In the first of a three-part series sponsored by MSD Animal Health on enteric health, we look at the issue of vaccination as a control option for coccidiosis

Coccidiosis vaccination – a realistic option for broilers?

During the past two years, MSD Animal Health has been investigating the clinical and financial benefits of coccidiosis vaccination through a series of field trials with two UK broiler integrators.

The trials are focused on hatchery vaccination programmes using Para-ox, a live attenuated oral vaccine which will protect chickens against five species of coccidia that are significant in broilers: Eimeria acervulina, E maxima, E tenella and E mitis.

The vaccine can be administered in the hatchery by dry or spray administration at a volume of 0.2ml a bird, before they are despatched to the grower site.

Apart from attempting to determine the cost benefits of this vaccination strategy, the trials also aim to establish the most appropriate management factors and skills required to optimise immune response in the birds, and to simplify/standardise the vaccine administration process.

Andrew Payne, MSD trials assistant, coordinates this long-term project. More than seven and a half million birds have been involved in the trials to date, which are on-going and expanding in size. He believes that a Paracox 5 vaccination programme is a viable coccidiosis control option for broiler producers.

“Tie trials are ongoing and results are yet to be fully analysed, but regular reviews are showing positive outcomes in terms of production levels achieved.”

In addition, some farmers are also noticing that the vaccination programme has improved bird health to the extent that they are able to manipulate diet specifications and use less expensive feeds toward the end of the production period.

Mr Payne says that having coccidiosis under control has enabled managers to focus on other areas of flock health, environmental control and nutrition.

Observations also suggest that gut health in these flocks has improved, with better gut integrity and more robust digestive systems. This, he says, is probably the reason why diets are able to be reformulated to include less expensive ingredients and more whole grains, without imposing greater production costs.

“Many farmers are now putting pressure to reduce the amount of medication used in live production,” says Mr Payne. “Some of the conventional treatment and control strategies, which are currently being used on farm, are being questioned and producers are being encouraged to explore alternative treatments as vaccination, which at present are not usual practice.

“In the area of coccidiosis control, protecting birds against disease by vaccinating is already commonplace in long-lived birds. It is likely that this could become more widely considered as a viable option for broilers in the near future.”

Sub-clinical infection is also common. No clinical signs are seen, but gut damage still occurs and this has a negative impact on FCR, growth and overall flock health. It can also increase a bird’s susceptibility to secondary infections, the most notable being clostridial enteritis.

These factors can further exacerbate loss, complicate diagnosis and significantly increase the costs of stabilising health status.

STRATEGIC CONTROL

All farms at risk of coccidiosis should implement a strategic control programme under veterinary guidance.

Dr Tiber Cezeri, technical manager with MSD’s Poultry Team, says that there are two basic options: in-feed anti-coccidial treatments and vaccines that induce immunity to coccidiosis. Most commercial layers and broiler breeders destined for extensive production systems in the UK are vaccinated with ParaCox 8, which provides protection against all coccidial species which could cause disease during the course of their lifetime,” he adds.

However, for most standard broiler producers, in-feed anti-coccidial medication is widely regarded as the most economic option. This is because, historically, coccidiosis vaccination has seemed difficult to justify commercially, given the short production period available to return a return on that investment.

Typically, a prophylactic anti-coccidial programme involving the use of several different types of medicated feed is used throughout the production period. This treatment does not eradicate the parasites, but reduces infection levels, thus controlling the flock’s exposure to the disease challenge, during which some level of immunity is developed.

In many parts of the world there is mounting pressure to reduce the amount of medication used in live production,” says Mr Payne. “Some of the conventional treatment and control strategies, which are currently used on farm, are being questioned and producers are being encouraged to explore alternate treatments such as vaccination, which at present are not usual practice.

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Promising health status and reducing the risk of disease is vital for flocks to achieve their full genetic potential.

Intestinal health is of paramount importance and maintains gut integrity throughout the production period is a key objective for both broiler growers and commercial egg producers.

Managing coccidiosis can be challenging, however, this protozoan parasite is persistent and can contribute to morbidity and mortality rates. Its successful treatment and control requires strategic actions, typically using effective veterinary medicines and stringent housing protocols. The success of the “carryover” of oocysts from one crop of birds to another.

Coccidiosis can cause immense intestinal damage, due to its exploitative reproductive capacity. The parasite attacks mucosal tissues, invades cells and leaves lesions in the gut, which impair digestion and nutrient absorption. Blood loss and/or dehydration may also contribute to performance losses, and clinical outbreaks may result in high morbidity and mortality rates.

Sub-clinical infection is also common. No clinical signs are seen, but gut damage still occurs and this has a negative impact on FCR, growth and overall flock health. It can also increase a bird’s susceptibility to secondary infections, the most notable being clostridial enteritis. These factors can further exacerbate loss, complicate diagnosis and significantly increase the costs of stabilising health status.

“Currently, the option selected by a poultry business broadly depends on the type of bird farmed. With regard to commercial layer and broiler breeder flocks, protecting young birds through vaccina- tion is a valuable investment, as it provides lifetime immunity against coccidiosis. Most commercial layers and broiler breeders destined for extensive production systems in the UK are vaccinated with ParaCox 8, which provides protection against all coccidial species which could cause disease during the course of their lifetime,” he adds.

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A medicated feed is then reintroduced for the subsequent three crops. The response to in-feed treatment is usually significantly better following the break during which vaccine is used, because increasing levels of fully susceptible vaccine coccidia start to displace the weak strains on the farm.

However, choosing a vaccination-only strategy can also have advantages over the rotation system, says Dr Cezeri. When managed correctly, it will reduce the coccidial field challenge for the long term and a single vaccination given to a day-old chick will protect the bird for the entire breeder cycle – a factor that reduces the potential risk of late coccidial outbreaks and additional treatment costs.

It need not be more expensive either. “When potential savings in time/labour and overall health status are considered, then the economics begin to stack up,” says Dr Cezeri. “When evaluated on a margin per crop basis, the real cost of a coccidiosis vaccination programme is typically found to be comparable to an in-feed medication strategy,” he suggests.