

A SURVEILLANCE PROGRAMME FOR FOOT-PAD DERMATITIS IN SWEDISH BROILERS

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La pododermite est une sorte de dermatite de contact qui se caractérise par l'apparition de lésions sur les régions plantaires de la patte de l'oiseau. En juillet 1994, un plan de surveillance a été initié en Suède pour approfondir les connaissances concernant l'apparition de la maladie et son extension dans les populations de poulets. Dans le cadre de ce programme, un service de conseil opérationnel pour la prévention de la pododermite a été ouvert aux professionnels. Pour chaque bande abattue, 100 pattes sont systématiquement prélevées pour un examen sommaire à l'abattoir. Les lésions des coussinets plantaires sont répertoriées par des inspecteurs vétérinaires spécifiquement formés. Cette étude repose sur des données collectées dans le cadre du plan de surveillance de juillet 1994 à juin 1996. La saisie de données a porté sur 6988 bandes, soit un total d'environ 110 millions de poulets. Ce sont en tout 176 producteurs de 15 régions géographiques différentes (comtés) qui sont représentés. Huit fournisseurs d'aliments et les onze principaux abattoirs suédois ont été impliqués. En moyenne, chaque ferme a fourni sept bandes par bâtiment et par an. Les résultats ont indiqué une baisse significative ($p < 0,001$) dans le temps de la prévalence de la pododermite, et un effet déterminant de la saison ($p < 0,05$). Les lésions des coussinets plantaires étaient généralement plus importantes pendant les mois d'automne et d'hiver (Octobre à février) que pendant ceux du printemps et de l'été (mars à septembre). Des différences significatives ($p < 0,05$) ont également été observées en fonction de l'abattoir, de l'origine de l'aliment et de la région géographique, et en fonction également de la combinaison de ces paramètres. Une petite différence, mais statistiquement significative ($p < 0,001$), a été observée entre les valeurs moyennes du nombre total de lésions des coussinets chez les deux hybrides étudiés.

INTRODUCTION

Foot-pad dermatitis is a type of contact dermatitis in which lesions appear on the plantar regions of the bird's feet (Greene *et al.*, 1985). The lesions are considered to be caused by a combination of moisture and chemical irritants in the litter (Nairn and Watson, 1972; Harms *et al.*, 1977; Greene *et al.*, 1985; Martland, 1985; McIlroy *et al.*, 1987). A number of risk factors for wet litter, such as litter depth and material (Smith, 1956; Shanawany, 1992; Ekstrand *et al.*, 1997), feed composition (McIlroy *et al.*, 1987), stocking density (McIlroy *et al.*, 1987; Tucker and Walker, 1992; Gaardbo Thomsen, 1993), enteric *Campylobacter* infections (Neill *et al.*, 1984), climatic conditions (Payne, 1967; McIlroy *et al.*, 1987) and type of water equipment (Elson, 1989; Lynn and Elson, 1990; Tucker and Walker, 1992) have previously been identified.

THE FOOT-HEALTH PROGRAMME

In July 1994, a surveillance programme was developed in Sweden to improve the knowledge about the occurrence of the disease and its spread in the broiler population. As a part of the programme, active advisory service was provided to the farmers on how to prevent foot-pad dermatitis. The programme involves all eleven major broiler abattoirs in Sweden and 97 % of the broiler producers. From every slaughtered flock 100 single feet are taken out for gross examination at the abattoir. The foot-pad lesions are classified by especially trained veterinary inspectors.

The foot-pad lesions were assigned to three different classes:

0 = No remark; no lesions, only mild hyperkeratosis, no discoloration or scars.

1 = Mild lesions; superficial lesions and discoloration of the foot pad.

2 = Severe lesions; deep lesions, ulcers and scabs.

The inter-rater agreement of the method has been evaluated. Kappa values were calculated for the eleven different veterinary inspectors involved, resulting in a mean kappa value of 0.86 ± 0.15 (ranging from 0.50 to 1.0), which should be considered as very good (Altman, 1991). The kappa values were calculated as comparisons of the senior author and inspector observations.

THE STUDY

This study is based on data collected within the surveillance programme from July, 1994 through June, 1996. The aim of the study was to further investigate regional and seasonal aspects of foot-pad dermatitis in Swedish broilers, and also to investigate differences in the prevalence of foot-pad dermatitis between flocks slaughtered at different slaughterhouses.

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All demographic data and foot-health scores from the programme have been reported to the 'National Standards Officer' at the Swedish Poultry Meat Association. The programme is monitored by the national authorities, and summaries of the results have been presented twice yearly to the Broiler Committee of the National Board of Agriculture.

The records included 6988 flocks, representing approximately 110 million broilers.

A total of 176 producers from 15 different geographical regions (counties) is represented. On average, each farm delivered seven placements per compartment and year. Two different breeds were raised, one accounting for 63.2 % of the flocks and the other one for 36.8 %. Eight feed companies supplied feed to the study farms. Their market shares ranged from 2.2 % to 24.3 % of the flocks. Birds were slaughtered between 28 and 53 days of age, with a mean of 36.0 days.

RESULTS ON FOOT-PAD SCORE

The total foot-pad score per flock ranged from 0 to 200, which were the lowest and highest scores possible to achieve. The overall mean was 34.7 and the standard deviation was 40.9. The median value was 20, the lower quartile 6 and the upper quartile 47 points. A total of 820 flocks (11.7 %) were recorded as having no foot pad lesions (score 0), and 41 flocks (0.59 %) achieved the maximum score of 200.

A simple linear regression analysis showed that the mean total score on a weekly basis decreased significantly ($p < 0.001$, $R^2 \text{ adj.} = 0.108$) over time during the study period. This was mainly due to a decrease in the prevalence of severe lesions. Results also showed a significant effect of season ($p < 0.05$). Foot-pad scores were generally higher in the autumn and winter months (October-February) than in the spring and summer months (March-September).

The Duncan multiple range test (BMDP, 1992) showed that there was a statistically significant ($p < 0.05$) association between slaughterhouse and the mean value for total foot pad score of the flocks slaughtered, with a range from 11.1 to 110.5 points. There was also a significant ($p < 0.05$) association between feed supplier and the mean foot pad score, with a range from 16.1 to 61.6 points. County of origin proved to have a statistically significant ($p < 0.05$) association with the mean foot pad score, means ranging from 3.4 to 59.1 points. Interactions between slaughterhouse, feed source and geographical region were found. There was a small but statistically significant ($p < 0.001$) difference between the mean values for total foot pad score for the two different hybrids (37.6 ± 38.1 and 33.0 ± 42.3 respectively).

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