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Bait preferences of roof rats in poultry houses

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Summary

Failures encountered in rodent control work are related mostly to unproper selected or formulated baits. In poultry houses where other feedstuffs are abundant a good selection of baits is very important. In the present work a series of experiments were done in order to reveal bait preferences by roof rats in poultry houses.

In the first experiment whole dry wheat, barley, oat and rye were placed in cylindrical plastic containers in the upper roof - shears inside the poultry houses. Whole dry wheat was preferred over the other three cereal grains. In the second experiment plain baits of coarsly ground wheat, corn, wheat bran and poultry feed were exposed. Except wheat bran all the others were well accepted. In the third experiment plain baits of whole dry wheat, coarsly ground wheat and corn as well as the mixture of the last two compounds on the equal weight basis were used. Whole dry wheat was the most accepted one. In conclusion whole grains were accepted over dust or ground compounds. The importance of bait preferences studies in poultry houses is discussed.

Introduction

Poison baiting in poultry houses is a practical and wide spread rodent control method. In most cases the effectiveness of the treatments is determined primarily by the acceptability rate of bait. Unproper selected or formulated baits are from the principal reasons of failures encountered in rodent control works. Anticoagulants expected to give highest control in rodent killing campaigns may not be highly successful due to the abundance of food in poultry houses (Jackson, 1977). In this case selection of bait to be used in poultry houses, where other feedstuffs are abundant gain more attention. Bait

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acceptability varies with rat species and/or populations. Ingenuity is therefore needed in formulating the bait and placing in the field (Drummond, 1972).

The feeding behaviour of rodents has been studied most frequently under artificial laboratory conditions in which the animal must take a specific choice between two (or more) kinds of foods, or under the semiconfined conditions of large cages or pens. Often this procedure gives results not applicable to wild rodents (Jackson, 1965). However a more direct approach to the problem involves the study of what the animal normally or naturally prefers in its native habitat (Shumake, 1978).

In the wild state the roof rat eats an enormous variety of plant and animal food. In domestic situations the rats feed largely on food stored, for consumption by men and domestic animals (Drummond, l.c.). On the other hand rats are known to be as basically grain eaters (Anonymous, 1975) and usually prefer whole cereals or coarsly ground grains. Neverthless the choice of food is determined largely by the environment where the rat or the mouse is living (Pratt and Brown, 1976).

Using a bait quite different from food already available to the rat or mouse may increase the probability of the bait (Pratt and Brown, l.c.). In the present work, bait preferences among some cereals by roof rats in poultry houses has been studied.

Materials and Methods

Poultry houses where the work was carried out were in units of 111 m length, 12 m width, half-open type and 1/2 slats from sides. Including an entrance and 9 pens of 12×12 m each. Feeding system was entirely automatic and feed, poultry layer mash meal composed mainly by corn meal, wheat meal, sunflower seed meal and fish meal, was available nearly all time. All units harboured roof rat populations.

A series of 3 experitents were done in order to accomplish this work. In experiment 1. Plain baits of weighed amounts of dry whole wheat, barley, oat and rye were placed in cylindrical plastic containers with uncovered openings. These containers were exposed by placing side by side to upper roof - shears inside the units, places used mostly as pathways by roof rats. Consumption of baits were recorded after 5 days of exposition and relative consumption of baits were calculated.

In experiment 2. Plain baits of coarsly ground wheat, corn, wheat bran and poultry feed (mash) were exposed as described previously. Consumption of baits were recorded after 7 days of exposition and calculated.

In experiment 3. Plain baits of whole dry wheat, coarsly ground wheat corn and on equal weight basis the mixture of the last two compounds were exposed in the same manner. Consumption of baits were recorded after 3 days and calculated.

Results and discussion

In the first experiment rats showed a distinct preference on wheat over the other cereals (Table 1). Barley was apparently preferred after wheat. Rye and oat were less accepted without any significant difference among them. The highly preference on whole dry wheat continued to increase periodicaly reaching nearly to 3/4 of total (bait) consumption.

In the second experiment rats preferred feeding mostly on ground corn, wheat and poultry feed (Table 1). Wheat bran was the least accepted.

In the third experiment whole dry wheat was of first choice in preference over coarsly ground wheat and corn (Table 1). The preference of whole wheat grain over the other cereal grains may be attributed primarily to its physical structure. Since in the second experiment except wheat bran the other cereals given in ground form were well accepted. The third experiment stressed out the importance of whole wheat grain in bait preference by roof rats for the control of roof rats in poultry houses perhaps the best way will be to make several different baits available. The one taken the most readily will most likely be best for poison baiting. In conclusion, in our experiments even being at the same composition, the rats prefer whole grains over dust on ground compounds.

Özet

Tavuk kümeslerinde kara sıçanların yem tercihi

Genelde tavuk kümeslerinde sıçan kontrolü zehirli yemlerle yapılır. Kontrolün başarıya ulaşması için ilk şart, kullanılan zehirli yemlerin sıçanlar tarafından kabul edilmesidir. Kontrolde görülen bazı başarısızlıklar zehirli yemin iyi seçilmemesinden kaynaklanır.

Bu araştırmada, kümeslerde tavuk yeminin bol olarak bulunduğu bir ortamda farklı yem hammaddeleri sıçanların tercihine bırakılmış ve en fazla hangi hammaddeleri beğendikleri saptanmıştır. Birinci denemede plâstik kaplara dane yem olarak buğday, arpa, yulaf ve çavdar konmuş beş gün sonra yapılan incelemede en fazla buğday tanelerini tercih ettikleri görülmüştür. İkinci denemede kaba olarak

öğütülmüş buğday ve mısır, kepek ve tavuk yemi sıçanların tercihine bırakılmış ve kepek dışındaki üç hammadde arasında bir tercih farkı bulunamamıştır. Üçüncü denemede ise dane buğday, kaba olarak öğütülmüş buğday ve mısır ile ayrıca bu öğütülmüş maddelerin karışımı tercihe bırakılmış, dane buğdayın en fazla yendiği saptanmıştır.

Bu denemelerin ışığında dane buğdayın fiziksel strüktürü nedeniyle öğütülmüş maddelere tercih edildiği sonucuna varılmıştır. Bu nedenle tavuk kümeslerinde sıçan kontrolu için zehirli yem verilmeden önce bu tip testlerin yapılması, kontrolün etkinliğini artırması açısından uygun görülmektedir.

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Table I. Preference of roof rats for different food ingredients

Experimental number	Materials	Exposure period (days)	Relative consumption* (%)
I	Whole wheat grain	5	62.0a
	Whole barley grain		19.0b
	Whole oat grain		8.0b
	Whole rye grain		11.0b
II	Coarsly ground Corn Meal	7	34.33a
	Coarsly ground wheat meal		28.67a
	Wheat bran		1.3b
	Poultry layer mash meal		35.70a
III	Whole wheat grain	3	54.0a
	Coarsly ground wheat meal		12.3b
	Coarsly ground corn meal		13.3b
	Coarsly ground wheat meal		
	Coarsly ground corn meal		20.3b

(*) Means within experiment having different superscripts are significantly different (p=05)