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Protecting materials from rat gnawings in poultry houses

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Summary

Rats in poultry houses cause severe damages by gnawing materials. In this study a mixture of creolin-lubricating grease oil was applied on some plastic parts of watering system inside the poultry houses, pieces most damaged by roof rats gnaws.

This mixture proved to prevent gnawing of roof rats, and gave a high rate of protection on treated pieces.

Introduction

Poultry houses harbouring rat populations are subject to rat damages in many ways. One of the most important damages of rats in poultry houses results from their gnawing activities. Generally rats tend to gnaw any material with a gnawing edge that is softer than the enamel of their teeth (Pratt and Brown, 1976).

Rats damage by gnawing in poultry houses is intensified mainly on water and electrical installations made of plastic materials. Consequently flooding of the poultry houses, electrical or mechanical breakdowns and sometimes even beginning of fires are encountered.

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The use of chemical repellents to prevent gnawing may be practicable and in most cases may provide some efficiency. Potential chemical repellents have been studied for a long time, with a few ever being marketed (Howard and Marsh, 1974). Several materials available on the market as repellents have been incorporated into electric cables to prevent gnawing by rodents (Pratt et al., 1977). Uunfortunately in building poultry houses very often rodent problem is ignored and usually the construction type, electrical and water installations are based on materials susceptible to maximum rodent damage. In these cases as rodent damage appears to be a problem, a complete modification or changing the susceptible materials may be necessary. But sometimes for economic or other reasons these modifications can not be accomplished instantly. More over rodent proofing materials may not be locally available. Under these circumstances a practicable and a quick protection of gnawable materials is preferred.

The use of naphtalene and paradichlorobenzene (Pratt et al., 1977), coal-tar derivatives as rodent repellents in some enclosed situations brings forth the fact to study other coal-tar derivatives for the same purpose.

In this work protection of watering system equipment in poultry houses against roof rats **(Rattus rattus)** gnawing damages, by treating pieces of the equipment with a mixture of creolin-lubricating grease oil was studied.

Materials and methods

Poultry houses where the work was carried out were in units of 111 m in length, 12 m in width, half-open type and 1/2 slats from sides. Including an entrance and 9 pens of 12x12 m each. The watering system inside the units was whole of plastic materials. Chicken waterers got their water through hoses attached by joint pieces to T shape connectors on PVC pipes traversing the units from two sides. Each pen contained about 5 waterers on each side. The work took place in two units harbouring rat populations of different sizes. The first unit was empty, cleaned and ready to receive chicken. Rats were observable during the nights. In order to avoid the rats from leaving the area, plain bait of whole oat grains was placed in each pen, checked and replaced daily during the work. Watering system did not contain water. The second unit contained chicken and the watering system was in action continously. Rats were observable in numbers during daytime and gnawing damage of joint pieces and hoses were reported frequently. Creolin a coal - tar derivative was mixed with lubricating grease oil (1:4) both purchased from free market, and a homogen viscouse

mixture was obtained. This mixture, with the help of a brush was coated to joint pieces and the terminal of hoses. Previously gnawed pieces were excluded in empty unit and 42 pieces were treated and 37 were held as control. In the other unit 45 pieces were treated and 45 were held as control. The treatment was made by coating the pieces one by one. Observations were made after 7 and 15 days.

Results and discussion

Results obtained from the observations after 7 and 15 days of the treatment proved that the mixture gave nearly a complete protection against gnawing damages by rats on treated pieces. (Table 1).

In the empty unit from the untreated pieces 21 were found gnawed after 7 days but on the second inspection (after 15 days) all untreated pieces were found gnawed. 12 of these pieces and hoses were heavily damaged and replaced. On the other hand from all treated pieces no any gnawing sign in appearance was found during the same time. In the other unit 4 heavily gnawed from untreated and 1 from the treated pieces were recorded during 7 days and 2 more from the untreated until the 15th day.

Table — 1

Gnawing cases observed after 7 and 15 days of creolin-lubricating grease oil mixture treated and untreated pieces

	Number of pieces	
	Treated	Untreated
Unit 1	42	37
Gnawed after 7 days	—	21
Gnawed after 15 days	—	16
Total gnawed	—	37
Unit 2	45	45
Gnawed after 7 days	1	4
Gnawed after 14 days	—	2
Total gnawed	1	6

Toxic or distasteful materials seem not to be quite effective in preventing rodent gnawing damage. Since it is known that due to their teeth arrangement, rodents are able to gnaw toxic materials without even taking them into the mouth (Drummond, 1972). Even many chemical repellents designed to prevent gnawing often fail to discourage rats and mice for the same reason (Anon., 1976). According to Howard and Marsh (1974) rats rely more on smell. From our results it was concluded that creolin's characteristic odour must be the main factor in providing the mixture protective effect acting as repellent.

A contradiction was seen in observed damages among the two units. As rat population in size were much higher inside the active unit, rat damage by gnawing the joint pieces and hoses would be expected to be higher than the empty unit, but the reverse was observed. This case may be explained by the differences in behaviours of rats in two units. In the active unit water being available everywhere, gnawing damage would be a result of gnawing behaviour by itself. In the empty unit watering system being out of action, water was not available therefore gnawing damage should result from water search activity in addition to gnawing behaviour.

The effectiveness of creolin lubricating grease oil mixture in preventing damages on gnawable materials was proved in some cases in other units too. In one case a piece after being gnawed consecutively for 3 days, was treated with the mixture and gnawing was not reported therafter. In another case a unit which electrical cables were frequently gnawed causing daily breakdowns, after treatment of the cables gnawing ceased completely and breakdowns was no more reported.

The mixture is not inflammable under environmental temperature inside poultry houses and no any corrosive effect was observed on applied materials. It is natural that the mixture's protective effect may decrease with time due to its diminishing odour (Howard and Marsh, 1974) and becoming dusty under environmental conditions. Therefore for a continual protection periodical treatments are seen necessary.

Relatively low cost, simpleness in its preperation and application makes the use of this mixture when gnawing problem is seen or specially manifactured products are not available.

Özet

Kümeslerdeki araç ve gereçlerin sıçan kemirilmelerine karşı korunması

Tavuk kümeslerinde barınan sıçanlar buralardaki araç gereç ve donanımları kemirerek büyük zararlara neden olurlar. Kemirilebilen maddeleri kemirme zararlarından korumak için kemirgenleri defedici (repellent) özellikle kimyasal maddelerden yararlanılmaktadır.

Bu çalışmada kümeslerde kara sıçanların **(Rattus rattus)** kemirme zararlarının yoğun olduğu su donanımının, kreolin-gres yağı karışımı (1:4) ile korunması araştırılmıştır. Elde edilen sonuçlardan kreolin gres yağı karışımının uygulandığı kısımlarda kemirme olaylarının önemli oranda azaldığı veya hiç görülmediği saptanmıştır.

Koruyucu etkinin karışımdaki kreolin kokusundan ileri geldiği, bu nedenle karışımın uygulandığı kısımlarda sıçanları defedici veya uzaklaştırıcı nitelikte olduğu sonucuna varılmıştır.

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