# SRUC Veterinary Services Monthly Report for April 2024

## OVERVIEW

- **Hypomagnesaemic tetany as the cause of death in a suckled calf**
- **Congenital intestinal atresia in Limousin calves**
- **Tick-borne fever as a cause of abortion in purchased ewe hoggs**
- **Suspected zearalenone associated abortion in a sow**

## GENERAL INTRODUCTION

April was the fourth wettest in a 189-year series with total rainfall equating to 160 per cent of the thirty-year (1991 to 2020) average. It was correspondingly dull with 84 per cent of average sunshine. The mean temperature of 6.6˚C was typical for the month.

## DISEASE ALERTS

The following conditions were reported by SRUC VS disease surveillance centres in July 2023. Given similar climatic and production conditions, they could also be important this year.

- **Ostertagiasis**
  The degree of pasture larval challenge in July can depend on a number of factors including survival of overwintered larvae, grazing history of the field, date of turn out, stocking density, sward length, climate, susceptibility of the cattle, anthelmintic treatment history and product efficacy. High faecal worm egg counts are diagnostic but when results are not clear cut, (particularly when investigating outbreaks of diarrhoea in older cattle), measuring pepsinogen levels can be useful. Assessing treatment efficacy should be considered in all cases.

- **Spironucleosis in pheasant poults**
  Diagnoses of spironucleosis peak in July with transfer of birds to release pens acting as a risk factor for outbreaks of disease. Clinical signs include reduced feed intakes, weight loss and frothy yellow diarrhoea. Coccidiosis is the main differential diagnosis. Concurrent cool wet weather can act as an additional stressor and increase mortality rates as incomplete feathering in young birds can make them susceptible to chilling and hypothermia. In order to confirm the diagnosis, intestinal mucosal smears from euthanased or very freshly dead birds should be examined for evidence of motile protozoa.

## CATTLE

### Nutritional and metabolic disorders

Two suckled calves were reported to have recurrent seizure episodes in the weeks preceding their death. They were housed with their dams and had access to homemade baled silage but were not creep fed. The carcase of a four-month-old Limousin cross heifer was submitted for investigation of the problem. A blood sample collected 10 days earlier had revealed significant hypomagnesaemia (0.21 mmol/l; reference range 0.8 – 2 mmol/l) and hypocalcaemia (1.51 mmol/l; reference range 2 – 3 mmol/l) with the former considered to be the cause of the seizures. The vitamin E result was also below the reference range (0.5 mg/l; reference range 1.3 – 7.8 mg/l). Postmortem examination was generally unremarkable, but histopathology showed irregular thickening of the growth plates with marked expansion of the hypertrophic zone consistent with a diagnosis of rickets. Necrotic myocytes were also detected and explained by the seizure activity. Phosphorus levels in the pre-mortem blood sample were within the reference range and a primary dietary deficiency of vitamin D was therefore suspected to be the cause of the rickets. Liver analysis returned a selenium result below the reference range (0.6 mg/kg dry matter (DM); reference range 0.9 – 1.75 mg/kg DM). The calves had been supplied with minerals since the blood sample results had been received and no other calves in the group had exhibited seizures. The two calves that died were the heaviest in the shed and it was suggested that higher growth rates in these individuals had predisposed them to clinical disease. Calf management was the same as in previous years when there had been no similar issues. The risk of hypomagnaesemic tetany should be considered in rapidly growing suckled calves without access to concentrate feed. The level of vitamin D in silage is extremely variable and cannot be relied upon as a consistent source of vitamin D in housed animals.

### Alimentary tract disorders

Congenital intestinal atresia was confirmed in two pedigree Limousin calves sired by the same bull. Calf one was born without assistance but developed a swollen abdomen and died overnight. Calf two had an assisted birth due to a swollen abdomen and despite getting to its feet and trying to suck it also deteriorated. The farmer noted that it had not passed any faeces. In both cases there was evidence of peritonitis and accumulation of fluid within the stomachs and proximal two thirds of the small intestines. The jejunum was not patent at this point and the distal small intestine and large intestine were empty (Fig 1). The bull had been used for five seasons without any previous issues and had not been bred back to its daughters.

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**Figure 1 – Congenital intestinal atresia affecting the jejunum of a neonatal Limousin calf. Distended proximal jejunum on the left and empty distal intestines on the right.**

**Respiratory tract diseases**
Two neonatal Limousin cross calves were submitted from a herd where five of the first 12 cows to calve had been assisted with the subsequent death of all five calves. Calf one survived for 24 hours, and postmortem examination confirmed evidence of dystocia with secondary hypogammaglobulinaemia and colisepticaemia. The second calf had been delivered by caesarean section and was unable to maintain sternal recumbency. No attempt had been made to calve it and it had not yet entered the pelvis prior to the elective caesarean. It died approximately 12 hours later and despite its young age showed extensive peritonitis and pleurisy with one area of suspected lung consolidation. *Mannheimia haemolytica* was isolated from the liver and lung. Histopathology identified biphasic lung pathology suggesting that the calf had already been compromised at the time of birth helping to explain the extent of the pathology in such a young calf. Examination of placentas from any similarly affected calves was advised.

## SMALL RUMINANTS

**Nutritional and metabolic disorders**
A three-week-old Suffolk cross tup lamb was found dead and submitted for postmortem examination. The cardiac and peri-renal fat had been metabolised, the rumen and abomasum contained a large quantity of ingested grass and there was no evidence of milk within the digestive tract. The intestinal contents were also indicative of a grass diet and the faeces were pelleted. The weather the previous night had been very wet, and it was suggested that this lamb had become separated from the ewe or had been rejected/mismothered. It was also advised to check the dam for mastitis. Similar findings were recorded in lambs from multiple flocks during April none of which were particularly thin suggesting that they had initially been receiving sufficient milk.

**Reproductive tract conditions**
A group of in lamb ewe hoggs were purchased from a market in March and run through a sheep shower before being turned onto the hill. Four days later one was found dead and a second seizured prior to death. Large numbers of ticks were noted on the carcases. Haematology, carried out on a pre-mortem blood sample, confirmed lymphopaenia. Three other ewes had aborted, and samples were submitted from a set of twins. Foetal spleens and blood samples from both ewes tested positive for *Anaplasma phagocytophilum* by PCR. No other infectious cause of abortion was found, and tick-borne fever (TBF) was recorded as the cause of the losses. TBF was a known risk on the hill and sheep were usually dipped, however staff shortage had made this impractical. The short timescale suggested that pyrexia was the cause of the abortions. An explanation for the neurological signs was not determined.

Concurrent infection with border disease and maedi visna (MV) virus caused significant losses in a commercial sheep flock as a result of abortions and neonatal lamb deaths. Three five-day-old lambs were examined with two testing positive for border disease virus and low ZST results confirmed hypogammaglobulinaemia in all cases. The carcases of two thin ewes were also submitted. Ewe one had a purulent peritonitis centred around the uterus and tested positive for border disease virus on PCR. The second ewe had pneumonia from which *Pasteurella multocida* was cultured and was strongly seropositive for maedi visna. Sixteen ewes were blood sampled and 11 proved seropositive for MV. Further testing of twelve homebred ewe hoggs found that three were seropositive for MV and nine for border disease.

**Renal diseases**
The carcase of a ten-month-old Texel cross wether lamb was submitted to investigate losses in a group of 750 fattening lambs purchased from various sources in October/November. The group had been strip grazing turnips with access to hay on a grass run back. Concentrate feed had been introduced five weeks previously and for the past two weeks the ration had consisted of only this plus hay. At the time of presentation there had been ten deaths, and 25 lambs were ill and lethargic with distended abdomens and a poor response to nursing and treatment with oxytetracyline. Postmortem examination identified gritty

grey material obstructing the urethra at the sigmoid flexure. The proximal urethra was distended and haemorrhagic and the left ureter had ruptured leading to uroabdomen. The findings confirmed urolithiasis as the cause of death and chemical analysis showed a predominance of amorphous magnesium calcium phosphate (AMCP) plus a lower level of calcium oxalate. AMCP is thought to be a precursor of magnesium ammonium phosphate (struvite) and therefore managed in a similar way including shifting the dietary calcium:phosphorus ratio towards 3:1, increasing access to water and forage, plus acidification of the diet with ammonium chloride. In this case it was suspected that the number of ring feeders had not been increased when access to turnips was withdrawn resulting in insufficient access to forage in the face of increased concentrate intakes.

## PIGS

**Reproductive tract conditions**

Three linked holdings reported poor reproductive performance and 16 foetuses were submitted from a sow that had aborted at 103 days of gestation. There were 440 sows on the unit and replacements were homebred. The abortion rate was 4 to 5 per cent, the stillbirth rate 0.8/litter, and 0.3 per cent of piglets were mummified. Vaccination protocols were in place against porcine parvovirus, *Erysipelas*, porcine circovirus 2 and *Escherichia coli*. The sows were housed and fed a home mixed ration of barley, wheat, soya, oil, and a docosahexaenoic acid (DHA) supplement with fish meal added during lactation. PRRS virus had recently been confirmed as a cause of abortion and stillbirths, but was not detected in this case. *Bacillus licheniformis* and an *Actinobacillus* sp were cultured from two pools of foetal stomach contents and histopathology confirmed inflammation of foetal membranes with intralesional Gram-positive bacilli. Similar bacteria were present in all sections of lung indicating that *B licheniformis* was the cause of abortion in this case. It is more commonly recognised as a cause of abortion in cattle.

Mycotoxicosis due to ingestion of zearalenone was suspected to be the cause of abortion in a 700-sow breeding to finishing unit. A total of 14 piglets from a number of litters were submitted and marked vulval reddening and oedema was observed in three of five female foetuses (Fig 2). Routine testing including histopathology failed to detect an infectious cause of abortion. Zearalenone is an oestrogenic mycotoxin produced by *Fusarium* spp fungi that can be recovered from mouldy cereal. It was not identified in blood samples from two aborted sows however, following ingestion it is metabolised in the liver and is only detectable in serum for around 24 to 48 hours. Many of the piglets were autolysed indicating a delay between foetal death and abortion; therefore, zearalenone could not be excluded as the cause.

**Figure 2 – Oedema and reddening of the vulva in a piglet in a case of suspected mycotoxin associated abortion**

## Miscellaneous

A five-year-old alpaca was euthanased following a six-week history of anorexia, abdominal pain and weight loss. It had slowly deteriorated despite treatment with antibiotics, NSAIDs and omeprazole with respiratory signs reported latterly. Postmortem examination found the carcase to be thin with subcutaneous oedema, ascites and a bilateral pleural effusion. There was thickening and yellow discolouration of the left atrioventricular valve with extension of the lesion across the endocardium from the valve to the apex (Fig 3). A smaller area of the right ventricular endocardium was also affected. Histopathology confirmed that the lesion was chronic with thickening and fibrosis of the endocardium plus mineralisation but little active inflammation. Separate foci of chronic myocardial damage were also detected. Congestive heart failure secondary to mural endocarditis was recorded as the cause of death. The findings were similar to a published report of *Mycoplasma* sp endocarditis in alpacas[1], including the lack of organisms observed in Gram-stained tissue sections.

**Figure 3 – Mural endocarditis in an alpaca**

Three deaths occurred in a group of 32 fallow deer over the course of a month. The herd were at grass with ad-lib access to good quality haylage plus additional concentrate feed. In all cases the affected deer were noted to have lost condition and became isolated from the group prior to death. Postmortem examination of an emaciated three-year-old stag identified serous atrophy of the pericardial and bone marrow adipose stores. The rumen appeared well filled but was found to contain a large bezoar weighing 3.5 kg and consisting of intertwined mixed plastic, including black and green bale wrap, bale netting and a rope. A faecal egg count of 1,850 strongyle eggs per gram suggested a significant parasite burden which had likely contributed to the poor body condition. The owner was advised to remove all plastic from bales and to investigate any further deaths in case this animal was not representative of the other losses.

**References:**

**1** Tomczyk K, Copeland S, Postey R, Ngeleka M. *Mycoplasma hominis* spp associated endocarditis with myocardial necrosisi in an alpaca (Vicugna pacos) in Manitoba in 2011. *Can Vet J* 2015: 56(2):141-143