Effective hygiene routine can lessen disease outbreaks

Egg producers are increasingly seeing brachyspira outbreaks — even new units are going down with the disease. David Burch of Octagon Services looks at how to tackle it.

**B**rachyspira are spiral shaped bacteria that primarily colonise the ceca of laying and breeding hens. They can be divided into those that do not cause disease (non-pathogenic), such as Brachyspira innocens or those that do cause disease (pathogenic). Non-pathogenic bacteria are less commonly found in hens and broilers, whereas pathogenic bacteria, which was originally thought to be non-pathogenic like B. innocens. We now know that it is quite so innocent. They live in the ceca and adhere to the epithelial lining. They are not usually very damaging or invasive, but in large numbers, they can almost caper up the gut (lower in the pit below right), reducing its efficiency. This infection leads to increased caecal drop droppings, which are brown to yellow and may be soft to liquid.

**WHAT DO THEY DO?**

The long-term effect of brachyspira infections is soft droppings, which may stain eggs, cause particle jets in the feed and results in mortality. But the chronic debilitative effect of the infection is a reduction in egg production, body weight and possibly increase in mortality.

The drop in egg production can occur as they approach peak if the infection is eradicated or any time after then as the infection builds up in the bird. With B pilosicoli, there can be a 0.2kg drop in hen weight, so this is also a useful parameter to monitor.

Mortality usually creeps up. It is not a sudden increase, but almost a doubling or tripling of mortality from 0.5% per month to 1-1.5% per month. Mortality is not always associated with anything in particular, but is thought to be due to the general debilitation of the hen and there is often an increase in egg peritonitis caused by E coli. Obviously these lost hens cannot be replaced, again reducing the overall efficiency of a shed, if allowed to continue over a long period.

**HOW PREVALENT ARE THEY?**

In our first UK mini-survey of 10 free-range flocks, we found B innocens in 90% of flocks and pathogenic ones (B intermedia and B pilosicoli) in 70%, whereas these were flocks that reported production problems. In addition, they also had a 30% prevalence of worm infections and 20% had IB (infectious bronchitis). These results highlight the potentially high prevalence of the problem in free-range flocks, as well as the need for a good diagnostic examination of these flocks and the use of a vet and laboratory to differentiate it from other problems.

In a larger survey with the SAC Veterinary Centre in Edinburgh using a quick PCR test, we looked at 96 submissions and 257 samples, which is more representative of the UK sector. They found 70% of the flocks were infected with brachyspira, but 54% had pathogenic pathogenic strains.

We initially thought that the problem was primarily associated with free-range flocks, due to the inability to maintain good biosecurity and the ease of faecal contamination of water. However, a recent publication (Bano and others, 2008) has shown the problem to exist in cage flocks too. Microspora species were found in 72% of farms tested (21 samples) and pathogenic ones in 35% of flocks.

**HOW ARE THEY SPREAD?**

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**How are they spread?**

This is really the million dollar question, as even relatively new free-range farms have become infected. There have been reports of infected flocks coming on to farms, but in all the cases I have looked at, the pelleting end has remained negative (graph 1), with infections only starting by 20 weeks of age after placement.

Where we have multi-aged cage units, which have become infected, it is easy to imagine carry over in poorly cleaned (or not cleaned) cages between batches as well as circulation between sheds by flies and rodents. Improving hygiene, fly control, especially in deep-pit houses and rodent control is essential.

**How can we detect them?**

For many years, nobody was routinely looking for brachyspira in chickens. They are difficult to identify and the only real way to differentiate them is to culture the organism and then sub-cultivate it and carry out biochemical strain tests. This takes one week for the initial culture and a second week for the differentiation, so is a slow process.

There are no routine blood tests, but a combination of clinical signs and the presence of brachyspira, must make one suspicious. B innocens is quite a frequent organism to find, but is not usually far behind. It is essential that other potential causes have been excluded.

**WHAT ARE THE BEST MEANS OF PREVENTION?**

For caged birds, good hygiene and cleaning between flocks is very important, although sometimes difficult to achieve in deep pits at certain times of the year. Fly control, even in winter, is also very important (for more, see p54). Again, the older the shed, the higher the problem. Finally, rodent control is essential, or it will carry a number of the brachyspira.

For free-range flocks it is more difficult. Good hygiene, management and rotation is helpful. Reducing poultry areas by filling in holes and maintaining the condition of the pop-hole areas are also helpful, as these areas get the most wear and are prone to contamination. Good or marbing can help reduce contamination.

Work is on going in Australia to investigate the possibilities of producing a vaccine commercially.

**WHAT TREATMENTS ARE AVAILABLE?**

First consult your vet. Although there are no products specifically designed for the treatment of brachyspira in laying hens, there are a number of products that are used in pigs. Tylosin (Tylosinum) has become the main product for treating and controlling brachyspira species in pigs, because of its relatively low level of resistance development. Tiamulin (Tiamulin Fort Dodge) are the two main antibiotics, which have zero withdrawal periods for pigs in the UK, so tend to be the first choices for any treatment in layers. Where these infections are complicated with mycoplasma infections, which are common in layers or with secondary bacterial infections, such as egg peritonitis caused by E coli, combined use of these products has also proven quite successful in controlling mortality and production. However, both products are POSMY and must only be used under supervision.

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