GB cattle quarterly report
Disease surveillance and emerging threats
Volume 22: Q3 – July-September 2018

Highlights

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Introduction and overview

This quarterly report reviews disease trends and disease threats for the third quarter of 2018, 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 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: Summer mean temperature (left) and rainfall (right) 2018 as anomaly compared with 1981-2010 (Met Office)

The mean temperature during summer 2018 was 15.8°C which is 1.4°C above the 1981-2010 average. Rainfall was 176mm which is 73% of the 1981-2010 average (fig 1). These factors, and the time in the year when they occurred (fig 2) have significantly impacted on the production of forage for livestock (see below).
Dairy

The drought conditions throughout the summer have not had a significant impact on UK milk production to date. However, there are still concerns about the increased cost and availability of winter feed, forage and straw in some areas of the UK and this coupled with either a plateau or drop in farm gate milk prices depending on contract will put pressure on overall dairy farm profits this winter.

Many farmers have capitalised on good autumn grass growing conditions to make extra grass silage; however, the quality of this material will be variable. The maize harvest was completed early and in good conditions; again, quality and quantity of drought-affected crops will be variable.

Although there are pressures on dairy farm profitability at the moment, progressive dairy farmers appreciate the value of routine veterinary interventions on their farms and the costs of not including them in their business model. Therefore, the opportunities for veterinary involvement in dairy herds and the spin offs for disease surveillance remain good.

Beef

Prime beef prices went into quarter three around 5ppKg DW ahead of the same period of 2017, and 18ppKg DW (around 5%) ahead of the 5 year average. However, prices shifted dramatically during July and early August. The hot, dry weather had driven demand for barbecue products in particular, which had supported excellent commodity beef (cull cow/bull beef) prices in early summer. The weather also brought very poor grass growth, and concerns over forage shortages led to higher numbers being brought forward and reports
of long waiting times at some abattoirs. The result was a sharp decline in price, not typical for the time of year, in both prime cattle and in particular in commodity beef. Both bottomed out in early to mid-August, where prime cattle settled at the 5 year average (around 354ppKg DW) and commodity beef well below.

Prices improved significantly again however through until the end of September, as grass growth improved and fewer cattle were brought forward for slaughter. For the last week of September, prime cattle was again trading around 3-4% ahead of five-year-averages, and matched with the same period from the previous year.

Store cattle prices followed a similar trend, with concerns of over forage shortages leading to very low prices in late July (the lowest since October 2016) but prices showed some recovery by the end of the quarter.

The NFU reopened its Fodder Bank in summer 2018 in response to the late drilling of spring crops in the east which could lead to lower straw yields and the current hot dry weather which is limiting grass growth. This is a free service that helps NFU members find cattle feed and animal bedding for their farms or lets them sell any surplus.

Forage Aid is a charity that provides forage and bedding from donations and pledges from within the farming community, then distributes it to those whose own supply of feed has been destroyed or made inaccessible due to the weather [http://www.forageaid.org.uk/](http://www.forageaid.org.uk/)

APHA produced an information note on associated livestock health, welfare and production problems that may arise as a consequence of the hot weather.


**New and re-emerging diseases and threats**

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

**Analysis of Diagnosis Not Reached (DNR)**

No significant changes in Diagnoses Not Reached were detected during Q3 of 2018.

**Unusual diagnoses**

**Epitheliotropic lymphoma in a beef cow**

A six-year-old homebred Limousin cross cow was reported to have developed widespread skin lesions over several months. The lesions were particularly concentrated over the
head and neck and also extended onto the thorax, flanks and udder (fig 1). The cow was otherwise well and was the only affected animal in the herd showing these lesions. It was notified by the private veterinary surgeon to APHA field services as suspect Enzootic Bovine Leukosis (EBL) which was ruled out following a veterinary investigation. Epitheliotropic lymphoma is usually sporadic and associated with neoplastic transformation of T lymphocytes. The clinical progression typically follows a waxing and waning of the skin lumps before progressing in severity. Tumours in cattle other than haemangiomias, papillomas or warts should be reported to APHA field services as suspect EBL.

Hydrocephaly in a Holstein fetus
An aborted seven month gestational age calf which was submitted to APHA Carmarthen Veterinary Investigation Centre (VIC) had severe hydrocephalus. This pathology was considered likely to have caused its premature death and expulsion. Five other cows in the herd of 120 Holstein dairy cows had aborted, all at a similar stage of pregnancy. Bluetongue virus serotype 8 infection can cause brain pathology in developing fetuses; the pathology is described as hydranencephaly which can be difficult to differentiate on gross examination from hydrocephalus. Consequently the case was reported to APHA field services as suspect bluetongue, which was negated after testing for the virus on the fetus. Subsequent PCR tests for BVD and Schmallenberg virus were also undertaken, with negative results. It was considered that this was most likely to be a sporadic case; however, hydrocephalus may be hereditary in some cattle breeds including Holsteins and in some outbreaks the cause is not established.
Multiple congenital cardiac abnormalities

Congenital cardiac abnormalities were identified postmortem in two Holstein calves in a south Wales dairy herd of 650 animals. The calves had been weak from birth and were unwilling to suck, one of the calves having been fed by stomach tube since its birth. They were slow to grow and exhibited increased respiratory rates. Clinical examination of one of the calves which was presented alive revealed a loud bilateral heart murmur, a heart rate of 140 beats per minute, a palpable ‘thril’, increased respiratory rate and pale mucous membranes.

Postmortem examination of the two animals revealed similar pathology with a ventricular septal defect, persistent truncus arteriosus (a common arterial trunk instead of separate aorta and pulmonary artery), patent foramen ovale and right ventricular hypertrophy. In addition there was generalised pulmonary oedema, the livers were enlarged and there was oedema within the connective tissues of abdomen, findings consistent with congestive heart failure. Seven more affected calves were also identified in the herd, each having consistent clinical signs, one having been examined postmortem by the practitioner who reported similar pathology to those examined at APHA Carmarthen VIC.
Each of the calves has the same sire by artificial insemination, an American Holstein bull. There is another report of other progeny of this bull having had congenital cardiac abnormalities. The pathological findings in the calves examined postmortem, and history of congenital cardiac abnormalities in other related progeny from the same bull, suggest a heritable condition in Holstein cattle. The Cattle Expert Group is interested to hear from practitioners of similar multiple cases on other farms.

**Traumatic reticuloperitonitis**

Cases of traumatic reticuloperitonitis were identified by several APHA VICs. Reports varied but in some herds several cows had died with similar signs before the diagnosis was confirmed by postmortem examination. A 3-year-old dairy cow was submitted to APHA Shrewsbury VIC after having lost weight and exhibited milk drop before it died. Three or four others in the herd of 90 milking cows had been similarly affected. Chronic thickening and inflammation of the serosal aspect of the reticulum were present with adhered oedematous fibrous nodules. There were also adhesions between the liver and the diaphragm and an inflammatory peritoneal exudate. A 6 cm black ‘tyre wire’ was penetrating the full thickness of the reticular wall confirming traumatic reticuloperitonitis.

Traumatic reticuloperitonitis has been identified in many herds in recent years, mostly in dairy cows, and nearly all have been caused by the cows having ingested broken pieces of tyre wire (hence the name ‘tyre wire disease’). The wires come from disintegrating tyres which have been used on the farms to weigh down the cover over silage clamps. The use of magnets (given orally) in cows and in the mixer wagon is advocated when cases are identified and has proved to be an effective preventive. Recommendations to prevent further cases include completing an audit of those tyres used on the farm, discarding those which are disintegrating, and ideally moving from the use of tyres to alternative means of weighting the silage clamp cover, for instance using sand bags.

![Figure 3: Cases by month of traumatic reticuloperitonitis for the years 2004-18 (2018 to August) (VIDA)](image-url)
Cerebrocortical necrosis

This neurological condition is most commonly diagnosed during the summer months (fig 4).

![Cattle CCN 2002 - 2018 by month](image)

There were few recorded cases in the third quarter in the previous three years. However, in 2018 there was a significantly increased number reported in APHA VICs and by partner postmortem providers in England and Wales. In one outbreak described in the south west, eight in-calf, 18-month-old Holstein heifers were euthanased after showing non-responsive nervous signs including ataxia, blindness, nystagmus, recumbency and seizures. Attempted treatments included calcium, magnesium, vitamin B1, antibiotics and steroids. The affected animals were at permanent pasture and were receiving no supplementary feeding. It was noted that the amount of space at the small water trough was limited.

Lead poisoning was excluded by biochemical testing and profound hypomagnesemia was identified in three of the affected heifers (concentrations of 0.1, 0.2 and 0.4 mmol/l – concentrations > 0.8 mmol/l are considered normal), but no response was seen to treatment with magnesium. At postmortem examination of one of the heifers, the surface of the brain was diffusely yellow and bilateral auto-fluorescence was evident. Histological changes were consistent with a diagnosis of cerebrocortical necrosis (CCN). It was unclear why those treated had not responded to Vitamin B1 administration; the severity of the malacic damage to the brain may have been too advanced, assuming that the animals had been correctly dosed.

CCN is typically associated with thiaminase production by bacteria in the rumen. It is considered that there is disruption of the ruminal flora, usually associated with dietary changes (particularly grain feeding or a change from poor to lush pasture). Reduced absorption of vitamin B1 from the intestine, for instance due to damage caused by parasitic gastroenteritis, may also be a factor. This late summer's increased prevalence of the disease, which has also been seen in sheep, probably reflects the unusual grazing conditions, particularly the dry hot conditions earlier in the year. In the outbreak reported
here there had been no concentrate fed or recent dietary changes. Water deprivation and possible hedge browsing may have been contributory factors, but the exact pathogenesis is uncertain.

### 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

**Abomasal disease**

Abomasal disease was considered noteworthy as anecdotally the prevalence of abomasitis and abomasal bloat in milk fed calves may be increasing.

This trend has been identified in young dairy and fattening calves in the last few years. 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 or secondary invaders. When such cases arise a review of the feeding and management on farms is recommended: one useful discussion of calf feeding practices which should be considered was published by Blowey (1994). A discussion of prevention and treatment of abomasal bloat in calves was recently made in Progressive Dairyman (https://www.progressivedairy.com/). The Cattle Expert Group will continue to monitor these conditions.

Figure 5 below shows the enteric disease diagnoses made during Q3 in young stock, by animal type:
Respiratory system

*Pasteurella multocida* pneumonia

There was an increase in the number of diagnosed pneumonias caused by *Pasteurella multocida* in England and Wales, although overall the number of submissions declined. The level is at its highest recorded for quarter 3 (fig 6).

The same pattern applies to *Mannheimia haemolytica* diagnoses during quarter 3 of 2018 when compared to previous years, although this trend is not statistically significant. The Cattle Expert Group will continue to monitor this issue and investigate any potential risk factors.
Reproductive and mammary system

E coli mastitis

Fig 7: GB Incidents of mastitis due to E coli as % of diagnosable submissions, in Q3

There was a significant increase in incidents of mastitis due to E coli, expressed as percentage of diagnosed submissions in both Q3 and annually, in GB (fig 7). An increase in gram negative mastitis cases was also recognised by at least one other GB veterinary laboratory undertaking mastitis testing. It is considered that this increase is likely due to the greater environmental challenge precipitated by the summer’s extreme heat to both housed and grazing cattle. Given the predicted shortage of bedding during winter 2018/19 (see http://apha.defra.gov.uk/documents/surveillance/diseases/winter18-forage-shortage.pdf), the Cattle Expert Group warns that there could be a greater risk of environmental mastitis during this period particularly if the winter housing period is prolonged.

Centre of Expertise for Extensively Managed Livestock

APHA Carmarthen Veterinary Investigation Centre (VIC) is being developed as a Centre of Expertise for surveillance in extensively managed livestock. Whilst based in Wales, the Centre is a Great Britain-wide resource.

Extensively-managed animals are those that are kept in such a way that they are not easily regularly and closely inspected for signs of ill health, or significantly altered production. The Centre will focus on extensively managed cattle and sheep and has been set up to:

- Develop efficient ways of sourcing relevant animal health data and information on extensively managed livestock for scanning surveillance.
- Investigate and develop how data and information can be translated into actionable intelligence and disseminated to extensively managed livestock keepers and vets
- Develop a virtual hub of expertise in scanning surveillance of extensively managed livestock to complement the APHA Species Expert Groups

The development of this Centre will progress over a number of years and is one of a number of projects underway to develop scanning surveillance further. During July 2016 an initial conference and workshop was held with a cross section of stakeholders from Government and the livestock industry, veterinary practice, retail and academic sectors. A further conference and workshop was held during November 2017. Further information is available on the APHA Vet Gateway: http://apha.defra.gov.uk/vet-gateway/surveillance/experts/exten-man-livestock.htm

Horizon scanning

Bluetongue (BTV) update

BTV is a complex virus with 27 different strains, several of which are currently present in Europe: for example, BTV8 is present in France and Switzerland, BTV1 is present in France and BTV4 is present in Italy, Spain, Portugal and Cyprus (fig 8).

In October, Italy reported nine outbreaks of BTV3 in Sardinia in sheep and goats. This is the first report of this serotype in Sardinia. BTV3 was first reported in the north of Tunisia in 2016, and then was identified in the north of Sicily in 2017. There is currently no inactivated vaccine available for this serotype. This reinforces the need to be aware of the different strains of BTV, what vaccines available and the specific requirements of each country if importation of animals is being considered.

As the season progresses we should be aware that there may be a risk of wind-mediated midge transmission in at risk areas along the south coast of England but it may be difficult to estimate without knowing how heavy the infection pressure is in the North of France.
Following on from the detection in September of BTV through APHA post-import testing, two animals tested positive for BTV8 by PCR in a consignment of 60 steers imported from France. In October BTV was detected in a consignment of four sheep imported from France. One sheep was PCR positive for BTV-8 and all four were antibody negative to BTV suggesting that the vaccination which is required prior to export had not been effective or not been carried out. All four animals were euthanased.

Surveillance is being undertaken in susceptible animals in the areas surrounding both of the UK destination farms at 4 and 10 weeks post-detection of BTV.

Livestock owners have been reminded that they should source animals responsibly by working with their private veterinarians and livestock dealers to make sure animals are correctly vaccinated and protected prior to travel. This means that animals from France must be correctly vaccinated against BTV-4 and BTV-8 or be naturally immune to both virus serotypes, prior to leaving the Restriction Zone.

References

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