

Control of Rodents in food Processing Unit "As Model"

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ABSTRACT

The present work was aimed to identify of rodent species and control it in the unit of food processing at the Faculty of Agriculture, Sohag University, Egypt during spring 2019 year. Because it found damage and losses caused by rodents inside the food processing unit through a loan for tools used in manufacturing operations, Hardware wiring loan food processing unit and microorganisms that can be transmitted such as some bacteria, such as *E. coli*, *Campylobacter*, *Salmonella* and other pathogenic may be transported from the mouse's to food, milk and then man. The results showed that were found, one species belonged to family muridae, named white bellied rat, *Rattusrattusfrugivorus* Linnaeus. Also, the results showed that the use of mechanical control by using traps is better than chemical control.

Keywords: *E. coli*, *Salmonella*, *Rattusrattusfrugivorus*, food processing unit.

INTRODUCTION

Pathogenic microorganisms such as *Salmonella* and *Campylobacter* are generally regarded as the most important food-borne pathogens in the world. Reduction or elimination of these pathogens in the first part of the food chain (on the farm) is important to prevent disease among consumers of animal products. In organic farming, elimination becomes more difficult, as food animals are allowed outdoors and have easy access to potential sources of hazardous pathogens. Whilst rodents are often associated by organic farmers with infrastructural damage and eating or spoiling of stored feed and products, their zoonotic risks are frequently underestimated. They can amplify the number of pathogens in the environment and transfer them to food animals. Thus, organic farmers should be identify of rodent damage.

Control from a food safety perspective. Preferably, rodent control should form an integral part of a total package of hygiene measures to prevent transfer of food-borne pathogens. These should also include e.g. control of wild birds and flies and obligatory disinfection of boots/clothes and equipment for farm workers and visitors. (Meerburg and Kijlstra, 2007). This study was aimed to identify rodent species and control it in the unit of food processing at the Faculty of Agriculture, Sohag University, Egypt as model for food plant.

MATERIALS AND METHODS

The present study was conducted in the Food processing Unit at the Faculty of Agriculture, El-Kawamel city, Sohag University during Spring 2019. It is located innewly reclaimed area at the Egypt Western desert area (15 km. west of Sohag Governorate). 10 wire-box traps were baited and distributed once every 15 days at 6pm and collected at 7am during the study period. The captured rodents were classified and recorded. The traps method was evaluated against the use of Bromadiolone (protect 0.005% baits-anticoagulant), placed under the walls and far away about food and in places without food.

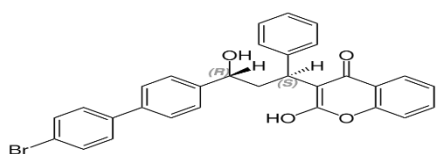


Figure 1. The rodents wire box trap of the usual spring door (25×12×10 cm) Desoky, 2007.

Rodenticides

One anti-coagulant rodenticides were used in the present study. Bromadiolone (protect 0.005% baits)

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Structure formula

Chemical Formula

C₃₀H₂₃BrO₄IUPAC name: 3-[3-[4-(4-Bromophenyl) phenyl]-3-hydroxy-1-phenylpropyl]-2-hydroxychromen-4-one

Chemical group:

Hydroxyl Coumarin LD₅₀ values for rats 1.125 mg/kg b.w.; and mice 1.75 mg/kg b.w.

RESULTS AND DISCUSSION

Data in table (1) showed that the presence of one species of rats included the white bellied rat, *R. r.*

frugivorus was found in the Food processing Unit at the Faculty of Agriculture, El-Kawamel city, Sohag University during study period. Because it found damage and losses caused by rodents inside the food processing unit through a loan for tools used in manufacturing operations, Hardware wiring loan Food processing unit used and parasites that can be transmitted such as some bacteria, such as *E. coli*, *Campylobacter*, *Salmonella* and other pathogenic may be transported from the mouse's to food, milk and then man. Also, data in table (2) The results showed that the use of mechanical control by using live traps is better than chemical control, Bromadiolone (protect 0.005% baits- anticoagulant).

Table 1. List of rodent species collected at food processing unit at Sohag university, during 2019.

Species	Family	Period	Common name
		Spring 2019	
<i>Rattus rattus frugivorus</i> (Linnaeus)	Muridae	+	white bellied rat, date palm rat
<i>Rattus rattus alexandrinus</i> (Linnaeus)		-	grey bellied rat
<i>Mus musculus</i> (Desmarest)		-	house mice

+ = Present, - = Absent

Table 2. List of rodent species collected at food processing unit at Sohag university, during 2019.

Control methods	% Reduction
Mechanical control (wire box traps)	**
Chemical control (anticoagulant) Bromadiolone (protect 0.005% baits)	*

** High reduction, * Slow reduction

Our Results were Similar with

Availability of food may play a number of different dynamical roles in rodent (Turchin, 2001). Wild birds and mammals are generally regarded as the main reservoir for *Salmonella* and *Campylobacter* in the environment. These warm-blooded animals can carry both bacteria in their intestinal tracts, mostly without showing any clinical symptoms of disease (Blaser et al., 1983). Infected animals can then cause transmission of pathogens from the farm environment to food animals, as is often mentioned in studies on *Campylobacter* and *Salmonella* epidemiology (Stern, 1992 & Jacobs-Reitsma, 1994 & Davies and Wray, 1995). Laboratory studies prove that rodents can in principle be infected with *Salmonella* and *Campylobacter*. Mechanical control is safe to the environment and higher than for reduce rodent population density, (Desoky 2013).

CONCLUSION

Mechanical (wire box traps) control is better than chemical control (anticoagulant used) in rodent control within food processing units

RECOMMENDATIONS

The most important steps in controlling rodents are preventive methods because prevention is better than control Healthy buildings should be constructed to prevent the entry of mice and rats.

- Repair / seal any cracks or holes small diameter or inch or larger in the foundation, walls.
- Repair broken windows and doors - Make sure that the door seals are tight for any inhabited buildings.
- Place the wire on all building windows.

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- Breaks in sewer lines or laterals can be detected and broken pipes should be replaced.
- All trash cans should have tightly sealed lids and garbage should be removed from the premise's multiple times per day.
- The "clean up" of an area will greatly influence the success of a rodent control program
- The control of rodents depends upon the rodent species, locality, neighboring and available food. (Desoky, 2007)
- Chemical control of pests, bait loaded traps, and the disposal of dead rodents should always be administered by a professional pest control company (Desoky, 2019)
- It is preferable to use traps for rodent control in food processing units because it is a safe method for tools and food inside the unit, safe for the environment and less pollution.

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