- To install metal collar in column or supporting pillar.

### **4.4 CHEMICAL CONTROL**

Nowadays this is the most common method used to eliminate existent infestation. It consists in the use of toxic substances added in formulated baits that will be offered to animals in places where they pass or as visitors.

The substances enclosed in baits are toxic to others mammals as cats, dogs and men. The baits have a role to attract the rodent by smell and to induce the consumption in a continuous form (taste) until to be discouraged to consume the habitual food.

**Pellets and grains:** Baits constituted by grains, broken cereals or pelletized.

**Contact powder:** It is constituted by a very thin powder to be widespread in burrows, ways and points visited frequently by rodents. It is forbidden in storage food areas or where passes domestic animals or people. **These kinds of products must be sold only to specialized enterprises.**

**Paraffin blocks:** These baits receive an impermeable substance, called paraffin. Because of paraffin these products are more resistant and confer more durability in adverse conditions as rainy days, high humidity and heat, common factors in tropical countries. The advantage of these products is the easy fixation.

#### **4.5 MECHANICAL CONTROL**

This control consists in the use of a physical protection system against the entry of rodents in the area and the use of capture systems to remove and eliminate these animals. It is necessary to eliminate apertures or cracks that propitiate the access of rats, put apparatus to avoid the escalate in lines, walls, conduits, tubes, plumbing, etc.

Capture equipment can be distributed strategically in control areas, as rat-trap, adhesives traps and cages. The size of equipment must be proportional and resistant to a specie that to intend to capture. The electrical barrier has limited factors as costs, accidents risks and maintenance.

#### **4.6 PHYSICAL CONTROL**

The use of equipment that produces ultrasound should be more studied to get a definitive conclusion about this technique according to many authors. The same authors showed limitations of these ultrasounds equipments in association with efficiency in the rodents control as directibility, attenuation, applicability and reduction of efficiency during the period of use.

#### 4.7 MONITORING

The monitoring consists in accompaniment of obtained results by preventive and control methods applied and based on observation in any change that occurs in building or in environment around in external area.

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