Effects of Alternative Systems on Disease and Health of Poultry

FUENTE: THE POULTRY SITE
www.theporultrysite.com
FECHA: 01/12/2011

Poultry health management is a pivotal component of successful poultry production, said Stephen Lister of Crowshill Veterinary Service in the UK in the introduction to his paper, co-written with Bert van Nijhuis of Verbeek's Broederij en Opfokbedrijven in the Netherlands.

Disease and its effects on poultry health can damage productive performance and have an adverse effect on bird welfare and food safety. A whole host of factors can affect disease incidence and its impact on poultry health, he said. These include the prevalence and interaction of many pathogens, availability and use of vaccines and medicines, standards of husbandry and management and levels of stockmanship.

The first major changes in the poultry industry tended to intensify production. As such systems became the norm, they have often been described as 'conventional'.

Key drivers in poultry production have changed in recent years, including a re-evaluation of the welfare impact of such production systems for both egg-laying and meat birds. Part of this has involved a move away from conventional systems and a re-introduction of more traditional systems or the development of novel alternative systems. The list of diseases that can affect poultry is the same, regardless of the system of production. However, the clinical effects of those disease challenges and impacts on health, performance and welfare can be specific to a particular system.

There have been several surveys of bird mortality to compare different production systems and most reveal an increasing trend in losses for the alternative systems, said Mr Lister. A recent paper from Denmark is typical and revealed the following mortality ranges: cages, 4.5 to 9.0 per cent; deep litter. 9.0 to 12 per cent; free-range, 6.0 to 11.0 per cent and organic flocks,

9.0 to 18 per cent.

There is a need to address the variations revealed in this work, said Mr Lister – both between and within the different systems.

One area with potential to have the most dramatic influence is the birds' environment and how they respond to it. This impact has been well known during the development of the poultry industry as it adapted to varying climates and market requirements. This involved considerable advances in technology and husbandry techniques.

"It all depends on the pathogens, the challenge and how birds adapt to the bugs and the environment," Mr Lister stressed, taking three examples of important disease challenges relevant to changing poultry systems.

Chicken respiratory disease is a multifactorial condition, involving several different pathogens and air quality, as well as underlying viruses that impact the immune system, such as Marek's disease, Gumboro and chicken anaemia virus. To prevent disease, it may be necessary to alter practices where the environment is harder to disinfect or when birds remain longer, Mr Lister said.

Turning to the second example, he cited avian influenza, which affects poultry in both high and low production intensities. The virus is likely to be introduced by wild birds, as in the outbreak in turkeys in the UK in 2007, which started near a lake but the infection soon impinged on nearby housed poultry. The best control method will depend on the intensity of poultry production and wild bird populations in the region.

Brachyspira is a bacterial disease of poultry, which has re-emerged in recent years in free-range flocks, causing sudden egg drops and production 'wobbles' at any time from peak lay. It is a disease of the intestinal tract and results in frothy, yellow droppings. Mr Lister said it is unclear if the pathogen is the primary cause of the condition or if it is an opportunist when the general health of the birds is poor. Often, affected flocks are found to have access to poached or wet heavily used areas of the run, which may be the source of the pathogen.

After stressing the vital importance of good biosecurity to

minimise the entry of pathogens, Mr Lister concluded that most important to address the challenges of disease in alternative poultry systems is to understand the health risks on each farm, to recognise sign of ill-health and to medicate when necessary.

"Whatever the system, an effective Veterinary Health and Welfare Plans appropriate to each farm is crucial for disease prevention," concluded Mr Lister.

Erysipelas in Laying Hens in Different Housing Systems

In a short paper, Helena Eriksson of Sweden's National Veterinary Institute described a study she carried out with researchers at the Swedish University of Agricultural Sciences.

The study found that the probability of an outbreak of erysipelas is affected by the housing system, and serological investigations confirm that the probability of an outbreak is higher in free-range systems than where the birds were housed indoors on litter.

Dr Eriksson explained that the Swedish Animal Welfare Act of 1988 ushered in the end of conventional battery cages for laying hens and by 2005, almost all flocks were housed either in furnished cages or in litter-based indoor housing systems, with or without outdoor access.

The first outbreak of erysipelas (infection with the bacterium, *Erysipelothrix rhusopathiae*) was diagnosed in a free-range flock in 1998. Further outbreaks in succeeding years were associated with mortality up to 50 per cent and production losses. The study had been set up to examine possible links between the disease and housing system.

So far, no flock housed in furnished cages has been diagnosed with the disease, added Dr Eriksson.

Effects of Open Water Sources on Duck Health

Ms G. Liste of Cambridge University in the UK explained that their study is part of a wider project investigating the provision of open water sources for commercial ducks kept in concrete-floored pens with straw bedding. It appeared that eye, nostril and foot condition were unaffected by treatment, in which water

was provided in large or small troughs or pools.

From the first two replicates, which were presented at the symposium, of a total of three replicates, feather hygiene and body weight were adversely affected with small troughs measuring 150×15×8cm. Weight and gait scores improved with age, as did feather hygiene and eye condition. Overall, the researchers commented that the ducks were in generally good health throughout, with low scores for poor health.

Production Systems for Laying Hens and Broilers and the Risk of Human Pathogens

It is the role of the UK's Health Protection Agency to check human diseases, such as Salmonella and Campylobacter, explained Dr Frieda Jørgensen from the Agency in the introduction to her paper written with co-authors from Ghent University in Belgium.

There is evidence that the type of production system used for laying hens and broilers can affect the likelihood of the chickens being colonised by human pathogens, she said.

The most significant public health risk associated with layers is transmission of Salmonella to humans via eggs, she explained. Based on experimental and epidemiological data, however, it seems unlikely that the move from conventional cages to enriched cages and non-cage systems will result in an increased prevalence and/or shedding of Salmonella in laying flocks.

Data in relation to broiler rearing system and the likelihood of birds being infected by other pathogens, including Salmonella, are scarce, said Dr Jørgensen. However, there is no evidence to suggest that organic and free-range broilers are more likely to be infected with Salmonella than are conventionally reared ones.

Turning her attention to Campylobacter in broilers, she said studies suggest that free-range and organic flocks are significantly more likely to be positive for Campylobacter at slaughter than conventionally reared broilers. However, there is evidence suggesting antibiotic-resistant human pathogens are more commonly isolated from conventionally reared than from organic or free-range broilers, Dr Jørgensen added.