Lungworm – the solutions

Last month's article on *Dictyocaulus viviparus* – the cattle lungworm – covered its life cycle, epidemiology, immunity, and the diagnostic challenges it can pose. In this article, Ruth Vernon BVSc CertCHP MCRVS looks at what can be done to minimise the impact of this parasite and associated clinical disease on farms

Despite a vaccine and effective anthelmintics being available for decades, lungworm still causes severe production losses and even death in cattle. Larvae survive best in wetter areas with a high average rainfall and outbreaks are commonly seen after a period of wetter weather in the summer.

RISK FACTORS FOR LUNGWORM

- Wet summers.
- Heavy stocking densities.
- Poor immune development due to low previous exposure to infective larvae.

Back in 1997, GB David surveyed a large group of adult cattle and summarised the main risk factors for an outbreak as:

1. Failure to vaccinate a group of animals on an endemically infected farm;
2. Susceptible groups of animals joining an endemically infected herd;
3. Reintroduction of infection from introduced livestock; and
4. Young stock grazed away or housed in their first year.

VACCINATION

The best way to prevent parasitic bronchitis in cattle is to vaccinate the cattle prior to them going onto pasture. However, establishing the vaccine programme on farms can be difficult and may meet farmer resistance. The protocol requires two oral doses at an interval of four weeks and the protocol should be completed two weeks prior to turnout. It can be tricky to arrange a vaccine schedule in all-year-round calving herds, due to these timings of vaccine administration and turnout of livestock. All cattle in the batch should be vaccinated and allowed low-level larval exposure on the pasture to ensure continued immunity post vaccination. Spring calving herds provide their own problems, where the protocol means that the calves will be 14 weeks old before they can be turned out (SPC states the calves must be eight weeks old at first vaccination). Serious consideration must, therefore, be given as to whether late-born calves are grazed at all in their first year of life. Some farms will use a cut-off date, where early-born calves are vaccinated and turned out in their first year, while later-born calves stay inside in their first year. These younger animals are then turned out for the first time the following spring, after they have completed their vaccination protocol. Despite vaccination being highly effective, the uptake is low and, in general, carried out only on those farms that had severe lungworm problems in previous years.

ANTHELMINTICS

Many anthelmintics are effective against fourth-stage larvae and adult *D. viviparus*. Prompt treatment is important as severely affected cattle may not respond or may even deteriorate, as dead or dying larvae block the lower airways and alveoli following treatment. It is vitally important that a worming programme is carefully considered with your veterinary surgeon and that it forms a key part of a veterinary health plan. Careful consideration of the route of administration and persistence of the product is important, as there needs to be a balance between allowing the cattle to ingest some larvae to maintain immunity but not too much, which would allow the disease to ensue.

GRAZING MANAGEMENT

In young cattle on pasture for the first time, rotational grazing can control gutworms by four weekly moves to clean pasture. However, rotational grazing to prevent lungworm would require weekly moves to clean pasture. So rotational grazing alone will probably not control lungworm without a vaccination protocol also being in place. Grazing of youngstock on permanent pasture can be particularly problematic.

The precise development and persistence of larvae on the pasture are poorly understood and it can be hard to predict the effect of the climatic conditions and, therefore, what the larval challenge is on the grass.

Potential outbreaks can be tricky to predict because primary infections are often not detected. Outbreaks are usually due to the second generation of larvae on the pasture, seen commonly from July to September. Larvae are susceptible to desiccation and survive on pasture swards for a limited time. However, in wetter regions the larvae can survive and persist for longer. Wet weather also aids the release of larvae from faecal pats and promotes the growth of Pilobolus which helps in the airborne spread of larvae on the pasture. Carrier animals are an important source of pasture larval contamination in the spring. Heavily stocked pastures will increase the risk of disease by increasing the opportunity for larvae being ingested lower down the sward.

For cattle to maintain immunity, they must continue to ingest a low level of larvae, otherwise immunity can wane with time eg. during housing. This is not generally a problem, as when the cattle are turned out in the spring, the number of larvae on the pasture are generally low. However, if cattle are turned onto heavily contaminated pasture then large numbers of larvae can reach the lungs and cause disease. One problem area can be dry-cow grazing, which can be very heavily stocked and never rested. Young stock could be set stocked after vaccination and regular faecal egg counts (FECs) should be taken to assess if worming is needed. This strategy works very well for gutworms, but not so well for lungworm as cattle become ill during the prepatent period before any larvae are detected in the faeces. Caution must be exercised as a dose-and-move strategy heavily selects for anthelmintic resistance.

An increasing issue is seen in non-vaccinated herds affecting the adults. Clinical disease in adult cattle can be dramatic with significant milk yield losses and mortality in severely affected cattle. These cases require thorough investigation to ascertain why they occurred.

Some farms experience outbreaks every year, usually late summer, early winter despite being classed as closed farms with regards to animal biosecurity. On these farms the parasite control plans need to be reassessed, especially ensuring any whole herd anthelmintic treatments can be justified.

Carrier heifers may introduce larvae into the main dairy herd, but it is more likely that the overuse of anthelmintics will prevent the development of immunity to infection in this class of stock. That is not to say that anthelmintic treatment should not be used, but rather that it should be limited to the animals that require treatment.

Farms that do not observe a closed status should assess the incoming animals to determine the likely immune status of the bought in animals and then work out an appropriate method of introduction into the main herd to minimise problems.

REPLACEMENT DAIRY HEIFERS

Poor development of immunity in replacement heifers can lead to increased susceptibility in milking cattle, leaving these animals exposed to a severe disease outbreak. So, first and second calved heifers may be ideally suited to targeted selective treatments post calving. The need to worm adult cattle is often questioned by farmers but there are several studies that show a real benefit if the right animals are targeted. If you target the herds that heavily rely on grazing grass as part of their feeding and look to treat animals that are fewer than 200 days in milk, then you can see an average improvement of nearly 1kg milk per cow per day benefit. This effect is generally more noticeable in lower yielding (compared to cohort) animals.

SUMMARY

It is important to look at each farm in detail to assess the risk factors that are present on that farm, as no two farms will be the same. Based on each farm's history in terms of grazing management, vaccination protocols, anthelmintic usage, and livestock biosecurity a veterinary health plan can be developed between the farmer and veterinary surgeon. It is vital to look at the overall picture on farm to provide worm control in a responsible manner and limit costly disease outbreaks.

REFERENCES

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