



# Poultry red mite

- **What is Poultry red mite?**

Poultry red mite is a blood-feeding parasite that has considerable welfare and production implications for both commercial laying hens and backyard flocks. The mites live “off-host” in the cracks and crevices of the poultry house, emerging in darkness to feed upon the hens. Red mites are related to ticks and almost all life stages of the mite are blood-feeding. Adult females will feed every 3 to 4 days in order to produce, on average, 30 eggs in their lifetime. In ideal conditions, red mite can develop from an egg to sexually mature adult in just 7 days. With such an efficient lifecycle, mite numbers in poultry houses can be massive; in severe infestations, numbers can range between 200,000 and 500,000 mites per hen! Given the large blood requirement of an individual mite and their population numbers, the health and welfare implications for laying hens can be severe.

- **Welfare issues** Common welfare issues associated with red mite infestations include: increased irritation and restlessness, feather-pecking and an increased incidence

of cannibalism and anaemia. These behaviours also have a considerable negative impact on egg productivity. In severe infestations, high hen mortality has been recorded. The negative effects of red mite are not restricted to poultry, they can, and do, bite humans, and like house dust mites they can cause itching and dermatitis following contact.

- **Impact on commercial egg production**

In the UK, it is estimated that 80-90% of commercial egg production systems; whether battery cage, free-range or barn system, operating organically or not, are afflicted with red mite infestation. A similar situation exists across Europe and it is estimated the red mite costs the EU poultry industry in excess of €150 million per annum. Losses are attributed to decreased egg output, hen mortality, control costs and down-grading of the sale value of blood-spotted eggs, which occurs when eggs roll over engorged mites.

- **Impact on backyard flocks** In Sweden, 19% of backyard flock questionnaire respondents said that their hens had red mite, but when these flocks were further investigated, the number was actually found to be 67%. The discrepancy between actual and perceived infestation levels is likely to be the result of difficulties in spotting red mite. Few mites are found on hens during daylight, when most people would observe their hens. During daylight, the mites will be hidden in the cracks in the fabric of the hen accommodation and, to an untrained eye, even a heavy infestation of a small flock will not be seen easily. The impact of red mite on backyard flocks in the UK is poorly understood with few studies undertaken. However it is clear from veterinary reports that red mite is a fairly common cause of hen deaths. Along with the rising trend of keeping backyard hens in the





UK, red mite will undoubtedly become more apparent in the non-commercial sector and new control measures will be required.

- **Control** Most methods of red mite control rely on chemical pesticide sprays. Spraying is usually carried out when the poultry house is empty, which is easy to achieve in backyard flocks but is only practically possible prior to restocking commercial cage systems. Pesticides require direct contact with the mites and getting pesticide into the inaccessible areas of the poultry house where the mites hide is difficult, as a result mite population can quickly recover. Because of concerns over safety and environmental contamination, many of the currently effective pesticides have been withdrawn from use and the emergence of mite resistance to the remaining compounds has further exacerbated control problems.

Alternatives to pesticides are available, such as detergent sprays that destroy the mite's waxy cuticle and silica-base dusts that desiccate the mites, many of which can be used in stocked poultry houses. However like pesticides, detergents and desiccants also rely on direct contact with the mite and so have similar practical application issues. Despite using several methods of control in parallel, adequate control of red mite in commercial poultry units remains difficult to achieve and is expensive. Alternative methods of control are urgently required.

- **Vaccination as a method of control**

Vaccination can offer a safe, effective alternative to chemical treatments. It is now recognised that vaccines to blood-feeding parasites can result in effective and sustainable control. Previous studies at the Moredun Research Institute have shown that vaccination of laying hens against red mite is possible but we need further research to produce a commercially-viable vaccine. With the support of our academic and commercial partners: Akita Co. Ltd, BBSRC and Zoetis, we aim to produce the first commercially available red mite vaccine and thus provide a potent weapon for the control of red mite in commercial and backyard settings.



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