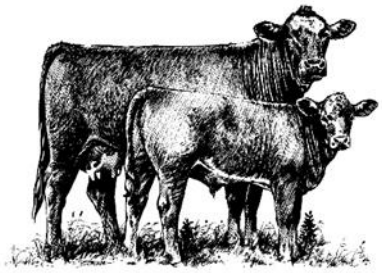
Animal & Plant Health Agency



SRUC

GB cattle quarterly report

Disease surveillance and emerging threats

Volume 28: Quarter 3 (July - September) 2024

Highlights

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- **Bluetongue virus update – page 4**
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Editor: Vanessa Swinson, APHA Thirsk
Email: Vanessa.swinson@apha.gov.uk

Introduction and overview

This quarterly report reviews disease trends and threats for the third quarter of 2024 (Q3), July to September. It is compiled using data available at the time of writing. 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

Dairy sector update

- **Prices:** UK farmgate milk prices averaged 43.06 pence per litre (ppl) in September, which was up by 1.48ppl (3.6%) on the month. Throughout Q3, we saw prices increase across most contracts on the AHDB league table. Wholesale dairy product prices reached record highs in September, especially for fats, with strong demand and limited supply.
- **Production:** UK milk production totalled 3,597million litres for the third quarter of 2024, up by 0.7% on the same period of the previous year. After a challenging start to the year improved levels of production in September have helped to revive overall output levels. Milk prices have incentivised further production into October.
- **Trade:** Year-to-date (Jan-Aug) volumes of dairy exports from the UK totalled 850,000 tonnes, a 0.7% decrease compared to the same period of the previous year. These exports were valued at £1.20 billion. Import volumes for the same period were 833,000 tonnes, an 11% increase year on year.
- **Demand:** During the 52 weeks ending 5 October 2024, volumes of cow's dairy sold in retail declined by 0.7% year-on-year (YOY). Growth in average prices (+0.6%) was not quite enough to balance volume losses as spend on cow's dairy declined 0.1% (Copyright © 2024 Nielsen Consumer LLC. All Rights Reserved).

Beef update

- **Prices**: GB deadweight prime prices have shown significant strength throughout Q3, with the average all-prime price reaching record highs of 506.9p/kg in the week ending 28 September, a 6% increase from the previous year's figure. Cull cow prices have been robust and relatively stable over the 3 months, standing at 358.8 pence per kilo (p/kg) in the last week of September, 8% up YOY.
- **Production**: UK beef production totalled 76,600 tonnes in September, up by 7% YOY. September marks the third consecutive month to see an increase in production volumes compared to the previous year's figures. Year to date (Jan-Sep) production totalled 691,700 tonnes, up by 4% from 2023, driven by strong demand and prices. Prime carcase weights in each month of Q3 were up by 1% on the year, averaging 342.4kg in September.
- **Trade**: In terms of UK beef trade, imports of fresh & frozen beef totalled 19,100 tonnes in August, up by 5% YOY. Export volumes sat at 8,300 tonnes for the

month, up 3% YOY. For the YTD (Jan-Aug) beef imports stood at 157,800 tonnes (+8% YOY), while exports totalled 72,900 tonnes (+10% YOY).

- **Demand**: In the 12 weeks to 29 September, spend on beef in retail increased by 4.3% year-on-year, and volumes increased by 1.7%. Prices paid rose by 2.5% on average across all beef products. Processed beef performance drove the overall volume increase (+9.4%), with burgers and grills (+11.5%), sausages (+19.8%) having benefitted from some of the summer seasonality of weather and potential for BBQ's, in July and August. Total primary beef volumes saw a slight decline this period (-0.2%).

Acknowledgment for the dairy and beef updates: Freya Shuttleworth AHDB.

Cattle disease surveillance dashboard outputs

The most frequent diagnoses from carcase submissions made in Q3 of 2024, compared to Q3 in 2023, and Q3 for 2015 to 2024 inclusive, through the Great Britain (England, Wales, and Scotland) scanning surveillance network, are illustrated in Table 1. These can be interrogated further using the interactive cattle disease surveillance dashboard which was launched in October 2017.

Table 1: Great Britain scanning surveillance 10 most frequent carcase submission diagnoses in Q3 of 2024, Q3 of 2023, and Q3 for 2015-2024

10 most frequent carcase diagnoses Q3 2024	10 most frequent carcase diagnoses Q3 2023	10 most frequent carcase diagnoses Q3 2015-2024
1. Pneumonia – not otherwise specified	1. Pneumonia due to *Mycoplasma bovis*	1. Digestive disease due to other causes (not listed)
2. Pneumonia due to *Pasteurella multocida*	2. Digestive disease due to other causes (not listed)	2. Respiratory – other cause (not listed)
3. Digestive disease due to other causes (not listed)	3. Ruminal acidosis	3. Pneumonia due to *Mycoplasma bovis*
4. Pneumonia - parasitic	4. Salmonellosis due to S. Dublin	4. Pneumonia due to *Pasteurella multocida*
5. Pneumonia due to *Mycoplasma bovis*	5. Respiratory – other cause (not listed)	5. Salmonellosis due to S. Dublin
6. Pneumonia due to *Mannheimia haemolytica*	6. Pneumonia - parasitic	6. Cryptosporidiosis
7. Coccidiosis	7. Pneumonia due to *Pasteurella multocida*	7. Pneumonia - parasitic
8. Cryptosporidiosis	8. Systemic disease (not listed)	8. Pneumonia due to *Mannheimia haemolytica*
9. Ruminal acidosis	9. Parasitic gastroenteritis	9. Coccidiosis
10. Colisepticaemia	10. Pneumonia due to *Histophilus somni*	10. Colisepticaemia

The ‘pneumonia not otherwise specified’ cases included embolic pneumonia related to udder cleft dermatitis, embolic pneumonia related to ruminal acidosis, pyothorax, and pneumonia with *Mycoplasma dispar* detected.

The digestive system cases which were classed as diagnoses not listed included intestinal rupture, intestinal intussusception, intestinal strangulation, and caecal torsion.

New and re-emerging diseases and threats

Bluetongue serotype 3 (BTV-3) update

The first case of the 2024 BTV season was confirmed in a ram in Norfolk on 24 August 2024. The affected animal presented with inappetence, ulceration in the mouth, mild crusting around the nostrils, and lameness in one leg. The total number of confirmed cases between 24 August and the end of September 2024, was 108 in England plus one in Wales. The most common clinical signs from confirmed cases, at the time of reporting and initial investigation, are listed in Table 2. Images of these can be found at: Pictures of clinical cases confirmed with bluetongue serotype 3 infection.

Bluetongue virus is a notifiable disease. Suspicion of bluetongue virus in animals must be reported to the Animal and Plant Health Agency on 03000 200 301 in England, on 03003 038 268 in Wales, and to the local Field Services Office in Scotland.

The government published their Bluetongue disease control framework set out on GOV.UK on 23 May 2024.

Further guidance and information are available on the Ruminant Health & Welfare site, Bluetongue: information and guidance for livestock keepers and on Bluetongue: how to spot and report it. An interactive map can be found at: APHA Interactive Bluetongue Virus Map (arcgis.com), and the restriction zones at the time of writing this report are shown in Figure 1.

Table 2: Most common clinical signs in cattle and sheep, from confirmed bluetongue serotype 3 cases, in descending order.

	Cattle	Sheep
1 (most common)	malaise	nasal discharge
2	lameness	malaise
3	ulceration	swollen face
4	red membranes	crusting
5	conjunctivitis	hypersalivation
6	crusting	red membranes
7	coronitus	lameness
8	pyrexia	inappetence
9	nasal discharge	ulceration
10	hypersalivation	pyrexia
11 (least common)	reluctance to move	reluctance to move

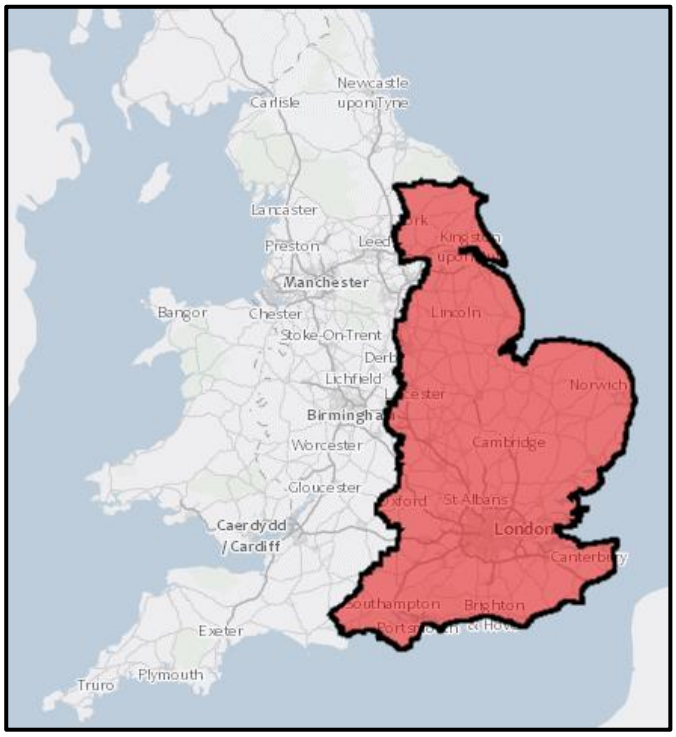

Figure 1: APHA Interactive Bluetongue Virus Map as of 15/12/2024, showing the restriction zone shaded red

Photosensitisation caused by liver neoplasia in a cow reported for possible bluetongue

A 13-year-old pregnant Charolais cross suckler cow developed ocular and nasal discharge, crusting and erosion of the nasal planum and ear edges, reddening of the udder and coronary bands, and later, jaundiced sclera (Figure 2). The practitioner who examined the cow, the only one affected in a herd of 40 animals, reported the case to APHA Field Service as possible bluetongue virus (BTV) infection. Blood samples were collected and following PCR testing BTV was ruled out.

After initial examination the cow was housed and the severity of the erosive lesions lessened, but it became more markedly icteric. Biochemical testing indicated hyperbilirubinaemia and cholestasis, with very high gamma-glutamyl transferase (GGT) enzyme activity. Liver fluke infection was ruled out by coproantigen testing. With lack of significant improvement, the farmer elected to euthanase the cow, and it was submitted for postmortem examination. In addition to the erosive lesions around the eyes and on the nasal planum, there was marked generalised jaundice, and the liver parenchyma was copper-coloured. The bile duct was fibrosed (Figure 3) which had caused cessation of bile flow, leading to marked dilation and inflammation of the gall bladder.

Tissues were collected for fixation, and histopathology confirmed neoplastic and fibrotic change to the liver, common bile duct, gallbladder and duodenal papillae, indicative of an adenocarcinoma, which was suspected to have arisen from the gastrointestinal tract. It was concluded that the growth of this tumour had caused biliary obstruction which led to the signs of hepatic photosensitisation. Although such neoplasms have been reported associated with bracken fern consumption, this could have originated as a sporadic occurrence in an older cow. APHA are keen to offer support for investigation of negated notifiable disease cases. Please contact your local postmortem provider, or Vanessa Swinson (see index page), if you would like to discuss a negated case.

Figure 2: Erosion of the nasal planum (left) and jaundiced sclera (right) in a cow with photosensitisation

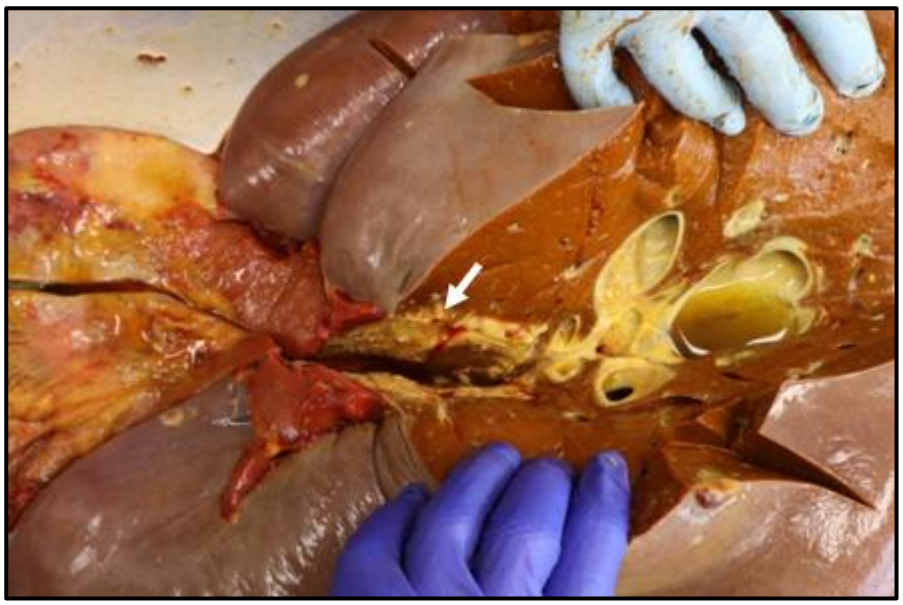

Figure 3: Thickened and fibrosed bile ducts in a cow with photosensitisation

Tick-borne disease review for Quarter 3 2024

The third quarter of the year was dominated by mild, wet weather in many parts of the country. These weather conditions are ideal for supporting *Ixodes ricinus* moulting and feeding activity, and as a result many cases of tick-borne disease were reported in cattle, particularly in northeast Scotland and southwest England (Figure 4).

Babesiosis was the cause of death in a five-year-old Dexter cow which presented with laboured breathing, cyanosis, muscle tremors and a vacant expression prior to death. Gross findings were indicative of intravascular haemolysis with icteric carcase fat, a copper-coloured liver, splenic congestion, dark red kidneys, and haemoglobinuria (Figure 5). No ticks were observed on the carcase but roughening of the skin of the medial thighs suggested recent tick attachment. PCR testing of spleen detected *Babesia divergens* confirming the suspected diagnosis of bovine babesiosis and, also, identified concurrent tick-borne fever (TBF) caused by *Anaplasma phagocytophilum*. Both these blood pathogens are transmitted by the *Ixodes ricinus* tick, however,dual infections are rarely identified. It has been suggested that co-infection may exacerbate clinical disease, and we have previously investigated very severe outbreaks in herds where both pathogens have been isolated.

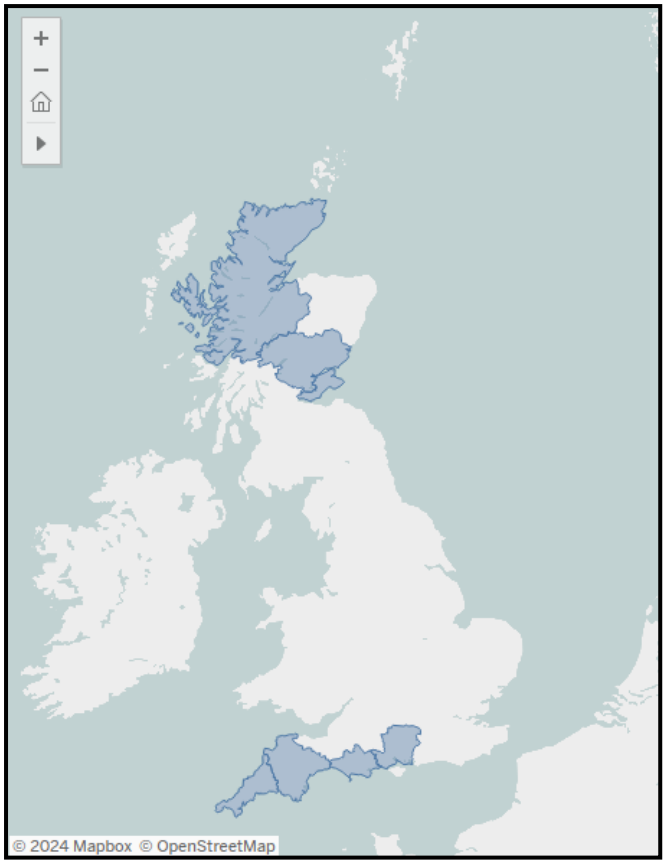

Figure 4: Geographical distribution of tick-borne disease (babesiosis or tick-borne fever) diagnoses in cattle in GB, Q3 2024

A co-infection was also diagnosed in an 18-month-old dairy heifer which presented with non-specific malaise prior to death. Ascites, hepatomegaly, splenomegaly and multifocal organ petechiation were reported grossly, and ticks were found attached to the axillary and inguinal regions. *Salmonella* Dublin septicaemia was diagnosed as the cause of death following isolation of the organism from the caecal contents and systemic sites. However, tick-borne fever PCR was also positive, and it was hypothesised that *Anaplasma phagocytophilum* infection may have predisposed to the salmonellosis through an immunosuppressive effect.

Figure 5: Dark red kidney and haemaglobinuria (urine in syringe) in a cow with Babesiosis

References

Johnson N, Paul Phipps L, McFadzean H, Barlow AM. An outbreak of bovine babesiosis in February 2019, triggered by above average winter temperatures in southern England and co-infection with Babesia divergens and Anaplasma phagocytophilum. Parasit Vectors. 2020 Jun 12;13(1):305. doi: 10.1186/s13071-020-04174-3. PMID: 32532309; PMCID: PMC7291436.

Andersson, M.O., Víchová, B., Tolf, C., Krzyzanowska, S., Waldenström, J. and Karlsson, M.E. (2017) “Co-infection with *Babesia divergens* and *Anaplasma phagocytophilum* in cattle (*Bos Taurus*), Sweden. *Ticks and Tick-borne Disease.* 8(6), 933-935 doi:10.1016/j.ttbdis.2017.08.005

Potential increased risk of exposure to ergot and fusarium from grain

The growing period for crops was wetter than average in the UK in 2024. AHDB issued a warning that there was likely to be an increased risk of grain contamination with ergot (Figure 6), and fusarium, resulting from this. Grain merchants and agronomists also suggested that this was the case. AHDB urged farmers to familiarise themselves with the clinical signs of ergotism and fusarium toxicity. Ergot causes vasoconstriction of the peripheral blood vessels resulting in tail-end and ear-tip loss, and lower limb and hoof tissue damage and sloughing. Lameness, weight loss, and neurological signs may also be exhibited. Fusariotoxins can cause gastrointestinal tract lesions, oedema, and general malaise. The information on the AHDB website can be found at this link: Farmers warned of potential risk to livestock posed by fusarium and ergot in grain | AHDB. Information on mycotoxicosis can be found on the WOAH information note at this link: mycotoxicosis.pdf.

Figure 6: Ergot sclerotia (dark brown) in a cereal crop

Changes in disease patterns and unusual diagnoses

Systemic disease

Acute Schmallenberg virus (SBV) and mannheimiosis in a dairy cow

The carcases of two adult cows were submitted to APHA Starcross from a 270-cow dairy herd. In the week prior to submission the whole herd had experienced an episode of scour with concurrent milk drop (over 1000 litres in total) and reduced appetite (eating one tonne less total mixed ration (TMR) per day). At the time of submission, several cows had developed pyrexia, malaise, and pneumonia-type signs. Two typical cases were submitted for postmortem examination.

The gross findings in both cows were consistent with an acute pneumonia and, included a severe fibrinous pleurisy (Figure 7) and deep red consolidation of the lung lobes. On the cut surface the consolidated lung parenchyma had a mosaic pattern consisting of dark purple lobules of lung tissue, interspersed between interlobular septae expanded with yellow gelatinous oedema. The gross appearance of the lung tissue was highly suggestive of *Mannheimia haemolytica* pneumonia, and this was confirmed on bacteriology with the isolation of the organism in pure, profuse growth from the affected lung tissue. Respiratory viral PCR testing gave negative results, and no *Mycoplasmas* were detected by DGGE/PCR. Considering the previous history of milk drop and scour, PCR testing for Schmallenberg Virus (SBV) was undertaken on an EDTA blood sample submitted with one of the cows, and SBV nucleic acid was detected. Subsequent serological testing of other affected cows revealed high levels of SBV antibodies; however, SBV PCR testing gave

negative results. The literature indicates the viraemic period for SBV is very short, with animals only staying PCR positive for six days post infection suggesting the delay in sampling the other cows may have been the reason for the negative PCR results.

APHA do occasionally see outbreaks of acute *Mannheimia haemolytica* pneumonia in adult cattle. The exact trigger factor for disease development often remains unclear in many of these cases, but the pathogenesis of the disease is characteristically thought to be associated with stress factors. These suppress the host defence mechanisms allowing proliferation of the commensal bacteria in the upper respiratory tract, leading to colonisation of lungs and subsequent pneumonia. Recognised stress factors include transportation over long distances, mixing with other cattle, and nutritional changes. It was concluded that the outbreak of scour and milk drop throughout the herd from SBV was the potential precipitating factor in this case.

Figure 7: Fibrinous pleuritis in a cow with mannheimiosis and acute Schmallenberg disease

Clostridium septicum infection (malignant oedema)

Two investigations at Shrewsbury and Carmarthen Veterinary Investigation Centres confirmed malignant oedema (or ‘gas gangrene’) caused by *Clostridium septicum* infection. A recently calved dairy heifer in good condition was noticed with marked swelling of the vulva, though was otherwise well and eating, but it was subsequently found dead. It was one of a group of 200 in a large herd which is housed all year. Two other cows had also recently developed swollen vulvas after calving. Postmortem examination revealed marked generalised swelling of the carcase with accumulation of subcutaneous oedema and emphysema, particularly the vulva, over the hindquarters, tail head, under the jaw, and ventral abdomen, and there was mucosal tearing and inflammation of the vagina (Figure 8). There were also extensive areas of dry blackened emphysematous muscle in

the upper hind legs. Histopathology of vaginal tissues confirmed necrotising inflammation consistent with clostridial disease.

In the second herd of 450 milking cows a nine-year-old cow was submitted for postmortem examination, as eight dairy cows had died over the previous two months. The cow had been recumbent for a week after having been dried off. The other cows had died at various stages of lactation; some were unexpectedly found dead whereas others died after a period of malaise or recumbency. This cow had very extensive necrotising fasciitis affecting much of the left hind limb. There was diffuse malodorous brownish oedema and emphysema, and underlying muscles were dark red to black and contained purulent foci.

In both cases infection by *Clostridium septicum* was identified by fluorescent antibody testing, and together with the gross pathology was consistent with malignant oedema. This is considered to occur through wound contamination. Obstetrical trauma leading to malignant oedema has previously been reported in freshly calved cattle, associated with necrotising vulvovaginitis, and sometimes, metritis (Odani and others 2009). Reviewing the calving protocols, improving hygiene, and considering vaccination were recommended. In the second case no obvious route of infection was identified and it was considered that the animal may not have been representative of the other losses in the herd; examination of an additional cow was advised if problems continued.

Reference

Odani, J.S., Blanchard, P.C., Adaska, J.M., Moeller, R.B. and Uzal, F.A. (2009) ‘Malignant edema in postpartum dairy cattle’ Journal of Veterinary Diagnostic Investigation 21, 920-924

Figure 8: Significantly swollen vulva and mucosal tearing of the vagina in a cow with malignant oedema

Digestive system disease

Abomasal disorders in calves

Abomasal disorders including abomasal bloat, ulceration, and necrotising abomasitis have continued to be detected across the surveillance network during the third quarter of 2024. Several of these cases were recently reviewed in the recent Vet Record APHA Surveillance Update for November 2024 (APHA, 2024). A large majority of such cases were found in artificially reared calves, although occasional cases are seen in suckled calves.

Necrosuppurative abomasitis due to *Mannhaemia haemolytica* was recently diagnosed in a 10-week-old suckled beef calf that had died suddenly. At post-mortem examination, approximately half of the abomasal wall was found to be markedly oedematous and necrotic with mucosal ulceration. A secondary fibrinous peritonitis was also noted. *M. haemolytica* was isolated from the abomasal wall with histopathological examination supporting the diagnosis of abomasitis due to *M. haemolytica* infection. This is a rare diagnosis, recently described in lambs by Pérez *et al*. (2024). *M. haemolytica* is a common commensal of the upper respiratory tract of ruminants that may cause disease following exposure to various host and environmental stressors such as concurrent disease or changes to feeding.

References

APHA. 2024. Disease surveillance in England and Wales, November 2024. *Veterinary Record*, 195: 445-449. https://doi.org/10.1002/vetr.4987

Pérez, E., Uzal, F. A., de Miguel, R., Rodríguez-Largo, A., Reséndiz, R., Streitenberger, N., Macías-Rioseco, M., Gómez, Á., Calvo-Sánchez, N., Pérez, M., Luján, L., & Asín, J. 2024. *Mannheimia haemolytica*-associated fibrinonecrotizing abomasitis in lambs. *Veterinary pathology*, *61*(4), 604–608. https://doi.org/10.1177/03009858241235393

Severe summer scour syndrome

Severe summer scour syndrome (SSS) was suspected as the cause of wasting and diarrhoea in four-to-five-month-old dairy calves from two herds in July 2024. Approximately 5-10% of calves were affected in groups of 90 and 180, turned out to grass in late April with supplementary concentrates provided. This history, and gross postmortem findings of oral, oesophageal, and intestinal ulceration, were consistent with SSS. No underlying cause of the ulceration was determined on testing (including for bovine viral diarrhoea, parapox and herpes viruses, parasitic gastroenteritis, coccidiosis, and salmonellosis). Histopathological examination confirmed severe, ulcerative oesophagitis with the presence of intracytoplasmic inclusion bodies, consistent with previous cases of SSS. This condition, recently reviewed by Swinson *et al*. (2023) is seen in weaned dairy calves from 3 to 12-months-old, usually within a month of turnout. Signs include diarrhoea, wasting, oral lesions and death. The aetiology is unknown but is thought to be multifactorial.

Swinson, V., Nabb, L., Henderson, K. and Millar, M. 2023. Update on severe summer scour syndrome in cattle. *Veterinary Record*, 192: 285-287. https://doi.org/10.1002/vetr.2918

Dietary scour in fattening cattle

Abrupt dietary change was the likely inciting cause of scour in a batch of 40 six-month-old cattle on a beef finisher unit. Calves arrived in good body condition a month prior to submission, where they were abruptly switched from a ad lib pellet/total mixed ration (TMR) diet to a 100% TMR mix. Coccidiostat treatment did not yield a clinical improvement. Poor body condition and severe watery scour were noted grossly, although no intestinal thickening nor ulceration were seen and rumen pHs were unremarkable. No *Salmonella* spp. nor significant parasitic burdens were detected. It was deemed likely that the abrupt change in diet may have led to ruminal and/or intestinal dysbiosis and subsequent onset of chronic scouring, as no infectious agents were detected during this investigation. Prompt review of the transition feeding was recommended.

Respiratory system

Embolic lung abscesses associated with udder cleft dermatitis (UCD) and *Trueperella pyogenes* in an adult dairy cow

As discussed on Page 3, embolic pneumonia was one of the main diagnoses included in the ‘pneumonia not otherwise specified’ category. An adult Jersey dairy cow was submitted to investigate respiratory signs and marked weight loss that had affected three cows out of a group of 230, in a 500-milking-cow herd. The udder had a discharging skin lesion, and multifocal, tracking, pungent abscesses ranging from 0.5cm to 8cm in diameter that affected 25% of the udder (Figure 9). Similar pungent abscesses of varying size were scattered throughout the lungs. Purulent material was also present in the lumen of the bronchi. *Trueperella pyogenes* was isolated from the lung and udder abscesses, consistent with the udder being the origin of infection, with bacterial embolic spread to the lungs. The multifocal abscessation, and ongoing bacteraemic episodes, were the likely cause of weight loss and respiratory signs observed.

The aetiology of UCD is uncertain, but likely risk factors are:

- Certain udder conformation traits
- Cows with a high milk yield
- Cows which are in late lactation
- Cows of greater parity
- Increased foot and leg lameness issues in the herd
- Shorter cubicle lengths
- The use of cubicle mattresses

Figure 9: Necrotic tracts in the udder of a cow with udder cleft dermatitis

Various bacteria that have been isolated from UCD lesions including *Corynebacterium*, *Staphylococcus*, *Brevibacterium luteolum, Trueperella pyogenes* and *Fusobacterium necrophorum*; their significance is debated and may simply reflect opportunistic infection of the UCD lesions.

Reference

Ekman L, Nyman AK, Landin H, Magnusson U, Waller KP. Mild and severe udder cleft dermatitis-Prevalence and risk factors in Swedish dairy herds. J Dairy Sci. 2018 Jan;101(1):556-571. doi: 10.3168/jds.2017-13133. Epub 2017 Nov 2. PMID: 29103724.

Pneumonia due to *Mycoplasma bovis* and *Pasteurella multocida* in a 10-week-old dairy cross calf

A 10-week-old Friesian cross calf was submitted to investigate respiratory disease in two calves from a group of 10 in a calf rearing unit. Calves were bought from multiple sources, and this calf had been bought-in three weeks previously. A *Mycoplasma bovis* vaccine was given to some calves on the unit, but it is not known whether this calf was vaccinated.

The calf was in poor condition and had not been eating well prior to death and had severe bronchopneumonia. There was significant dark red, firm, lung consolidation and pockets of caseous necrosis from 1mm in diameter coalescing in places to 5cm diameter (Figure 10). Gross pathology was suspicious of *Mycoplasma bovis* and this was confirmed on testing. *M. bovis* is a well-recognised primary respiratory pathogen of calves. *Mycoplasma arginini* was also detected, which is usually considered to be a commensal but may contribute to pathology in mixed infections. *Pasteurella multocida* was isolated in pure growth from lung. This organism may be found as part of the bovine respiratory disease complex, often secondary to immune compromise, stress, or co-infection with other respiratory pathogens.

RSV, PI3 and IBR were not detected by PCR, however these are only detectable in the acute phase and the window of detection may have been missed.

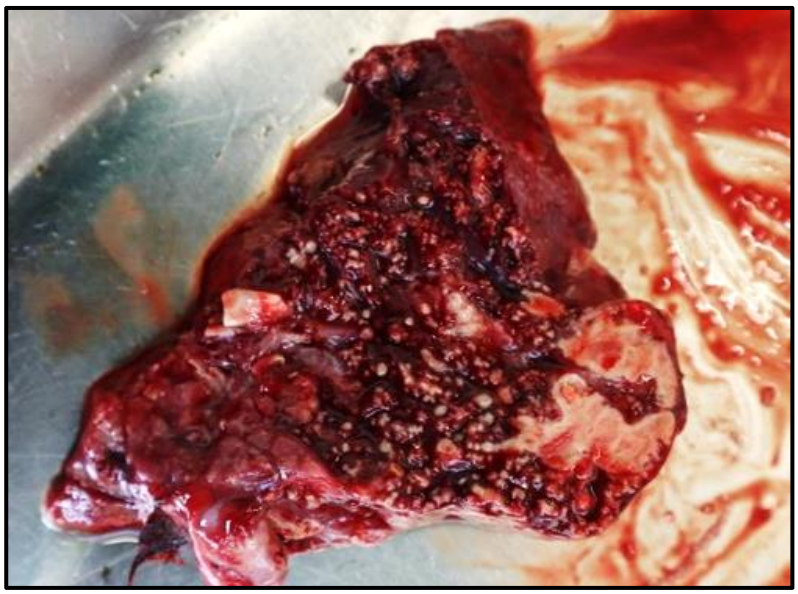

Figure 10: Miliary caseous necrosis lesions in the lung of a calf with *Mycoplasma bovis* and *Pasteurella multocida* pneumonia

Infectious bovine rhinotracheitis (IBR) gE bulk milk serology

Table 3 shows the proportion of National Milk Records (NMR) bulk milk samples testing positive for IBR gE antibody (used for herds vaccinating with a gE deleted IBR vaccine), by ELISA. This data is kindly provided under agreement from National Milk Records (NMR) to support the collection of disease surveillance information across GB. NMR provide milk and blood serology testing for endemic disease in cattle. Testing is carried out primarily at the request of vets. Most of the samples tested will be routine quarterly surveillance ('monitoring') and a few may be part of a clinical disease investigation ('diagnostic') but these are not differentiated in Table 3. The values indicate a high level of, and widespread, IBR exposure in England, Scotland, and Wales. In line with agreed APHA reporting, the number of samples tested is not shown. For further information on this data please contact vetenquiries@nmrp.com.

Table 3: Proportion (%) of NMR bulk milk samples testing positive for IBR gE antibody by ELISA, by country and by quarter

Country and Quarter	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2023 Q1-Q4	2024 Q1	2024 Q2	2024 Q3
GB	73.3	74.3	83.8	81.7	78.1	74.4	52.5	62.9
England	73.1	72.7	84.3	81.2	77.6	73.9	52.0	61.9
Scotland	100	94.4	88.2	94.7	94.4	100	89.5	80.0
Wales	71.1	84.8	78.7	83.5	78.9	73.8	48.8	68.8

Acknowledgements for the IBR data: Eamon Watson MRCVS, NMR Product Strategy Manager and Karen Bond MRCVS, NMR Veterinary Team Lead

Musculoskeletal system

No significant trends this quarter.

Urinary system

No significant trends this quarter.

Nervous system and organs of special sense

Unusual central nervous system (CNS) infections in calves

Two weaned dairy heifer calves, in a group of 180 at pasture, fed supplementary rearing nuts, developed nervous signs. Cerebrocortical necrosis was initially suspected. One of the calves died and the practitioner submitted the head, heart, and samples of liver and lung to Shrewsbury Veterinary Investigation Centre (VIC) for pathological investigation. This revealed a fibrinopurulent exudate around the base of the brain, extending cranially beneath the cerebrum to the cribriform plate (Figure 11). The retropharyngeal lymph nodes were very inflamed. The heart had a focal extensive necrotic lesion in the left ventricular muscle, affecting the papillary muscle and extending into the left atrium. Although no significant bacteria were isolated, probably reflecting recent antibiotic use, histopathology confirmed a severe diffuse fibrinosuppurative ventriculitis, choroiditis and meningitis in the brain, and a necrosuppurative myocarditis. Retrospective PCR testing of myocardial tissue identified *Histophilus somni* infection. Exactly why this outbreak occurred is unknown, making preventive advice difficult, but it was recommended to consider vaccination.

In another outbreak, nervous signs were the principal feature in dairy calves aged two to three weeks, in a herd of 160 cows. Suppurative meningitis was found postmortem in a calf submitted to Thirsk VIC. It was reported that two or three calves each year had developed torticollis and progressive neurological signs, and there had been three affected calves in the previous few months. The calves were reared in individual pens and bucket fed waste milk twice a day. Although there was no obvious gross pathology observed in the brain, a suppurative meningitis was evident on histopathology, and immunohistochemical labelling confirmed *Mycoplasma bovis* infection. A second calf from the farm was examined two weeks later and a severe unilateral caseo-necrotic *M. bovis* infection of the middle ear was confirmed. A review of the feeding management, hygiene, and possible treatment protocols was discussed.

H. somni and *M. bovis* are relatively unusual causes of central nervous system disease in calves. The most frequently identified bacteria causing CNS infection in young calves are *E. coli*, with disease often occurring associated with insufficient systemic colostrum absorption, or as a sequel to navel infection. *Salmonella* Dublin and *Listeria monocytogenes* CNS infections are also sporadically diagnosed in calves. Each of the different bacteria which cause CNS disease has different risk factors, and hence it is important that outbreaks of CNS disease are investigated thoroughly and promptly, in order to advise on appropriate preventive and control measures.

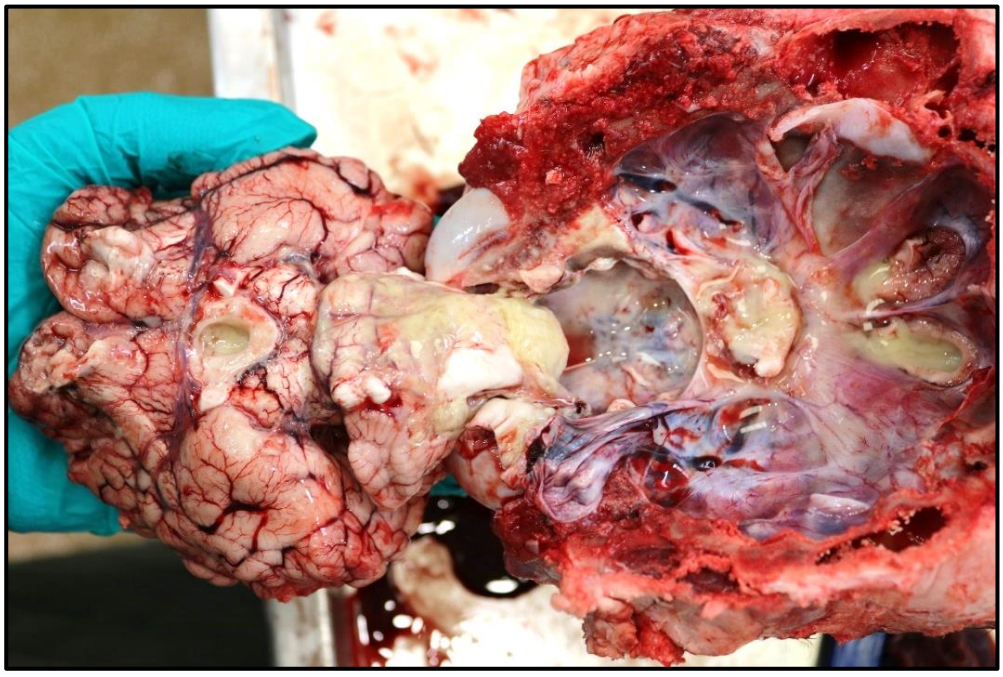

Figure 11: Fibrinopurulent exudate around the brain of a calf with *H. somni* meningitis

Skin disease

Generalised follicular hypoplasia in a 5-day-old Limousin-cross calf with alopecia

Formalin fixed skin samples were received from a five-day-old Limousin-cross calf. The animal had developed generalised alopecia, mild scaling, and self-grooming shortly after

birth. The calf was not pruritic, and the herd was BVD free. Histopathology revealed that the hair follicles and shafts were smaller than expected for the age of calf. Thin hair shafts would epilate and break easily, leading to alopecia and self-grooming behaviour noted clinically. It was deemed most likely that this generalised follicular hypoplasia was the result of an in-utero process affecting cutaneous circulation, such as subclinical disease or pyrexia in the dam. It was thought that other calves in the herd would likely not be affected, and the hair coat in this animal should return to normal in the future.

Circulatory disease

Congenital multicentric lymphoma

Congenital multicentric lymphoma was identified as the cause of striking pathology in a non-viable calf born alive at approximately eight months of gestation, in an outdoor grazing herd of 600 cows. Postmortem findings included extensive subcutaneous yellow oedema throughout the tissues of the neck, ascites and an unusual appearance to the liver, which was pale, firm, grossly enlarged with rounded edges, and had an irregular, pitted appearance to the capsular surface. Three small, raised, foci were present on the caudate process of the caudate lobe and the liver parenchyma was firm with extensive grey-white infiltrate throughout. A generalized lymphadenopathy, splenomegaly and widespread petechial haemorrhages throughout the carcase were also noted. Histopathology identified that almost all normal hepatic parenchyma had been replaced by vast sheets of round cells with an appearance typical of lymphoma. A similar picture was observed within sections of the lymph node and spleen. Congenital multicentric lymphoma in calves is generally considered to be sporadic and not associated with bovine leukaemia virus, the causative virus of the notifiable disease enzootic bovine leukosis (EBL). Nonetheless, consultation with APHA Field Services was undertaken, with EBL subsequently negated as a cause for the observed pathology.

Reproductive system – abortion, stillbirth, and congenital deformities

The most frequent diagnoses from abortion and stillbirth submissions made in the third quarter (Q3) of 2024, compared to Q3 in 2023, and Q3 for 2015 to 2024 inclusive, through the Great Britain (England, Wales, and Scotland) scanning surveillance network, are illustrated in Table 4. These can be interrogated further using the interactive cattle disease surveillance dashboard which was launched in October 2017.

Table 4: Great Britain scanning surveillance 10 most frequent abortion and stillbirth submission diagnoses in Q3 of 2024, Q3 of 2023, and Q3 for 2015-2024

10 most frequent abortion diagnoses Q1 2024	10 most frequent abortion diagnoses Q1 2023	10 most frequent abortion diagnoses Q1 2015-2024
1. Fetopathy due to *Salmonella* Dublin	1. Fetopathy due to *Salmonella* Dublin	1. Fetopathy due to *Salmonella* Dublin
2. Fetopathy due to *Neospora* infection	2. Fetopathy diagnosis not listed	2. Fetopathy due to *Neospora* infection
3. Fetopathy diagnosis not listed	3. Fetopathy due to *Bacillus licheniformis*	3. Fetopathy diagnosis not listed
4. Fetopathy due to *Bacillus licheniformis*	4. Fetopathy with BVD detected in the foetus	4. Fetopathy due to *Trueperella pyogenes*
5. Fetopathy due to Listeria sp	5. Fetopathy due to *Neospora* infection	5. Fetopathy due to *E. coli*
6. Fetopathy or stillbirth due to thyroid hyperplasia	6. Fetopathy due to *E. coli*	6. Fetopathy due to *Bacillus licheniformis*
7. Fetopathy due to fungi	7. Fetopathy or stillbirth due to congenital abnormality	7. Fetopathy with BVD detected in the foetus
8. Fetopathy due to *Trueperella pyogenes*	8 Stillbirth due to bradytocia	8. Stillbirth due to dystocia
9. Fetopathy with BVD detected in the foetus	9. Fetopathy due to *Salmonella* Typhimurium	9. Fetopathy or stillbirth due to congenital abnormality
10. Fetopathy or stillbirth due to congenital abnormality **10. Stillbirth due to bradytocia**	10. Fetopathy due to *Trueperella pyogenes* 10. Fetopathy due to *Salmonella* Dublin	10. Fetopathy due to fungi 11. Fetopathy due to Listeria sp

Abortion due to Salmonella Coeln

Salmonella Coeln was isolated from the foetal stomach contents of a four-year-old dairy cow; one of three to abort in quick succession in a 150-cow herd. The organism is not isolated commonly in cattle (three isolations in 2023, and one isolation in 2021 recorded by APHA (Salmonella in animals and feed in Great Britain 2023). The species has been

implicated in a few significant human salmonellosis outbreaks, the most recent being in Sweden where the source was established as fresh sprouts: https://www.foodsafetynews.com/2021/11/sweden-solves-salmonella-outbreak-sprouts-identified-as-likely-source/

Stillbirth due to bradytocia

Bradytocia due to relative foetal oversize was established as the cause of death in a calf which exhibited 'panting' and died within a few hours of being delivered by caesarean section. It was a large calf, weighing 51kg and measuring 107cm from crown to rump. There was marked congestion of the cerebral vessels but no evidence of either metabolic or infectious disease was identified. Given the size of the calf, it was proposed that a degree of uterine inertia may have contributed do the bradytocia, resulting in foetal hypoglycaemia and hypoxia. Sire selection is key to ensuring the risk of foetal oversize is minimised: https://bvajournals.onlinelibrary.wiley.com/doi/abs/10.1002/inpr.71

Mastitis

There were no significant trends for this quarter.

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. For more details, please see the COEEML pages on the Vet Gateway. The CoEEML is holding a 'Ruminant Health Day' Conference in Devon in February 2025. For information and to reserve a ticket (free of charge) please use this link: Ruminant Health Day Tickets, Wed, Feb 12, 2025 at 10:00am | Eventbrite

Antimicrobial use and resistance

The Veterinary Antibiotic Resistance Sales and Surveillance (UK-VARRS) Report 2023 has recently been published by the Veterinary Medicines Directorate (VMD): Veterinary Antimicrobial Resistance and Sales Surveillance 2023

This latest UK-VARSS report continues to document downward trends in sales of veterinary antibiotics in the UK. In addition, the latest RUMA Targets Task Force report can be found at: RUMA-TTF-Report-FINAL-published-November-19-2024.pdf

The Medicine Hub, a voluntary industry initiative, developed and managed by AHDB, was launched in 2021 and provides a central location for the collection of medicine data, including antibiotic use: Medicine Hub for dairy, beef and sheep farmers | AHDB

Chemical food safety

The latest Chemical Food Safety Reports can be found at: APHA chemical food safety reports (livestock)

Toxic conditions

Lead toxicity in suckler calves

Lead toxicity associated with the ingestion of bonfire remains was diagnosed as the cause of death of a two-month-old suckler calf received for postmortem examination. It was the third calf from a group of 21 to be found dead with no premonitory clinical signs. The calves were at grass with their dams, and remnants of a bonfire were found in one of the fields with evidence of cattle activity amongst the remains. There were no specific gross findings to indicate a cause of death, however; a large piece of black cloth with a distinct aroma of petrochemical was found within the rumen. Kidney-lead analysis revealed a result of 43.60 mg/kg fresh tissue (FT) consistent with lead poisoning. This was reported as a food safety incident. The remaining animals in the group were moved to new pasture and were under voluntary restriction pending blood sampling to ensure blood lead levels had dropped below acceptable limits. APHA typically see an increased incidence of lead poisoning in the spring following turnout as animals find batteries and other rubbish abandoned in fields after winter. As this case highlights, young cattle are especially at risk due to their inquisitive nature and propensity to investigate unusual objects.

Horizon scanning

International Disease Monitoring (IDM) horizon-scanning activities monitor for major, notifiable, or new and re-emerging animal disease outbreaks worldwide. This is done to provide an early warning and to assess the risks they may pose to the United Kingdom (UK), particularly for those diseases which impact on animal health and welfare, international trade, public health, or wider society. IDM also assess the risk that animal diseases might come into the UK through the trade in animals or animal products (legal or illegal), through movements of wildlife, or through the movement of fomites and vectors such as insects which may carry infectious disease. These outbreak assessments are used to guide decisions how to manage or reduce the risks and are published on the web: Animal diseases: international and UK monitoring

Shown below is some of the outbreak assessment information and horizon scanning from Quarter 4 2024.

Bluetongue virus in Europe: in November, in Europe, BTV-3 was reported in Czech Republic (88), Denmark (296), France (7), Germany (11), Liechtenstein (1), Norway (12) and Spain (9). BTV-4 was reported in Cyprus (3). BTV-8 was reported in Greece (31). In Africa, BTV pending typing was reported in Libya (13). (WOAH data only). See also the map in Figure 12, which shows all the bluetongue virus reports on WOAH in Europe (except BTV-1). On the 11 October 2024, the Netherlands published reports for the first time detailing that BTV12 had been detected in 2 separate farms. BTV-12 has not been seen before in Northern Europe and the origin is unknown at this time (NVWA 2024c). There is no vaccine available for BTV-12 and the clinical picture is unclear. Further information can be found at: Bluetongue virus in Europe

Epizootic Haemorrhagic Disease (EHD): France, Spain and Portugal reported outbreaks of EHD (serotype 8) in Q3 and Q4 2024. Epizootic haemorrhagic disease in Europe

Foot and Mouth Disease (FMD): in November 2024, outbreaks of FMD SAT 2 were reported in Algeria (6) and South Africa (3). Outbreaks of FMD type O were reported in China (1) and Palestine (2) (WOAH data only).

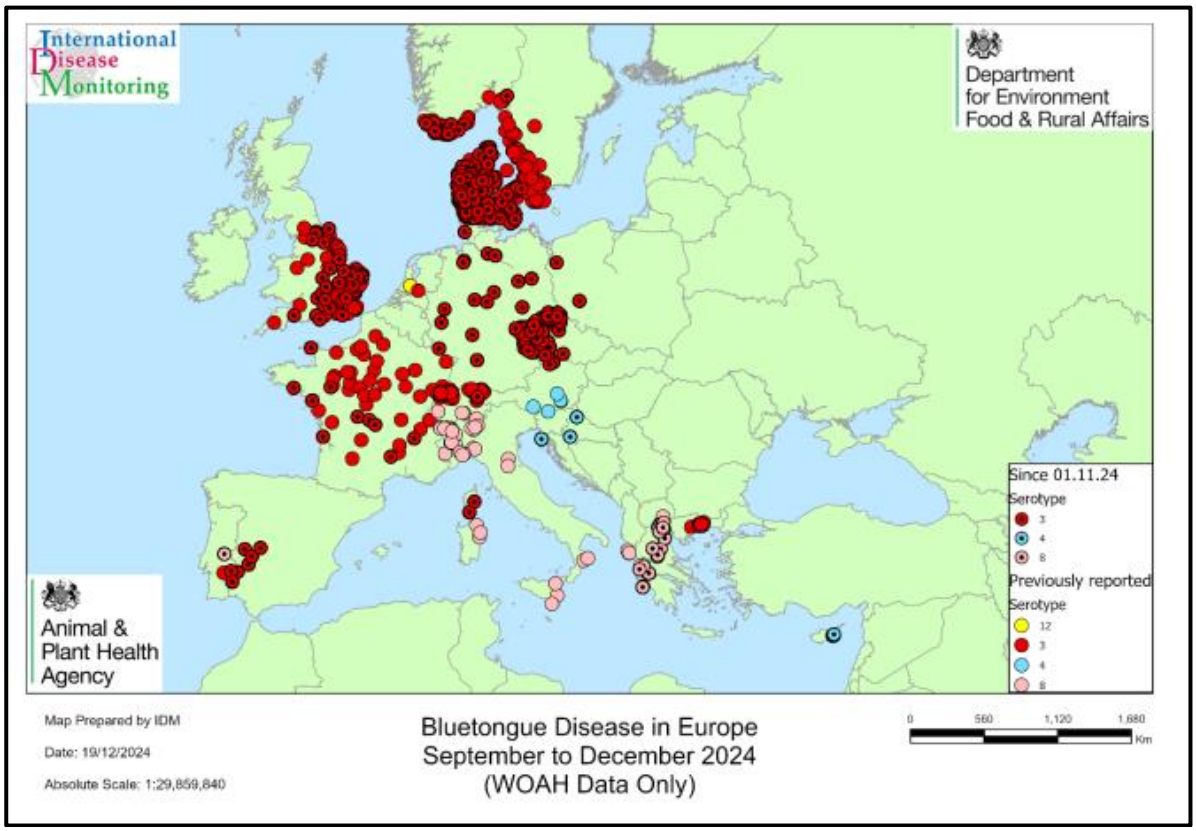

Figure 12: WOAH data for Bluetongue Disease in Europe from September to 17 December 2024

Highly pathogenic avian influenza (HPAI) H5N1 in dairy cows in the USA

On 26 March 2024, the United States of America (USA) made an immediate notification to the World Organisation for Animal Health (WOAH) of an outbreak of influenza A of avian origin (H5N1) affecting dairy cattle in Texas. The outbreak strain, a high pathogenicity avian influenza (HPAI) strain, belongs to clade 2.3.4.4b, genotype B3.13 (Nguyen et al.,

2024). This genotype has never been detected outside of the Americas (UKHSA, 2024). As of 15 August 2024, this case numbers had risen to 192 reports in livestock (191 in dairy cattle and 1 in alpacas, present on a poultry farm with the same strain) across 13 states (Map 1) (US Department of Agriculture (USDA), 2024a). As of 15 August 2024, 156 of these reports are available on WOAH (2024a). According to the USDA's National Epidemiological Brief, on average, less than 10% of affected dairy cattle have displayed clinical signs. Where clinical disease has been seen, it included a reduction in feed consumption and production of thickened or clotted milk, with average mortality and culling estimated at 2% or less. However, no deaths in dairy cattle have been directly attributed to HPAI (USDA, 2024b). Influenza A (H5N1) of avian origin in domestic livestock in the USA and CDC A(H5N1) Bird Flu Response Update September 27, 2024 | Bird Flu | CDC

APHA publications of interest

Monthly APHA disease surveillance reports can be found at this link: APHA disease surveillance monthly reports - GOV.UK (www.gov.uk)

APHA focus articles in the Veterinary Record can be found at: APHA focus articles in the Veterinary Record - GOV.UK (www.gov.uk) including a recently published surveillance focus article on Nodular skin disease in cattle (wiley.com)

The 2023 edition of the *Salmonella* in animals and feed in Great Britain (previously called *Salmonella* in Livestock Production in GB) has been published and is now available here: Salmonella in animals and feed in Great Britain 2023

MASTIN A; Gubbins S; Ashby M; PAPADOPOULOU C; WADE C; Batten C (2023) BTV and EHDV – what's new and what do I need to know? Veterinary Practice: InFocus 4th October 2023. BTV and EHDV – what's new and what do I need to know? - Veterinary Practice (veterinary-practice.com)

OTTER A; SCHOCK A; PAYNE J (2023) A form of hepatogenous copper poisoning in fattening cattle associated with the ingestion of mouldy straw. Vet Record Case Reports 11 (2) 2592. A form of hepatogenous copper poisoning in fattening cattle associated with the ingestion of mouldy straw - Otter - 2023 - Veterinary Record Case Reports - Wiley Online Library

JEWELL N; SWINSON V; HAYMAN C; MARTINDALE L; BRZOZOWSKA A; Mitchell S (2023) Laboratory diagnosis of gastrointestinal nematodes in first-grazing season cattle. Veterinary Record 192 (9) 364-36 Laboratory diagnosis of gastrointestinal nematodes in first-grazing-season cattle - Jewell - 2023 - Veterinary Record - Wiley Online Library

OTTER A; BRZOZOWSKA A (2022) Pneumonia in adult cattle, *Veterinary Record 5/12 March 2022 191-193* Pneumonia in adult cattle (wiley.com)

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.