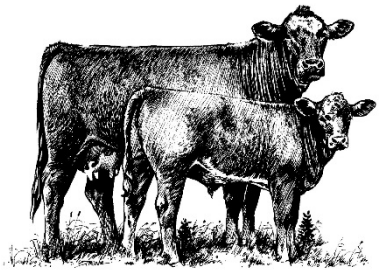
Animal & Plant Health Agency



SRUC

GB cattle quarterly report

Disease surveillance and emerging threats

Volume 31: Quarter 1 (January to March) 2022

Highlights

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Introduction and overview

This quarterly report reviews disease trends and disease threats for the first quarter of 2022 (Quarter 1), January to March. It contains analyses carried out on disease data gathered from APHA, SRUC Veterinary Services division of Scotland's Rural College (SRUC) and partner postmortem 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

APHA's new Endemic Disease Alert System

This is a new component of the communications from our scanning surveillance network, and a new system that the APHA will be using to keep you up to date with significant disease alerts and information, projects, publication of reports & other items.

This is independent of the notifiable disease alert system.

To receive these notifications please contact siu@apha.gov.uk and provide your preferred: -

- email address if you wish to receive email alerts
- mobile telephone number if you wish to receive text alerts

We hope that you will find this new messaging system to be beneficial, and any suggestions or feedback are welcome.

Issues and trends

Dairy update

Dairy overview - https://ahdb.org.uk/production-fall

- Farmgate milk prices are currently high and still rising in a bid to keep up with rises in cost of production. https://ahdb.org.uk/dairy/uk-farmgate-milk-prices March and April saw milk prices increase by 2.7ppl on average and announcements for May see most prices on our league table around the 40ppl mark. https://ahdb.org.uk/dairy/milk-price-changes
- Milk supplies are tight as production is low with daily milk deliveries in the UK down 1.9% year on year in February https://ahdb.org.uk/dairy/uk-daily-milk-deliveries and forecast to decline throughout the 2022/23, ending the season between 0.8% - 5.3% down on 2021/22
- It was a mixed picture on world dairy wholesale markets in April, as disparities between the different regions have emerged. Supplies generally remained on the

tighter side, so variations in demand were the main difference between regions. https://ahdb.org.uk/dairy/world-wholesale-prices

- The UK trade balance for all dairy products was negative in volume terms in 2021, following two years of a small surplus. Including the shipments of unprocessed milk, there was a deficit of 68k tonnes in 2021, which compares to a surplus of 53k tonnes in 2020. The ongoing pandemic continued to disrupt both domestic and international markets in 2021. Additionally, our exit from the EU at the start of 2021 brought new export regulations, bringing further disruption, while import regulations were deferred. https://ahdb.org.uk/news/uk-dairy-trade-balance-back-into-deficit

Beef update

Beef overview - https://ahdb.org.uk/news/uk-january-beef-outlook-review

- Deadweight prices are at record highs and rising with overall average prime cattle hitting 438.4p/kg week ending 30 April and cull cows at 358.2p/kg https://ahdb.org.uk/beef/gb-deadweight-cattle-prices-by-region
- So far in 2022, prime cattle kill has reached 485,400 head, 4% lower than the same period a year ago. Lower slaughter at this point in the year was to be expected, judging by cattle population figures. https://ahdb.org.uk/news/young-bulls-slaughter-trends-and-future-supplies
- The UK exported 10,500 tonnes of fresh and frozen beef in February, up 54% from the same month a year ago and the highest February beef export figure since 2011 https://ahdb.org.uk/news/uk-beef-exports-continue-strongly-in-february
- As with the other proteins, some consumer demand is shifting out of the retail channel and into foodservice, as pubs and restaurants continue to reopen and increase offerings. In the 12 weeks ending 17 April 2022, spend on beef declined 9% year-on-year, while volumes fell by 14%, this year-on-year comparison is against a time where there were more restrictions in place due to covid-19. https://ahdb.org.uk/beef/consumer-insight-gb-household-beef-purchases

Acknowledgments for the dairy and beef updates: Freya Shuttleworth AHDB

New and re-emerging diseases and threats

Schmallenbergvirus update

A sample of fresh brain was received from an aborted calf, which was described by the practitioner as having arthrogryposis affecting its forelimbs, and also, spinal and cranial defects. It was positive for Schmallenbergvirus (SBV) by PCR. In addition, in this quarter, a sample of brain was received for SBV testing from a beef suckler holding based in the southeast of England. From the herd of 24 cows, a single calf had been born dead and deformed. Maternal SBV serology was strongly positive and PCR testing of the calf brain was positive for SBV nucleic acid. These cases confirmed our suspicions that SBV infection was circulating again in 2021, resulting in the birth of affected calves (and lambs)

in spring 2022. Virus positive calves were also identified in 2021, indicating that the virus re-emergence began in 2020.

Free of charge testing for SBV infection is presently offered by APHA. Samples from calves with arthrogryposis, or other musculoskeletal deformities, can be tested free of charge following discussion with an APHA veterinary investigation officer. In addition, blood samples from up to six cows or heifers can be submitted for SBV serology. It is important to remember that the detection of the virus in brain tissue will depend on the stage of gestation at which the foetus became infected, and that many infected calves may be PCR negative despite the dam having suffered SBV infection.

Gross pathology (especially identification of a much smaller spinal cord) and histopathology (spinal cord and brain) can identify characteristic pathology in virus negative animals. In addition to PCR testing on the brain (a sample of fresh brain is required; the brain stem is preferred and can relatively easily be obtained via the foramen magnum), blood from the affected calves or their dams (see above), can also be tested for antibodies to SBV. Please do not hesitate to telephone to discuss suspect cases or the submission of samples.

Diarrhoea outbreaks in adult dairy herds

During Quarter 1 2022 there were reports of diarrhoea in more than 20 housed dairy herds in England, Wales, and Scotland. The pattern of acute onset diarrhoea, with variably severe milk drop, was suggestive of ‘winter dysentery’, however other possible causes, including nutritional factors, were considered.

Winter dysentery is a highly contagious disease, which is caused by bovine coronavirus infection (Hodnik and others 2020). It most commonly occurs early in the housed period (Figure 1), usually affecting adult cattle, but with up to 100% of the herd (including youngstock) sometimes developing signs. Most have watery diarrhoea, but in some herds, as the name suggests, there is a more dramatic presentation with bloody diarrhoea or dysentery. Affected animals are rarely pyrexic although there may be malaise, loss of condition, and reduced appetite. The disease outbreak spreads rapidly, and clinical signs in individuals usually resolve spontaneously in two to three days. A significant reduction in milk yield is commonly reported. Mild respiratory disease, such as coughing, might also occur. Mortality is uncommon.

On the affected farms, up to 50% of the adult herd were affected, with around 4 to 7 litres reduced milk production per cow per day. Most recovered after a few days without treatment, although some cows became very sick and were treated with oral fluids and non-steroidal anti-inflammatories. In two of the herds, group C *Salmonellae* were isolated from affected animals, however the pattern of the disease outbreak spreading through the herd, and the associated clinical signs, were not considered typical of salmonella infection as the primary cause.

Coronavirus is shed in faeces, however, due to the dilution factor in adult cows, and probably also because virus shedding largely precedes clinical signs, antigen ELISAs to

detect the causative virus in faeces are often negative. Antibodies to coronavirus are common in cattle, so single sample serology is unhelpful, whereas paired serology can detect rising antibody titres in blood samples collected three to four weeks apart. Sampling at least five or six animals is recommended.

Other infectious causes of a herd diarrhoea outbreak, which should also be considered, include bovine viral diarrhoea (BVD) and Schmallenberg virus (SBV) infection (although SBV infection would be less likely in the winter as it is spread by insect vectors). Testing acute blood samples by polymerase chain reaction (PCR) can be done for both of these infections, or paired serology can be undertaken. Infection by *Salmonellae* is also possible and bacteriology on faeces samples is recommended.

Feed-related causes should also be considered and investigated, for example sudden changes of constituents, spoilage such as caused by moulds, and too high inclusion rates of concentrates, which risks acidosis. Potential management and nutritional factors should be investigated.

Please contact your local APHA centre to discuss cases. It is important that we are aware of the occurrence of such outbreaks, and we can help advise on farm investigations. Although there are several recognised causes of herd outbreaks of diarrhoea, as previously outlined, we must remain vigilant to the possibility of novel diseases. It was the increased numbers of reports of herds with diarrhoea, accompanied variably by milk drop and pyrexia, that enabled the Dutch veterinary surveillance colleagues to identify SBV infection when it first emerged more than 10 years ago.

Hodnik JJ, Ježek J, Starič J. Coronaviruses in cattle. *Tropical Animal Health and Production* 2020;52:2809-2816 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7367658/

Figure 1: Seasonality of outbreaks of winter dysentery diagnosed in England, Wales, and Scotland 2012-2021 (Veterinary Investigation Diagnosis Analysis [VIDA])

Cattle with multifocal skin lesions

Four cases of multifocal skin lesions (all in the Shrewsbury area) were investigated by Shrewsbury and Starcross Veterinary Investigation Centres. Two of these led to investigations for lumpy skin disease (LSD) as 'report cases' by APHA:

1. The first was an 18-month-old Holstein Friesian heifer, which rapidly developed many 'spongey' masses of varying size, some becoming ulcerated, over its entire body; the animal was not pruritic (Figure 2). Following investigation and laboratory testing to rule out lumpy skin disease (LSD), histopathology on biopsy samples confirmed the masses to be non-epitheliotropic lymphoma. The possibility of enzootic bovine leucosis (EBL) was considered and was discussed with APHA exotic and notifiable disease colleagues, but as the animal was only 18-months-old, and disease is typically recorded in animals older than 3 years, this was discounted and no further testing was undertaken.

Figure 2: Multifocal skin lesions in a heifer with non-epitheliotropic lymphoma

(Acknowledgement to Nathan Loewenstein, Shropshire Farm Vets)

2. The second was a 12-month-old Limousin-cross bullock, which was presented to the practitioner with numerous cutaneous lesions, which had developed over 3 to 4 months. These lesions resembled abscesses and were distributed along the dorsal aspect of the nasal bones, along the dorsum to the tail, and on the flanks. The lesions varied from 0.5 to 3cm and the superficial lymph nodes were enlarged. The animal was not pruritic (Figure 3). The case was discussed with APHA and LSD was not suspected. Biopsy samples were collected, and histopathology identified a chronic multifocal nodular pyogranulomatous dermatitis with folliculitis/furunculosis. No specific aetiology was identified; further testing for BVD by PCR was negative.

Figure 3: purulent skin lesions in a 12-month-old bullock with chronic folliculitis

(Acknowledgement James Hipperson, Belmont Vets).

3. The third case affected five suckler cows in a herd of 300, all of which developed caseous abscesses along the mandible and ventral neck. The animals were not pruritic, although they did show discomfort when handled for examination and sampling (Figure 4). Initially three needle aspirates were submitted for bacteriology, and each was sterile. Follow-up biopsies from several sites were collected, with histopathology confirming severe multifocal chronic pyogranulomatous lesions with Splendore-Hoeppli inclusions; these lesions are diagnostic for actinobacillosis.

Figure 4: pyogranulomatous lesions in a cow with actinobacillosis

(Acknowledgement Carwyn Lee, Hafren Vets)

4. A four-year-old Limousin cow with multiple skin masses was investigated. It was reported to APHA as suspected LSD which was ruled out by laboratory testing.

Follow-up sampling was done for bacteriology and histopathology. No significant organisms were isolated but, on histopathology, the lesions were confirmed to be lymphomas. This resulted in further reporting of possible notifiable disease, and as the cow was four years old, testing was undertaken by APHA which ruled out enzootic bovine leucosis.

LSD is not presently reported within Europe, with the nearest countries where the disease has been reported being Turkey (Asian region), Russia, and Kazakhstan.

Changes in disease patterns and unusual diagnoses

Systemic disease

There was an increase in hyposelenosis (6% of diagnosable submissions) in Scotland for this quarter, compared to the first quarter average for 2017 to 2021 (3%).

Systemic mycosis in a three-month-old Charolais calf

A three-month-old Charolais calf was presented following a week-long period of ill health, suspected clinically to be pneumonia due to ongoing issues within the wider group. The gross pathology included mild pneumonic change (typical of bacterial pneumonia) in the cranioventral lung, from which *Mycoplasma bovis* and *Pasteurella multocida* were detected on PCR, and circular lesions of the ruminal mucosa (Figure 5). A marked fibrinous peritonitis with strangulating gut was thought to be the cause of death. Histopathology revealed that the systemic pathology was due to systemic mycosis, with a striking lack of inflammatory or neutrophilic response. *Mucor* species were isolated from the larynx and rumen, and mixed *Aspergillus* species isolated from the lung on fungal culture. Bovine viral diarrhoea PCR was negative. No bone marrow was sampled at the time of postmortem examination and the cause of the likely immunosuppression in this animal remains unclear. The possibility of Idiopathic Necrotising Enteritis (INE) was discussed, as previous cases have not always had gross intestinal pathology, and were subsequently diagnosed on ileo-caecal junction and bone marrow histopathology.

Figure 5: The congested fibrinous serosal surface of the reticulum (left) also had areas of patchy haemorrhage. There was congestion and haemorrhagic change within the omasum (middle). The rumen had sloughed the epithelial surface, however numerous circular

papillary lesions were seen over the ruminal mucosa (right), from which Mucor sp. were identified on fungal culture.

Digestive system disease

Coccidiosis

Coccidiosis diagnoses (as a percentage of diagnosable submissions) were 4% for this quarter, compared to an average of 2% over the same quarter for 2017 to 2021.

Faecal egg count testing (FEC) provides valuable information on coccidial oocyst levels. In addition, follow-up coccidia oocyst speciation testing helps to inform the significance of this coccidia count, and therefore informs treatment and management. The two pathogenic *Eimeria* species *Eimeria bovis* and *Eimeria zuernii,* are the species that cause the most pronounced disease in calves less than 1 year of age. Clinical signs are more common in young calves reared under intensive husbandry conditions.

Eimeria alabamensis also causes disease, usually when at extremely large infective doses (>10 million oocysts). Coccidiosis caused by this pathogen is particularly observed in pastured calves, within 2 weeks after spring turnout, in their first grazing season, but can be seen in older animals. Clinical outbreaks of *E. alabamensis* have been reported in the UK. It is uncertain whether there is anticoccidial resistance in cattle, but there have not been reports of this in the UK.

Nutritional myopathy and coccidiosis in yearlings

Nutritional myopathy and coccidiosis were diagnosed in two yearling beef finishers submitted for postmortem examination. A handful of animals from the group had become recumbent, dehydrated, and died with 12 hours, despite veterinary treatment. They were fed an ad-lib total mixed ration, consisting of bruised barley, wheat straw, acid buffer, and distillery waste product. No supplementary minerals were given.

The main gross findings consisted of marked dehydration of the carcases, and scant diarrhoeic to mucoid faeces, with occasional admixed mucosal debris in the large intestines. Faecal testing detected a high number of pathogenic coccidial oocysts in both animals, including *Eimeria bovis*, *Eimeria zuernii* and *Eimeria alabamensis,* and histopathology confirmed severe subacute-chronic active coccidiosis. One of the animals also had a heavy bacterial colonisation of the large intestines, likely representing dysbiosis, (including occasional areas suspicious for attaching and effacing E. coli), and the other had multifactorial pneumonia with bacterial bronchopneumonia and active bovine herpesvirus type 1 (IBR) infection, superimposed on longer standing airway and pleural lesions. BVD was ruled out.

Histopathological examination of the skeletal muscles and diaphragm, from one of the two carcases, identified changes consistent with nutritional myopathy (due to antioxidant deficiencies), and a low selenium concentration was detected in the liver of both animals. Vitamin A concentrations were low in both animals, liver copper and cobalt were

unremarkable. No further clinical cases occurred on farm after administration of decoquinate and minerals to the ration, and injection with vitamin E and selenium.

Possible rotavirus serogroup B in a dairy calf

An investigation into scour and wasting was carried out on a three-week-old dairy calf, after four out of 15 animals in the group had died. Pen-side testing for enteric pathogens, performed on-farm, had been unremarkable. Signs of ill-thrift were present, with poor body condition noted, and lice present in the coat. An enteritis, and lymphadenopathy of the mesenteric lymph nodes, were present at postmortem examination. The results of testing for causes of calf enteric disease (cryptosporidiosis, rotavirus, coronavirus, salmonellosis and coccidiosis) performed by APHA were unremarkable, however histopathology revealed a mild enteritis with crypt injury and enterocyte syncytia. Syncytia formation is a feature in some viral enteric diseases, and has been noted in serogroup B rotavirus infections.

The majority of cattle rotaviral infections are serogroup A rotavirus, and other serogroups may not be detected with conventional faecal testing (the ELISA test that is routinely used only detects serogroup A). In this case, tissue autolysis hampered interpretation and the significance of these findings could not be determined due to lack of suitable samples. However, it was concluded that environmental and management factors were likely to be involved in this outbreak. It was advised that, if there were other similar cases, the submission of either faeces samples, or a freshly dead calf, for investigation would be indicated and then further virological investigation could be undertaken.

Coronavirus and secondary clostridial typhlocolitis in a dairy calf

An 11-day-old dairy calf was presented with severe diarrhoea, which had been poorly responsive to treatment. The herd was vaccinated for rotavirus, coronavirus, and E. coli enteritis. At postmortem examination, the rumen and abomasum had liquid contents, and the small and large intestinal content was profuse and watery. There was a 10 cm diameter area of mucosal necrosis in the caecum, with an area of surrounding inflammation. There were a small number of 1-to-2-mm red patches on the mucosa of the proximal colon. Coronavirus was detected in the intestinal content by antigen ELISA testing. Histopathological changes were consistent with subacute typhlocolitis. It is likely that the intestinal crypts were damaged by coronavirus, and then this damage was exacerbated by a secondary opportunistic clostridial infection.

Respiratory system

Bovine respiratory disease complex

Bovine respiratory disease is predominantly an event which occurs in the colder months, between November and March, which also tends to coincide with housing. This seasonality is observed for all pathogens involved in the bovine respiratory disease complex, although some can also be detected throughout the year. A high percentage of respiratory cases have more than one pathogen identified. It is important to remember that

a review of management risk factors, such as ventilation and stocking rates, remains essential for planning control of respiratory disease.

In the case of bovine respiratory syncytial virus (BRSV), the majority of cases are diagnosed from November to March (with a peak incidence in January) (Figure 6), making quarter 1 the period with the highest percentage of diagnoses. APHA saw a small increase in BRSV (as a percentage of diagnosable submissions) in England and Wales, compared to 2017 – 2021.

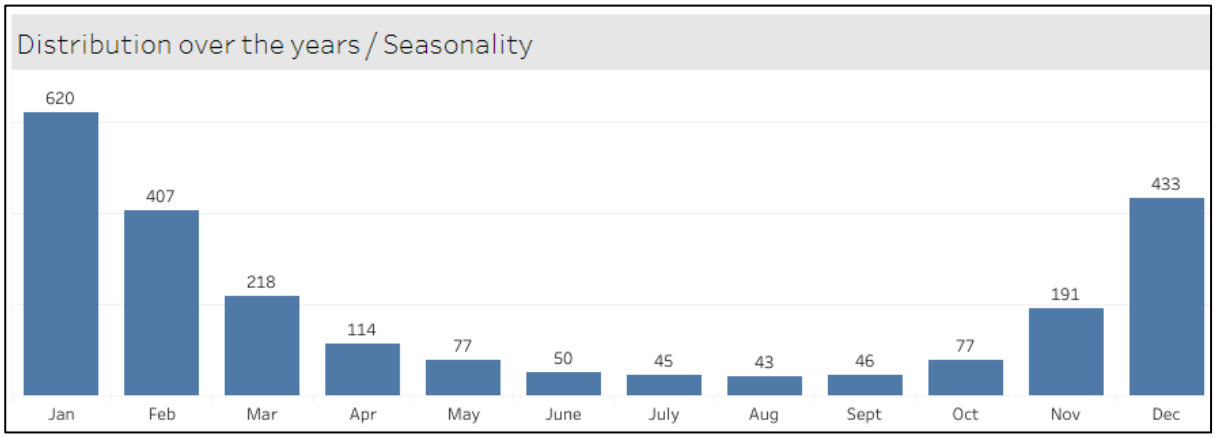

Figure 6: The seasonality of VIDA diagnoses of BRSV in Great Britain 2002-2022

BRSV is the most common viral cause of pneumonia in cattle, particularly in pre-weaned and post-weaned calves in Scotland and Northern England. In Quarter1 of 2021, pneumonia due to BRSV constituted 12.4% of total diagnoses for the respiratory syndrome, followed by IBR with 8.14%. The most common pathogen associated with pneumonia in the same quarter was however *Mycoplasma bovis* (18.24% of total diagnoses for the respiratory syndrome), which continues to see an increase in percentage of diagnosable submissions across Great Britain, but particularly in Scotland (Figure 7) (although some of this increase may be attributed to changes in testing methods).

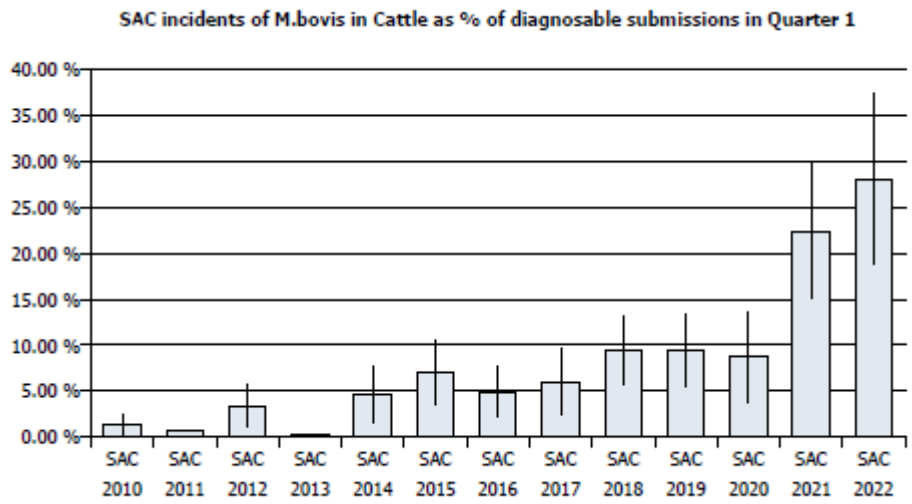

Figure 7: SRUC Incidents of *Mycoplasma bovis* as a percentage of diagnosable submissions in Quarter 1 for 2010 to 2022

In Quarter 1 of 2022 the figures were similar to those for 2021, with *Mycoplasma bovis* remaining the most common pathogen detected for pneumonia (20% of total diagnoses for the respiratory syndrome) followed by BRSV (14.8% of total diagnoses for the respiratory syndrome). However, BRSV remains the most common diagnosis for respiratory diseases in Quarter 1 in the period 2002-2022 with an overall percentage of 15.36% of total respiratory diagnoses. BRSV is commonly isolated alongside at least one other respiratory bacterial pathogen.

BRSV and *Mycoplasma dispar* in dairy cross calves

Over the winter (2021 to 2022) *Mycoplasma dispar* was detected on several occasions. The significance of this mycoplasma is uncertain. A 3-month-old Aberdeen Angus crossbred calf was submitted from a fattening site. It had received intranasal viral vaccination upon arrival on the unit at two weeks of age and, had been weaned three weeks previously. At weaning it was moved from a group of 10 into a group of 40, and the calves were also disbudded. Approximately 75% of the group of 40 were reported to have had signs of respiratory disease, with only this one calf having died. It had cranioventral consolidation with 75% of the lungs affected, and there was mucopurulent exudate in the airways. A few emphysematous bullae were present in caudal lobes. BRSV was demonstrated by PCR testing and *Mycoplasma dispar* by DGGE/PCR. A subacute necrotising and fibrinosuppurative bronchointerstitial pneumonia were found on histopathology, suggesting a complex aetiology; type II pneumocyte hyperplasia was present consistent with BRSV infection, and there was an inflammatory response indicative also of bacterial infection (none was isolated in culture, probably because of prior antibiotic treatment). There were no lesions consistent with typical mycoplasmal aetiology, although these could have been obscured by the other inflammatory changes. *M. dispar* has previously been reported to be associated with respiratory disease in calves.

Musculoskeletal System

No significant trends identified.

Metabolic bone disease / osteodystrophy in a dairy heifer

Femoral fracture, predisposed by a previous episode of rickets (associated with defective mineralisation), was diagnosed in a 13-month-old Friesian heifer (Figure 8). The animal was from a group of 150 yearling heifers, that had been transitioned onto strip-grazed fodder-beet in September, and which had developed diarrhoea and multi-limb lameness in early February. The submitted heifer had become recumbent, despite having appeared to have recovered from suspected initial laminitis and, was euthanised on welfare grounds. Histopathological examination of the costochondral junction of a rib identified a previous episode of severe metabolic bone disease / osteodystrophy, consistent with rickets and current growth plate degeneration. Defective mineralisation of bone associated with feeding of fodder-beet has been documented in dairy cows in New Zealand, particularly when leaf development is poor due to agronomical challenges in the growing season.

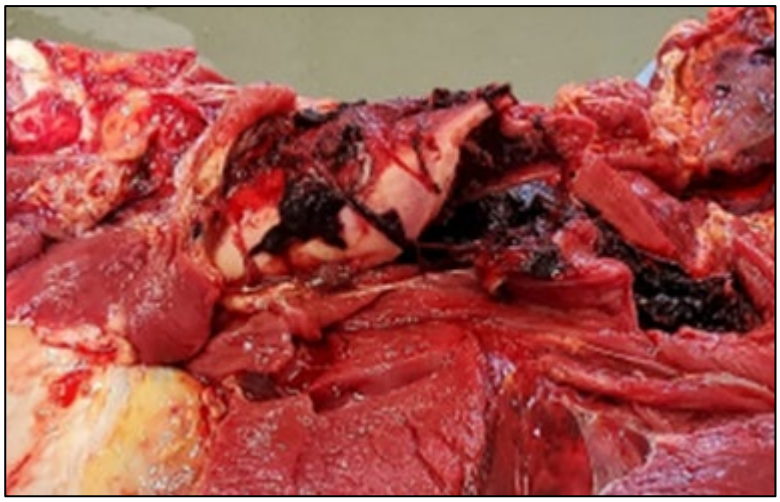

Figure 8: fracture of the right femur in a heifer with metabolic bone disease

Skin

Bovicola sp. (chewing louse) and *Linognathus vituli* (sucking louse) were detected in an 11-week-old bought in calf. Affected calves were reported to have developed lethargy, loss of appetite, ear droop, coughing and dyspnoea. At postmortem examination, there were ectoparasites on the skin, particularly in the inguinal region, and there was extensive lung pathology. *Pasteurella multocida*, *Mycoplasma bovis*, PI3 and BRSV were all detected in lung. It is likely the ectoparasitism contributed to debilitation, and alongside a review of purchasing policy, housing, and vaccination for pneumonia; it was recommended that other potentially infested animals in the at-risk group should be treated with an appropriate ectoparaciticide.

Circulatory system

There was an increase in circulatory disease (particularly of ‘diagnosis not listed’), as a percentage of diagnosable submissions, in quarter 1 2022, compared to 2021. The diagnoses for these cases included: a cow with pericarditis and haematoma, a calf with thrombosis associated with navel ill, a calf with mineralisation of the large artery tunica media and intima (unknown aetiology), two calves with dilated cardiomyopathy, and a 7-day-old calf with total anomalous pulmonary venous connection.

Reproductive system – Abortion

Listeria monocytogenes

Two aborted bovine foetuses from one farm were received at APHA VIC Shrewsbury, one at approximately eight months gestation, the other at around five months. *Listeria monocytogenes* was isolated from the smaller calf, whilst no significant infectious agents were identified in the second. In addition, APHA VIC Starcross diagnosed *Listeria monocytogenes* as the cause of abortion in a late-term-gestation foetus, submitted from a dairy herd. It was the fourth abortion reported in the herd of 190 cows over the previous

month. All affected dams had been pyrexic on clinical examination. The organism was isolated in pure growth from foetal stomach contents.

Listerial infections are most commonly diagnosed in cattle in the housed period (Figure 7) and silage feeding is a risk factor. Not all of the silage clamps or bales are usually affected; the organism survives in areas where there are imperfect anaerobic conditions and where soil has been incorporated, and these are most likely to be beneath the covering sheet (especially where there are tears, or around the outside of bales). If such spoilt areas (which usually look 'mouldy') are seen they should be removed and not fed to livestock.

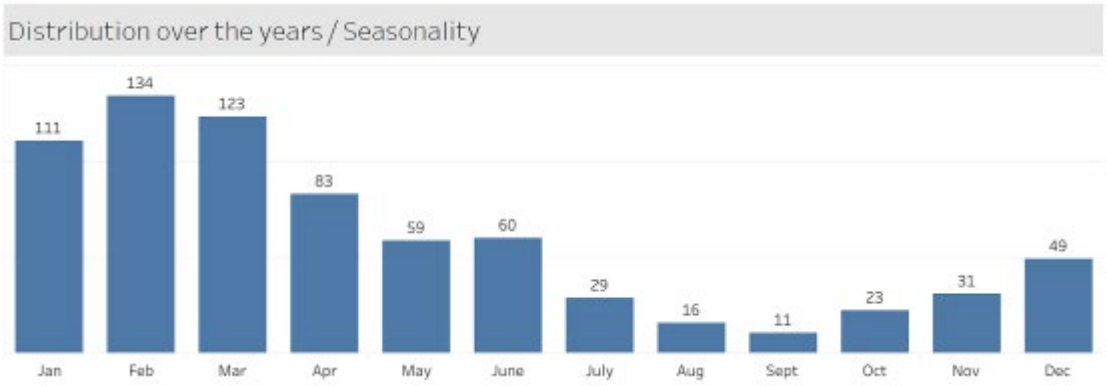

Figure 8: Seasonality of diagnoses of listerial abortion and listerial encephalitis in cattle in England, Wales, and Scotland 2002 to 2022

Stillbirths

Two stillborn dairy calves were presented from a herd of 500 cows. Both were born to second calvers, in a dry group of 30 animals. The herd had recently been vaccinated for IBR and was also vaccinated against salmonellae and BVD. The calves were 38kg and 96cm crown rump length, and 51kg and 103cm crown rump length. In neither were the lungs inflated and there was some oedema around the throat and affecting the tongue of the larger calf. The thyroid of each weighed 20g. No placentae were submitted. Tests for a range of infectious agents failed to identify potential pathogens. Histopathology was also unremarkable. The findings suggested a degree of dystocia occurred with both, with no other specific cause of the stillbirths being ascertained. In such cases a detailed review of the procedures and management before, during, and immediately after calving is recommended; interventions prior to calving can have a deleterious effect on calving. A recent review of the investigation of stillbirths in cattle was published in 2021 (Geraghty and others 2021).

Geraghty T, Mee J, Murphy A, Orr J. How to investigate a stillbirth on farm. *In Practice* 2021;43:373-387

In another case, a stillborn calf and the placenta were received to investigate a problem of stillbirths and the birth of weak, live calves, which died shortly after birth, in a beef suckler herd. Only first calving heifers had been affected and the heifers had calved without assistance. The herd was housed and being fed grass silage at the time of submission. On gross examination the placenta was thickened and leathery with reddening of the intercotyledonary areas. Gross findings in the calf included aeration of the lungs, and a

blood clot within the umbilical vein, consistent with it being born alive and dying shortly after birth. A fungal placentitis was diagnosed on histopathology, but unfortunately cultures were unrewarding, so the exact organism involved could not be determined. Inflammation of the placenta in the later stages of gestation has a significant impact on calf viability, and this was deemed the most likely cause for the calf's demise.

Mastitis

There were three cases of mastitis following drying off reported in the first quarter of 2022, and we have reported incidences of this during 2021. In the first, nine cows on a 400-cow dairy farm developed mastitis shortly after two groups, totalling 120 cows, were dried off over a period of four days. Despite treatment with NSAIDs, sulphonamides and fluids, seven cows died and the remaining two were euthanised for postmortem examination. Extensive yellow-red, subcutaneous, gelatinous oedema was present in the mammary glands of both animals, with dark discolouration of mammary tissue, which had a malodourous smell, present in the left front and back quarters. A clear line of demarcation was noted between affected and unaffected quarters.

Staphylococcus aureus was isolated from affected quarters of both animals, and histopathology confirmed the presence of this organism in conjunction with mastitis in the tissues. It was thought likely that hygiene practices in the drying off routine had been inadequate, allowing introduction of the organism into deep udder tissue. Given the large number of animals dried off in a short period, user fatigue may also have been a contributing factor. A second case of mastitis due to *Staphylococcus aureus* was reported in a dairy herd following drying off with a teat sealant. Twelve cows from a batch of 100 dried off were affected and three died.

In the third case, three cows became unwell within a few days of drying off with a teat sealant. A fourth cow, which was also given antibiotic intramammary tubes when it was dried off on the same day, had not developed illness. One of the affected cows was euthanased and submitted for postmortem examination. No bacteria were isolated from three of the quarters, with *E. coli* recovered from the fourth; this is likely to reflect prior antibiotic treatment. Histopathology indicated a severe multifocal acute necrotising fibrinosuppurative mastitis. In all cases it was advised that the drying off process was reviewed. It is vital to ensure a strict aseptic technique is used, to prevent inadvertent introduction of bacteria into the teat canal. Protocols for drying off can be found at https://ahdb.org.uk/knowledge-library/drying-off-dairy-cows

Centre of Expertise for Extensively Managed Livestock

The COEEML was developed by APHA to address potential surveillance gaps for extensively managed animals. Extensive management of livestock potentially makes regular or close inspection for disease detection more challenging. The Centre is based at the APHA Veterinary Investigation Centre in Carmarthen; however, it is a Great Britain-

wide resource and forms part of the wider veterinary surveillance system operated by APHA.

APHA are already aware of cases of tick-borne disease in cattle and sheep in 2022, which is not unexpected given the warm weather we have been experiencing recently. The 2021 bovine babesiosis project has finished and findings are currently being collated, but we are still interested to hear about cases of tick-borne disease in cattle throughout the 2022 grazing season.

For 2022, free testing using the dual pan-piroplasm and *A. phagocytophilum* PCR is still available for suspected cases of bovine babesiosis and tick-borne fever, on a case-by-case basis. Submission of samples for testing will not only help inform on-farm control planning but, it will also further aid our understanding of disease epidemiology, which is evolving in the face of climate and land use change. Practitioners should contact their local VIC to discuss potential cases, before sending samples to APHA Starcross if free testing is agreed.

Tick risk with tick borne fever in two Dumfries cases during March

A 5-month-old Galloway calf was presented dead, with a history of acute respiratory signs, and exposure to ground with a high tick burden for the last four months. There were many small and large engorged ticks on the carcase, particularly in the inguinal region, and 70% of the lung tissue was consolidated. The spleen was thickened and enlarged. *Anaplasma phagocytophilum* DNA was detected by real time PCR from the spleen. Respiratory PCR testing on the lungs detected both *Mannheimia haemolytica* and *Pasteurella multocida* in significant quantities. Histological findings were consistent with a subacute bacterial bronchopneumonia, most likely due to one of the Pasteurellacae family of bacteria. Underlying immunosuppression caused by tick borne fever was suspected.

A 14-year-old highland cow was presented as a sudden death, following the unexplained and rapid deaths of two other cows in the small herd. The herd was purchased four months previously and put on to rough ‘ticky’ ground. The carcass was covered in a large number of ticks. There was also a significant number of lice across the belly and shoulders. There was no specific gross pathology detected at postmortem examination, although the carcass was moderately autolysed and the blood was watery. *Anaplasma phagocytophilum* DNA was detected by real time PCR. Histopathology did not find any lesions suggestive of babesiosis, or other causes of intravascular haemolysis. No definitive cause of death was found, but tick borne fever was thought to be a significant contributory factor.

Antimicrobial use and resistance

The Veterinary Antibiotic Resistance Sales and Surveillance (UK-VARRS) report 2020 has been published by the Veterinary Medicines Directorate (VMD)

Veterinary Antimicrobial Resistance and Sales Surveillance 2020 - GOV.UK (www.gov.uk)

Chemical food safety

The latest chemical food safety report can be found on Gov.uk.

Two incidents of lead toxicity were reported for cattle in Q1 2022.

Horizon scanning

Bluetongue (BTV) update

APHA no longer has access to the EU's Animal Disease Notification System (ADNS), hence we are now only using World Organisation for Animal Health (OIE) data (for mapping), and the weekly outbreak summary data published by the new EU Animal Diseases Information System (ADIS). Areas of Europe remain under Restriction Zones shown on the map (Figure 9), though this has not been updated by the European Commission since November 2021, due to the seasonally vector-free periods over the winter months.

In December, Portugal reported ten outbreaks of BTV on sheep farms and a mixed farm of sheep, goats, and cattle. In total 109 animals were affected. For more information, see our BTV Outbreak Assessment on GOV.UK

APHA have released a series of animations on Facebook and Twitter to inform keepers of BTV. https://www.facebook.com/APHAGov/

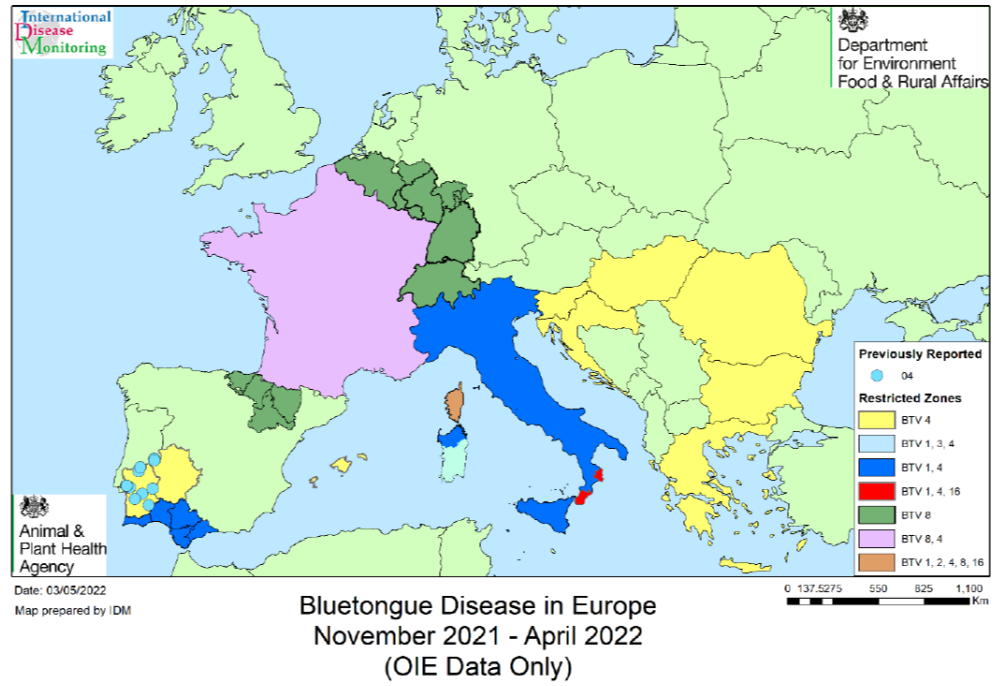

Figure 1: Map of Europe showing BTV restriction zones November 2021 to April 2022

Foot and mouth disease (FMD)

Outbreaks of FMD for November 2021 to April 2022 are shown in Figure 10.

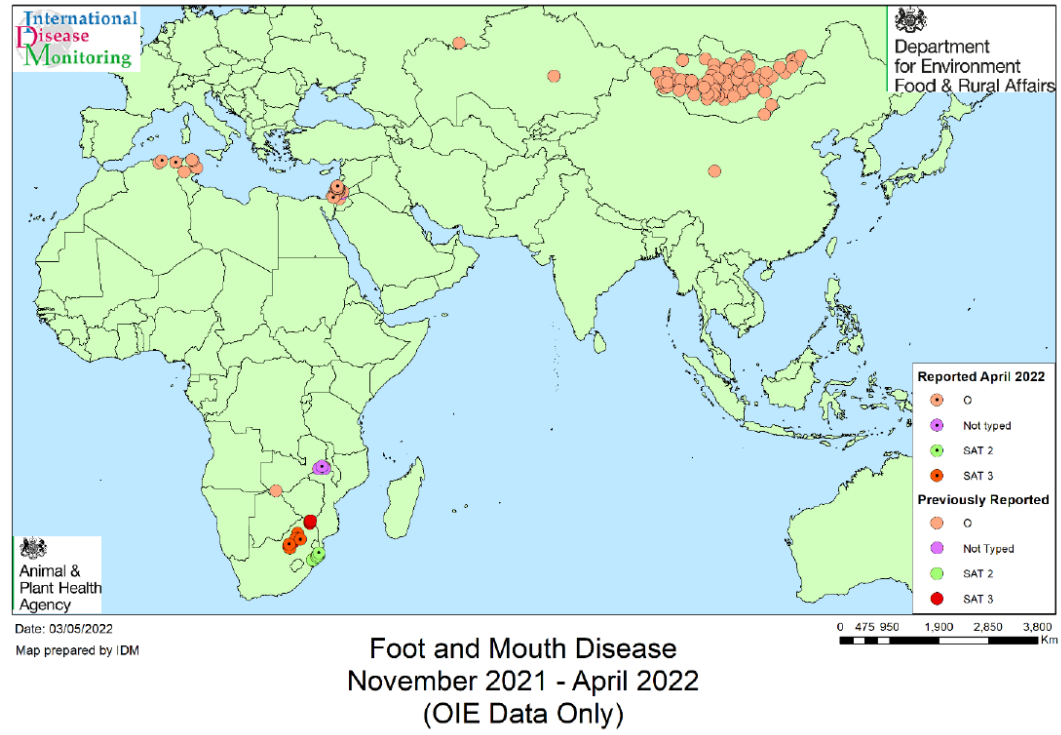

Figure 2: Outbreaks of Foot and Mouth Disease November 2021 to April 2022

In April, Israel reported 23 outbreaks of FMD serotype O. There were 18 outbreaks on commercial farm premises containing cattle, four of which had over 1,000 animals. One

outbreak was on a commercial premises containing 4,000 sheep, one was on a commercial premises containing 12,500 pigs and one was on a commercial premises containing under 200 milking sheep and goats. One outbreak was on a mixed non-farm premises with cattle, goats and sheep containing over 200 animals, and one was on a non-farm premises containing 765 cattle.

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Statement regarding use of this material

This publication is available at:

https://www.gov.uk/government/collections/animal-disease-surveillance-reports

Any enquiries regarding this publication should be sent to us at SIU@apha.gov.uk

http://apha.defra.gov.uk/vet-gateway/surveillance/index.htm

The Animal and Plant Health Agency (APHA) is an executive agency of the Department for Environment, Food & Rural Affairs, and also works on behalf of the Scottish Government and Welsh Government.