GB cattle quarterly report
Disease surveillance and emerging threats

Volume 24: Q3 – July-September 2019

Highlights

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Introduction and overview

This quarterly report reviews disease trends and disease threats for the third quarter of 2019, July-September. It contains analyses carried out on disease data gathered from APHA, SRUC Veterinary Services division of Scotland’s Rural College (SRUC) and partner post mortem providers and intelligence gathered through the Cattle Expert Group networks. In addition, links to other sources of information including reports from other parts of the APHA and Defra agencies are included. A full explanation of how data is analysed is provided in the annexe available on GOV.UK https://www.gov.uk/government/publications/information-on-data-analysis

Issues and trends

Weather

Fig 1: July 2019 mean temperature and mean temperature (right) expressed as degree difference from the 1981-2010 average, respectively (Met Office)

During July, the UK mean temperature was 1.2°C above the 1981-2010 average (fig 1). There were severe thunderstorms with very heavy rainfall that led to localised flooding.
This pattern continued into August. In some areas such as the Derbyshire Peak District, Yorkshire Dales and parts of Scotland, heavy rain fell onto already saturated ground leading to further flooding and landslips, which have caused problems of access for some farmers, and there was significant disruption for local communities near the Toddbrook Reservoir. Fig 2 shows the rainfall breakdown by month and region compared with the 1981-2010 average.

![Rainfall (1981-2010) anomalies for 2019](image)

**Fig 2: Monthly 2019 regional rainfall expressed as % difference from the 1981-2010 average (Met Office)**

**Dairy**

UK milk production to the end of September 2019 was 144 million litres higher than the equivalent time period last year and overall the average UK milk price for August 2019 is 0.87p/L lower than at the same time in 2018. Although overall output is high there is evidence that UK milk output as a whole was starting to slow as the autumn period began. Overall the later grazing season has proved challenging for some farmers due to wet weather with cows housed early. This will be offset by good forage supplies compared to 2018 which leaves dairy farmers with some reserve capacity as they go into the winter period.

Colin Mason, SRUC
Beef

The price decline that started in the middle of quarter two continued into quarter three, with a reducing price across all categories of stock, and in all areas of the country. Recent historic trends are for prices to drop in the first half of the year, and rise toward Christmas, so the drop is not typical. The decline continued to a low of around 325 pence per Kg (all prime cattle). To put this in context, five year average is closer to 350 ppKg, and an AHDB ‘cost of production’ report for 2018/19 estimates that the top 25% of producers are likely to have production costs of around 360 ppKg, while the middle 50% of producers have costs of around 440 ppKg. Unsurprisingly, store cattle prices also dropped over the period, by roughly £100 per head over 2019. The prices remained at around the 325 ppKg mark for the duration of the quarter. The reasons for the price decline are likely to be multifactorial: much beef that went into cold storage (partly due to EU exit contingencies) is coming to market; domestic demand has reduced by about 1.5% and is focussed more on lower value product; production internationally is higher than previously, as has been domestic production (by about 1% for prime cattle). This is partly mitigated by increased exports, but at a lower price.

Tim Geraghty, SRUC

New and re-emerging diseases and threats

Please refer to the annexe on GOV.UK for more information on the data and analysis.

Unusual diagnoses

Infectious pustular vullovaginitis

A veterinary practitioner investigated a problem of vaginitis in cows in a north Wales dairy herd. PCR testing of vaginal swabs proved positive for bovine herpesvirus-1 (BHV-1) in all samples confirming infectious pustular vullovaginitis. This, and its equivalent in the male infectious pustular balanoposthitis, is an unusual form of BHV-1 infection which is more commonly associated with infectious bovine rhinotracheitis (IBR). Genital infections caused by BHV-1 were more commonly seen in the past; infection is spread by natural service and the widespread use of artificial insemination in dairy herds accounts for its rarity currently.

Pyelonephritis and chronic cystitis

A crossbred 10-year-old suckler cow was submitted from a group of 25 cows with their calves, which were grazed away from the home farm, after it was unexpectedly found dead. Postmortem examination revealed massively enlarged kidneys which had multiple
cystic structures filled with liquid pus (fig 1). Similar content was present in the ureters which were also markedly enlarged. There was also haemorrhagic/purulent urine in the bladder which had several large fleshy cauliflower-like masses attached to the mucosa within the lumen (fig 2). The pathology affecting the kidneys and ureters was consistent with chronic pyelonephritis.

Fig 1: Enlarged kidney of cow with little recognisable normal parenchyma largely replaced by multiple cystic structures which were filled with liquid pus

Fig 2: Incised bladder showing haemorrhagic/purulent urine within which are several large cauliflower-like masses which are attached to the bladder mucosa
Initially it was thought that the masses in the bladder were neoplasms, suggestive of ‘enzootic haematuria’ which occurs in cattle which are chronically exposed to bracken. However, histopathology indicated metaplastic rather than neoplastic cellular morphology in the bladder masses. This finding is similar to pathology observed in humans with chronic cystitis which is known as *cystitis cystica glandularis* where the mucosa can develop nodular or polypoid growth, mimicking a malignant neoplasm. It was concluded that this was an unusual presentation of a severe chronic pyelonephritis and cystitis.

**Leptomeningitis caused by *Mycoplasma bovis* infection**

A four-month-old Fleckvieh cross calf was submitted to APHA Starcross VIC from a dairy farm to investigate neurological disease. The animal was suspected to have pneumonia when it was approximately three weeks old. After treatment with antibiotics and anti-inflammatories the calf appeared to have recovered, but shortly afterwards it developed a slight head tilt. Several more antibiotic treatments were administered, but the calf gradually deteriorated. Prior to submission it had developed severe head tilt and nystagmus, and it was unable to rise. Two other calves in the group were similarly affected. Yearlings on the farm were also reported to have mild head tilts which had initially developed when they were young calves.

Postmortem examination identified cloudy cerebrospinal fluid, and on the ventral surface of the brain overlying the pituitary, the left medulla and caudal brainstem there were large greenish-cream purulent clots (fig 3).

![Fig 3: Ventral aspect of calf brain showing purulent material](image)

Bacterial cultures of the brain were unrewarding, considered initially to reflect the chronicity of the condition and multiple antibiotic treatments. Histopathological examination identified a focally extensive, severe, fibrinosuppurative and granulomatous leptomeningitis suggestive of *Mycoplasma* spp infection and subsequent PCR/DGGE testing of cerebrospinal fluid confirmed *Mycoplasma bovis* infection. Infection by *M. bovis*...
of the meninges and/or brain, focussed around the medulla/pons, has previously been identified by APHA. It is a rare manifestation of *M. bovis* disease which is suspected to occur due to ascending infection via the Eustachian tubes, possibly associated with a previous pneumonic episode; in this case, although clinical signs suspicious of pneumonia had previously been reported there were no pathological pneumonic lesions found postmortem.

**Babesiosis in a suckler cow**

Babesiosis is sporadically diagnosed in cattle in certain areas of England, Wales and Scotland. A Charolais-cross suckler cow on a North Yorkshire holding was observed by the farmer to pass very dark red to black colour urine. The cow was in a group of cows with calves, on pasture that bordered a wood, and bracken poisoning was initially suspected. The cow was otherwise bright and alert, not pyrexic, eating and feeding her calf. A blood sample was collected and tested using the practice haematology analyser which indicated a PCV of 14% (reference interval 25 - 45%: SRUC) and red cell inclusions which were suspected to be *Babesia divergens*. A blood smear was prepared and submitted to Axiom laboratories who reported that the inclusions were consistent with *B. divergens* indicating a diagnosis of babesiosis. The cow was reported to have recovered quickly after treatment with imidocarb dipropionate. It was the only affected individual in the group, although a cow was reported to have presented similarly last year and died, and at the time was thought to have had bracken poisoning. Babesiosis has not previously been recorded in VIDA in this area of the country (since VIDA began in 1992) and this may indicate a change in the distribution of this disease and its tick vector.

Fig 4: Map showing VIDA diagnoses of Babesia 2002 – 2019
Changes in disease patterns and risk factors

Please refer to the annexe on GOV.UK for more information on the data and analysis.

Enteric system

Johnes disease

A downward trend for the diagnostic rate for Johne’s disease is seen in Q3 2019 compared to Q3 2018 and Q3 2017 (fig 6). There was a change in the diagnostic ELISA test used by APHA during Q4 2017, which may have contributed to the decrease in diagnostic rate seen between 2017 and 2018 due to a difference in test performance parameters. There has been no further change in diagnostic test used. The decrease in diagnostic rate may be affected by changes in sampling and testing behaviour or may represent a change in disease rates. There is ongoing and increasing activity aimed at the control and reduction of Johne’s disease across the country, especially within the dairy sector, and it is hoped that this activity may be starting to show results in terms of disease prevalence. The Cattle Expert Group will continue to monitor the data.
Salmonellosis

A case of acute milk drop in a 130 dairy cow herd was investigated in mid-June by APHA at the request of the PVS. The herd had been performing well and a total mixed ration had just been introduced to provide buffer feeding as grass quality had fallen.

Over the weekend of the 15th and 16th of June over 80% of the herd suffered a profound milk drop (fig 7). Clinical examination revealed variable levels of pyrexia, dullness and inappetance. Blood and faecal samples were collected and it was proposed that the incident most likely represented an acute, point exposure given the acute nature and epidemiology. Whilst feed was considered the route of exposure a potential aetiology was not immediately established. Bacteriology recovered RDNC (‘Reported but does not conform’ to recognised serotypes) *Salmonella* Typhimurium 3225 from each cow. This variant had been linked to a significant outbreak of human and animal health disease since 2017 with sheep the primary focus of investigation. A multi-agency investigation, led by PHE had produced substantial guidance to producers and related industries, particularly slaughter houses.

A *Salmonella* investigation (Z04) visit established widespread contamination of the maize silage face with bird faeces whilst rodent control and storage of straights was considered inadequate. The strain recovered was associated with wild birds and the farm was not far from the site of the original outbreak in the Midlands involving the same strain in sheep in 2017. No *Salmonella* spp were recovered from individual animals subsequently, including a sick calf; but the organism was recovered from the majority of environmental samples. The herd was vaccinated against *Salmonella* and throughout the incident only one cow died, two aborted and three suffered from tail tip necrosis. The original 20% of the herd which were unaffected developed clinical signs approximately one week later, suspected
to be due to the heavy environmental contamination. The herd subsequently recovered and yields recovered. Despite the widespread distribution of the pathogen there were no human cases. The dairy were aware of the situation throughout.

Salmonella in Livestock Production in GB 2018 has been published on Gov.uk

Parasitic gastroenteritis (PGE)

An increase in diagnostic rate for parasitic gastroenteritis was noted for Q3 of 2019 compared to the same quarter of 2018 (fig 8). This increase is statistically significant for SRUC and combined GB data. An increase has been seen for both adults and youngstock. PGE diagnostic rate was lower than average in 2018, considered to be due to the hot, dry summer weather conditions experienced. Conditions have been much wetter in 2019 and this is likely to have led to increased numbers of infective larvae on the pasture. In addition, high grass yields during 2019 may have encouraged turn out of higher numbers of stock, potentially for longer periods. The conserved forage shortage experienced in several areas during the 2018-19 housed period may have prompted earlier turnouts and longer grazing seasons. These findings emphasise the need for cattle keepers to have appropriate, evidence-based parasite control plans in place.

Fig 8: Incidents of PGE in all ages of cattle across GB as a % of diagnosable submissions, Q3 2019 (VIDA)

A breakdown of the most frequently diagnosed causes of enteric disease in youngstock in Q3 2019 is shown in fig 9 below, with Q3 2018 for comparison (DNL is ‘diagnosis not listed’). These indicate the increase in PGE incidents in youngstock in 2019 reported to the VIDA network, which resulted in an alert from the Early Detection System model.
Severe Summer Scour Syndrome (SSSS)

Two cases of suspected Summer Scour Syndrome from southwest England were investigated in July. Both were from a group of 12 three-month-old dairy heifers which had all developed severe scour approximately two weeks after turnout onto pasture. At the first sign of scour the calves were moved back inside, but the scour and wasting persisted...
along with bruxism and weakness. At the time of submission five calves had died. Post-mortem findings included superficial necrosis and erosion of the tongue, necrosis of the proximal oesophagus, a corrugated appearance to the abomasal mucosa and mild thickening of the ileum. Intestinal contents were liquid throughout. An extensive range of testing was undertaken following the protocol agreed by surveillance partners, but no infectious agents were identified.

A summary of cases of SSSS submitted to the scanning surveillance network will be provided in the Q4/annual Cattle Emerging Threats Report.

**Abomasitis with abomasal bloat**

Abomasitis and associated abomasal bloat was diagnosed in a six-day-old Friesian calf from Cumbria which was found dead. The farm had been experiencing some health issues in the young calves including some navel infections and respiratory disease. Neonatal calves were given 3 litres colostrum via stomach tube and then fed on their dams’ milk (2.5 - 3 litres twice daily) via buckets for three days, followed by a powdered calf milk product. On postmortem examination the submitted calf had a distended abdomen, and was dehydrated and diarrhoeic. The abomasum was markedly enlarged with a red / purple serosa and a diffusely abnormal mucosa including emphysematous abomasal folds, reddened and blackened thickened regions, plus haemorrhagic and oedematous areas. The abomasal contents comprised gas and a profuse volume of grey / brown watery liquid which had a sour odour. BVD virus and calf scour pathogens were not detected. Histopathological examination confirmed an acute neutrophilic abomasitis with emphysema and *Sarcina*-like bacteria.

Abomasal bloat and abomasitis have increasingly been diagnosed in young dairy and fattening calves in the last few years, and were reported in the Q3 Cattle Emerging Threats Report in 2018. Changes in feeding practice and reduced hygiene can result in abomasal bloat - thus it was advised to review the management / feeding of young calves (including the hygiene of the feeding equipment and calf environment).

There is much debate about the cause of abomasal disorders. Risk factors which have been considered include the ingestion of large amounts of fermentable carbohydrate and the use of antibiotics in the immediate post-partum period, in addition to the presence of micro-organisms within the abomasum which produce fermentative enzymes. Inadequate colostral antibody absorption, poor hygiene, the feeding of large volumes of milk or at inappropriate temperatures and improper mixing of milk replacer could also affect abomasal function. *Clostridium* species and *Sarcina*-like-bacteria have been identified in some of the affected animals; however, it is unclear whether they are primary of secondary invaders.
Respiratory system

Husk

As expected, cases of parasitic pneumonia (husk) started being reported in September but with no significant increase in submissions diagnosed. However, Scotland has seen a rise in the percentage of diagnosable submissions in Q3 over recent years (fig 10). Most diagnoses are recorded in the Dumfries and Galloway area, which is consistent with the high density of cattle holdings in this region. The Cattle Expert Group will monitor this trend.

![Incidents of Husk in Cattle as % of diagnosable submissions](image)

Fig 10: Incidents of husk in GB as % of diagnosable submissions, Q3 2019 (VIDA)

The most recent quarterly newsletter for on farm chemical food safety has just been published on Gov.UK.

Horizon scanning

Bluetongue (BTV) update

Fig 11: Bluetongue disease incidents, Europe, May-November 2019

There were reports of BTV-8 cases in Switzerland and Germany, and also of BTV-4 from Italy including the islands of Sicily and Sardinia. The risk of incursion of infected midges to the UK has remained at ‘low’ and as the vector low season approaches this will be reviewed. There remains an ongoing risk of importation of BTV from live animals, and importers are reminded to take appropriate precautions when considering bringing animals in from BTV zones on mainland Europe, including ensuring that vaccination against the relevant serotypes has been carried out.
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