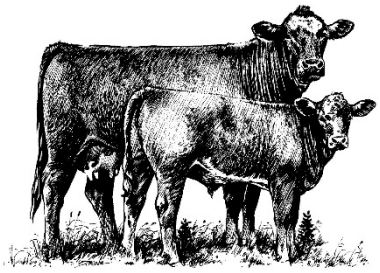
Animal & Plant Health Agency



SRUC

GB cattle quarterly report

Disease surveillance and emerging threats

Volume 27: Q4 – October – December 2020

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Introduction and overview

This quarterly report reviews disease trends and disease threats for the fourth quarter of 2020, October -December. 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

Issues and trends

New Postmortem Providers join APHA's Scanning Surveillance Network in England and Wales

The APHA's postmortem examination and diagnostic testing service provides a major component of the GB scanning surveillance network. The network works closely with vets and farmers to detect and investigate new or re-emerging disease, and diagnose endemic diseases in farm animals.

The APHA Surveillance Intelligence Unit and Surveillance and Laboratory Services Department are very pleased to announce that during January and February 2021, three additional postmortem examination (PME) providers have joined the scanning surveillance network. These are the Universities of Cambridge, Liverpool and Nottingham.

This broadens the expertise of, and contributors to, livestock disease surveillance in England and Wales and also brings livestock premises in the areas they cover closer to a postmortem provider.

The new PME providers join the seven current PME Providers (Royal Veterinary College, Universities of Surrey, Bristol, Cambridge and Liverpool, the Wales Veterinary Science Centre, and SRUC Veterinary Services St Boswells) that work together with the six APHA Veterinary Investigation Centres (VIC), all of which will continue their valued contribution to scanning surveillance.

Key points about accessing PME in APHA's scanning surveillance network:

- Each PME Provider has an assigned area as shown in colour on the map on this link: http://apha.defra.gov.uk/documents/surveillance/maps/england-wales-map20.pdf
- Within each assigned area, the hatched area shows where premises are eligible for free carcase collection and delivery of animals to the PME Provider
- Premises within non-hatched areas need to arrange to deliver animals themselves

- The postcode search tool identifies and provides contact details for the allocated PME provider and indicates if the premises is eligible for free carcase collection. This is based on the postcode of the premises from where an animal is to be submitted rather than a veterinary practice: http://apha.defra.gov.uk/postcode/pme.asp
- To arrange a PME, the vet calls the relevant PME provider to speak to the duty VIO/vet
- There will be some livestock premises for which the allocated PME provider has changed, and the free carcase collection service may no longer be provided for some holdings. The APHA postcode search tool allows farmers and vets to see the situation for individual premises.

More information about APHA's scanning surveillance and diagnostic services is available on Vet Gateway (link) below and in the attached farmer and vet information leaflets which include a map showing the PME sites.

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

Please do let me know if you have queries which are not addressed in this communication, or contact the APHA Surveillance Intelligence Unit SIU@apha.gov.uk for more information.

Covid19

APHA, SRUC and partner postmortem providers took all reasonable preventative measures in view of the ongoing Covid19 situation and developed contingency plans, to be in place to manage services across the network during the outbreak. They have continued to provide a diagnostic service for livestock, through carcases submitted for postmortem examination and from samples submitted by post for diagnostic testing and, for APHA sites, vets were reminded to contact their local site as directed by the postcode finder: http://apha.defra.gov.uk/postcode/pme.asp

Weather

2020 was on the whole a rather wet year, with the wettest February on record, all summer months being wetter than average, and October and December also notably wetter than average (Figure 1). October was a wet and dull month, with 142% of average rainfall and 72% of average sunshine – provisionally the fifth wettest October in a series from 1862. November began mild, wet and windy with a provisional UK mean temperature of 7.7 °C, which is 1.5 °C above the 1981-2010 long-term average, making it the 6th warmest November in a series from 1884 (Figure 2). December was unsettled and turned increasingly cold during the last week, with widespread wet and windy weather from Storm Bella.

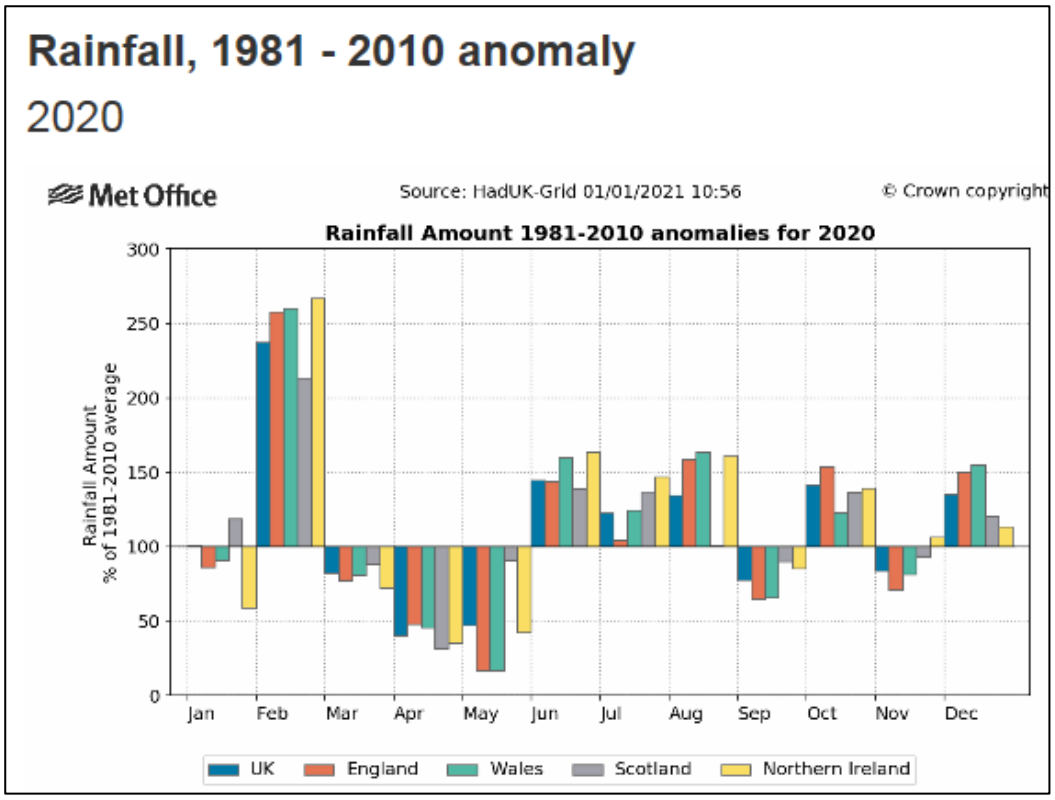

Figure 1: Rainfall amount 1981-2010 anomalies for 2020

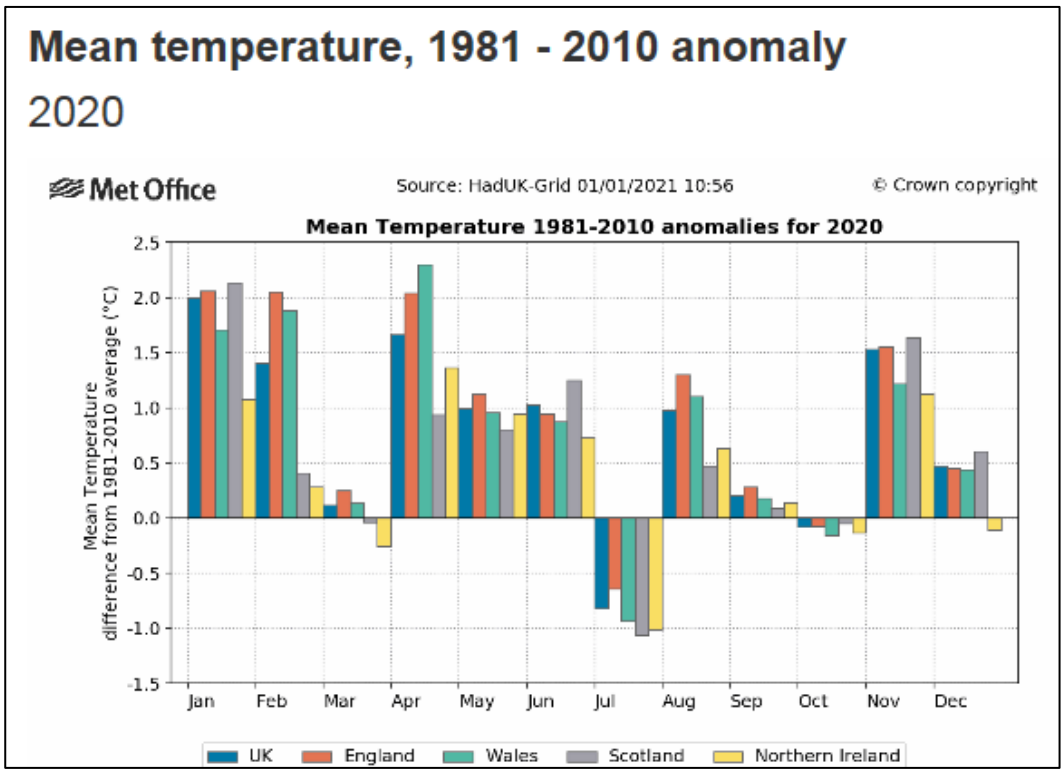

Figure 2: Mean temperature 1981-2010 anomalies for 2020

The milder temperatures meant that confirmation from The Pirbright Institute that **28th December 2020** was the start date for the seasonal vector-free period (SFVP). This was later than in previous years – which has previously been around the end of

November, start of December, in some years. This is of particular relevance to Bluetongue and other midge borne diseases e.g. Schmallenberg virus, as it suggests that the period for possible findings of congenital deformities in calves and lambs could be protracted.

Reports from the sheep sector indicated that cases of acute fluke also appeared delayed, although the first case was reported by SRUC in October in North East Scotland. A group of farmers in the north of England performed sentinel surveillance for liver fluke antibodies in lambs from September, on farms known to have liver fluke problems. The majority failed to detect antibodies until December and this informed those farmers on the best time to target liver fluke treatments.

Dairy

Cumulative milk production for 2020 was 30.66 million litres higher than for 2019. The UK average milk price for December 2020 is estimated at 30.38ppl, which is down 0.27ppl from the November 2020 average (30.65ppl); with a significant variation between the highest and lowest paying contracts. Overall the DEFRA average UK farm-gate milk price for November 2020 was 30.54ppl, which was 0.67ppl more than the average November and 2019 price, but not as high as the 31.6ppl price recorded in November 2018. Although there is relative price stability at the moment, this is set against increases in feed, fuel and fertilizer costs.

Some farmers are reporting forage stocks to be tight, as we head into the second half of the winter, with some looking for an early start to the grass growing season.

Beef

The last quarter of 2020 remained very strong for beef prices, well above the five-year - average with GB average prime cattle prices generally increasing in the October and November, and then hovering around the 370ppKg mark. Essentially, consumer demand has remained high and supply relatively tight. The trend for reducing beef cow numbers continues, and total UK beef and veal production was less than last year in all three months. Cull cow markets also remained strong during the quarter, though prices did drop through October and November.

There were concerns about the introduction of the new lockdown in early November, and about the trade negotiations linked to leaving the EU, though prices continued to be strong into the New Year. An interesting market report from AHDB in October highlighted that heifers are now making a larger share of the prime market than ever before (around 40%) with sexed semen (fewer male black and white bulls) and, reduced suckler cow numbers needing fewer replacements thought to be driving the trend.

New and re-emerging diseases and threats

At the time of writing, four cases of congenital defects in calves and lambs, with positive PCR results for Schmallenberg Virus (SBV), have been detected in Q1 2021. This led to a review of SBV serology results in the second half of 2020, which were suggestive of a resurgence of exposure to SBV in Q3 and Q4 2020.

Unusual diagnoses

Klebsiella pneumoniae septicaemia in a neonatal dairy calf

A four-day-old Holstein heifer calf was submitted from a milking herd of 60 cows. Three calves had died over the previous few weeks. The calf had remained with its dam for 48 hours before being moved to an indoor teat-rearing system. It had been noticed ill and was found dead the next day. Postmortem examination identified dehydration and faecal soiling around the perineum. The right hock and carpal joints were swollen and had increased fibrinous synovial fluid, and there were haemorrhages over the surface of the liver and lungs. The findings were suggestive of septicaemia and *Klebsiella pneumoniae* was isolated. This organism is an uncommon cause of neonatal septicaemia in calves, with *E. coli* identified in most cases. Hypogammaglobulinaemia usually underlies neonatal septicaemia and a zinc sulphate turbidity test (ZST) result of 3 turbidity units (adequate values are considered >20 units) indicated no effective systemic colostrum transfer. Rotavirus and coronavirus infections were also confirmed.

Johne's disease in an immature stock bull

A 20-month-old dairy bull was examined postmortem. It had developed diarrhoea, weight loss and lethargy over a period of a week and was euthanased following attempted symptomatic treatment. The purchased animal had been housed since its introduction to the herd. Postmortem examination identified several fresh ulcers in the greater curvature of the abomasum, in addition to three larger ulcers, each approximately 1cm diameter, in the pyloric region. The ileum was not markedly thickened, although the mucosa had a ridged texture (Figure 3). A PCR on ileal content proved positive for *Mycobacterium avium* subspecies *paratuberculosis* (Map); a blood sample collected by the practitioner prior to euthanasia had also proved seropositive to Map. This is not the youngest animal identified with Johne's disease, but it is a reminder that clinical disease can occur in immature animals. It also highlights the risk of introducing infection into herds through purchasing stock.

Figure 3: Corrugation of the ileal mucosa associated with *Mycobacterium avium* subspecies *paratuberculosis* infection in a young stock bull

Congenital bovine herpesvirus-1 infection in an un-weaned dairy calf

A 14-day-old calf was submitted from a dairy herd of 150 cows. Four similarly aged calves had recently died, with clinical signs of respiratory disease reported in this age group. The calf examined postmortem had reportedly first shown respiratory signs when aged five days. It subsequently deteriorated despite symptomatic treatment.

The liver was swollen and had diffuse fine pale foci. Anteroventral lung consolidation was suspected and there was also purulent omphalitis. BoHV-1, the cause of infectious bovine rhinotracheitis (IBR) was detected by PCR from the respiratory tract. Histopathology confirmed an acute necrotising lymphohistiocytic hepatitis, with rare intranuclear inclusions, consistent with congenital BoHV-1 infection, and non-specific lung lesions. Immunohistochemistry subsequently demonstrated BoHV-1 within the liver lesions. BoHV-1 most commonly affects the liver in aborted and congenitally-infected calves; the latter may also exhibit ulcerative or necrotic lesions of the upper alimentary tract.

Plant poisonings

Bracken poisoning in a four-year-old bull

A group of 18 suckler cows with their calves and a bull, part of a herd of 150, was grazing enclosed common land. Over a period of five days the bull developed malaise and pyrexia (40.7^{o}C), it became dehydrated and lay away from the other animals in the group. The bull initially improved with attempted treatment, then relapsed. It passed blood in the faeces three days later and was euthanased after further deterioration.

There were multifocal haemorrhages throughout the carcase, particularly notable on the epicardium (Figure 4), endocardium, parietal pleura and serosa of the alimentary tract. Blood was present in most of the large intestine. Necrotic lesions were scattered throughout the lungs.

Histopathology confirmed bone marrow suppression, which particularly affected the megakaryocyte and granulocyte lineages. The gross lesions and histopathological findings were consistent with bracken fern toxicity. Bracken is generally considered to be fairly unpalatable to cattle, though it may be eaten when there is a lack of grass, such as in drought conditions, or possibly when grass is lush and cattle seek a source of fibre. In this case no other animals in the group were affected, and the reason for the bull ingesting bracken was unknown. Bracken contains several toxic moieties including ptaquiloside, kaempferol and shikimic acid, and exposed food producing animals could be a threat to human consumers. For this reason a withdrawal period of 15 days is advised for exposed animals prior to slaughter for human consumption of meat and offal (based on the recommendations of the Committee on Toxicity 2008).

For information: Committee on Toxicity

The Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) is an independent scientific committee that provides advice to the Food Standards Agency, the Department of Health and Social Care, and other Government Departments and Agencies on matters concerning the toxicity of chemicals.

https://cot.food.gov.uk/

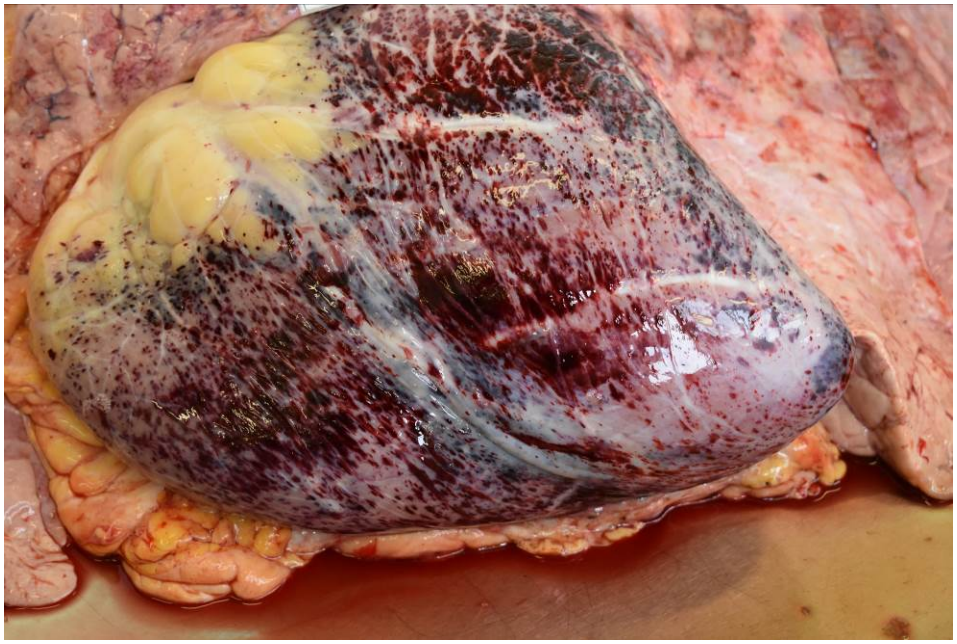

Figure 4. Epicardial haemorrhages in a bull with bracken poisoning

Suspected acorn and bracken poisoning in dairy heifers

Two cases of acorn poisoning were diagnosed postmortem (in addition to several others in sheep this quarter; reports were also received from practitioners). The carcase of a nine-month-old dairy heifer was submitted for postmortem examination. The heifer was in a group of 30 at pasture and had access to bracken and acorns. Four days prior to submission the private veterinary surgeon was called to examine the group as three showed signs of coagulopathy, including bleeding from the nostrils and melaena, and/or

fresh blood in the faeces. One animal died despite treatment and was examined postmortem. There were widespread haemorrhages in the subcutaneous tissues, over the diaphragm, omentum, epicardium and serosal surface of the intestines. Blood clots were present within the abomasum and in some loops of the small intestine. Both kidneys were surrounded by yellow oedema and had dilated haemorrhagic pelvises. A brown diphtheritic membrane covered the oesophageal mucosa. Acorn toxicity was suspected and this diagnosis was supported by an aqueous humour urea concentration of 153 mmol/l (reference interval 3-8 mmol/l), and kidney histopathology which confirmed diffuse tubular necrosis consistent with a nephrotoxic injury. The widespread carcase haemorrhages were suspected to be caused by bracken toxicity, although bone marrow histopathology did not confirm the characteristic lesions. Haemorrhages can also be a feature of acorn toxicity, presumed due to the effects of uraemia.

Acorn poisoning in beef steers

A second case of acorn poisoning was diagnosed in fatteners. Five of a group of 18 steers aged 10 to 11 months died. The group was in a field which had many oak trees, prior to being housed three weeks before the submission of a carcase for postmortem examination. Gross pathology and histopathological lesions confirmed significant renal disease, and an aqueous humour concentration of 84 mmol/l indicated compromised renal function. The blood urea concentrations of the four other affected animals in the group were also reported to be increased above the reference interval.

The toxic components in acorns are tannins, which if sufficient acorns are ingested, can cause gastroenteritis and renal damage. The concentration of tannins is reportedly particularly high in green acorns, and poisoning most often occurs in autumn after storms bring large numbers down onto pastures. 2020 was designated a “mast year”, which is a year where oak trees produce particularly large numbers of acorns. It can be difficult to prevent disease in animals which can reportedly develop ‘cravings’ for acorns, despite the presence of adequate grazing. Moving animals off the pastures, using fencing, or covering the acorns with slurry are suggested ways of preventing stock gaining access to the acorns.

Acorn poisoning

APHA issued an alert for the risk of toxicity due to ingestion of acorns, particularly in cattle and sheep.

https://www.facebook.com/APHAGov/posts/1681947668637976

Myositis caused by *Clostridium novyi* in dairy cows

Over a period of six months, eight cows in a very large dairy herd were reported to have sporadically developed swollen legs, affecting usually only one front or rear limb. The eighth affected animal, which developed swelling and lameness of one of its forelegs, was euthanased and submitted for postmortem examination. The carcase was unfortunately fairly autolysed. The triceps, biceps, pectorals and serratus ventralis muscles of the right

foreleg were all blackened, relatively dry and with emphysematous foci (Figure 5). Excess dark fluid was present in the fascia between the muscles. *Clostridium chauvoei*, the cause of 'blackleg', was not detected, but a fluorescent antibody test identified *Clostridium novyi*. This organism is not considered to be a primary invader, and like *Clostridium septicum*, can cause opportunistic infection, or 'false blackleg', following trauma or wounding. Discussions with the practitioner did not elucidate the factors which may have led to this muscle infection.

Figure 5: Dry, black and emphysematous muscle in a cow with *Clostridium novyi* myositis

Reference: Otter A, Uzal FA. Clostridial Diseases in farm animals: 2 Histotoxic and Neurotoxic disease. *In Practice* 05 June 2020

Haemangiosarcoma in a 12-year-old Welsh Black cow

A 12-year-old Welsh Black cow died suddenly. Postmortem examination was undertaken on the farm by the practitioner, who found a large amount of liquid and clotted blood in the abdomen, in addition to haemorrhages in the lung and thickened nodules in the liver. Histopathology confirmed that the lesions in lung and liver were neoplastic; the cellular features were consistent with a diagnosis of haemangiosarcoma. As there was much haemorrhage in the left cranial abdomen and the spleen is most often the site of primary haemangiosarcomas, a splenic origin was suspected; lesions in the liver are usually metastatic. Haemangiosarcomas are rare in adult cattle, with very few published case reports; primary haemangiosarcoma in the liver with metastasis to other organs has been reported (Stock and others 2011). All neoplasms in adult cattle, other than haemangiomas, papillomas and warts, should be reported to the APHA for investigation for possible enzootic bovine leucosis.

Reference: Stock ML, Smith BI, Engiles JB. Disseminated haemangiosarcoma in a cow. *The Canadian Veterinary Journal* 2011;52: 409-413

Babesiosis

Outbreaks of babesiosis (or 'redwater') were diagnosed at APHA VIC Starcross in dairy herds. In one of the herds of 200 cows, a total of 14 cows had shown typical signs of the disease; they passed red urine, developed milk drop and exhibited anaemia. Blood samples were collected from three of the affected animals and in two of these *Babesia divergens* infection was confirmed by PCR. This PCR can also detect other blood piroplasms, including *Rickettsia* and *Theileria*, along with *Anaplasma phagocytophilum*, the causative agent of tick borne fever (TBF). Additional testing for *A. phagocytophilum* demonstrated co-infection. The pan-piroplasm PCR test for these protozoa can be done on EDTA blood samples, or if a postmortem examination is done, on fresh spleen. It can also be used to test ticks for infection.

The vast majority of diagnoses of redwater are made in adult cattle. The immunity to this protozoal disease is complex. Infection by *B. divergens* occurs in animals exposed to infected *Ixodes ricinus* ticks. Young calves on tick-infested farms usually acquire passive protection in colostrum, which may persist for up to nine months. After turnout, repeated exposure to infection results in the development of immunity. Hence the disease usually occurs in cattle which have been brought onto a farm where there are infected ticks, and if the animals are naïve to the infection they can develop clinical disease. It can also arise where previously unexposed herds are grazed on newly acquired land, which is unknowingly infested by ticks.

The disease is more often diagnosed in the second half of the year, clinical cases usually occurring through May to November (Figure 6), which corresponds to the predominant seasonal activity of ticks and the grazing management of the herds.

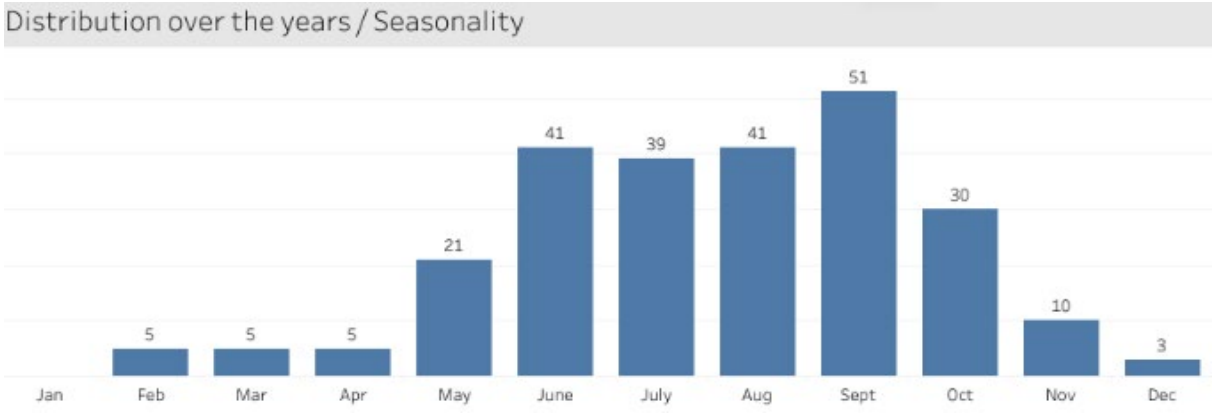

Figure 6: VIDA diagnoses showing seasonality of Babesiosis 2002-2020

Changes in disease patterns and risk factors

Enteric system

The *Salmonella* in Livestock Production in GB 2019 has been published on Gov.uk:

https://www.gov.uk/government/publications/salmonella-in-livestock-production-in-great-britain

Salmonella Dublin continues to be the most common serovar detected in cattle in England, Wales and Scotland. In England and Scotland, Salmonella Mbandaka detection in cattle has become more frequent during 2019 and 2020, than previous years. The significance of this is being investigated.

Abomasal disorders in dairy calves

Abomasal disorders are increasingly diagnosed in young dairy calves. Outbreaks of abomasal disease can cause multiple deaths within management groups. APHA VIC Shrewsbury recorded three cases in December.

The first was in a 200 cow block-calving herd, where bloating and diarrhoea occurred in calves aged around seven to ten days. Fifteen calves had been affected and two had died. Each of the affected calves was fed reconstituted milk powder, whereas 30 calves which had been fed whole milk were unaffected. The second dead calf was submitted for postmortem examination. The abomasum was markedly distended with foul-smelling gas and milky fluid in the lumen, and the rumen also contained similar milky fluid and a little forage. There was no milk clot within the abomasum which suggested that the milk powder may have been reconstituted too dilute, and as such failed to satisfy the calves' hunger, making them overfeed; this can lead to bloat, bacterial proliferation and endotoxaemia.

In the second herd, calves were affected at around three weeks of age. A calf examined postmortem from the herd of 280 cows had a dilated abomasum, which was oedematous and filled with brown liquid, and the mucosa was emphysematous with necrotising inflammation (Figure 7). Although no specific bacteria were isolated an acute multifocal suppurative emphysematous abomasitis, associated with bacillary bacteria with morphology of *Clostridia* species, was identified by histopathology.

Figure 7: Large gas bubbles within the abomasal wall and reddening of the abomasal mucosa in a calf with emphysematous abomasitis

In the third case, calves aged 10-weeks were reported with signs of pneumonia, and 10 had died. The calf examined postmortem weighed only 57kg and was in poor condition. Multifocal ulcers were present in the abomasum and there was consolidation of anteroventral lung lobes. There was also generalised yellow discolouration of tissues and the liver was dark orange, which was associated with *Salmonella* Dublin infection.

In several of the case reports, from submissions where abomasitis was diagnosed, it was mentioned that there was no milk clot in the abomasal contents, which suggested there had been over-dilution of the milk. A further possibility is that these calves were fed a whey based milk replacer which does not clot, unlike a skimmed milk based product which contains casein. Products that are marketed as “skim milk powders” may only contain 20-50% skim-milk now, which affects clot formation. Some of the processing steps may also reduce clot potential.

The specific ‘trigger’ for abomasal disorders is often not clear, and when such cases are identified, a review of calf management, feeding and cleanliness is recommended, which would include:

- ensuring optimal systemic colostral absorption
- checking that milk powder is reconstituted to the correct dilution
- ensuring the milk is fed at the correct temperature
- making sure that teats are clean and undamaged and do not allow over-fast drinking
- regulating the amount of milk fed, so that calves are not overfed or receive varying amounts
- providing fresh water and suitable forage
- assessing whether infections such as navel ill are affecting the group, as this type of infection may affect oesophageal groove function and abomasal emptying.

Lesions suggestive of Severe Summer Scour Syndrome in a seven-month-old calf

A dairy heifer was submitted to Wales Veterinary Science Centre (WVSC) to investigate severe scouring, malaise and death. Two seven-month-old dairy heifers had died from a group of 30, which had all developed diarrhoea within two-to-three-weeks of being turned out. Anthelmintic and antibiotic treatment was unsuccessful, but feeding hay appeared to improve the clinical signs in most of the group.

At postmortem, oral and oesophageal ulceration and necrosis were observed. There were negative test results for parasitic gastroenteritis, coccidiosis, salmonellosis, yersiniosis, BVD, MCF and IBR. Histopathology confirmed severe, multifocal, subacute, ulcerative and necrotising stomatitis, glossitis and rumenitis, with intralesional bacteria likely to be opportunistic *Fusobacterium spp.* These changes in the alimentary tract were consistent with previous cases of Summer Scour Syndrome (SSSS) examined at APHA Weybridge.

SSSS can cause morbidity and mortality rates as high as 40% in some groups. Dietary factors are thought to be involved, with cases occurring soon after turnout, although the aetiology is likely to be multifactorial. If you think you may have similar cases during 2021, then please get in touch with your local postmortem provider, as APHA are keen to continue to investigate this disease further.

HATELEY, G., MASON, C., HENDERSON, K., FAGAN, S., MILLAR, M. & NEALE, S. (2018) Severe summer scour syndrome in recently turned out dairy calves. Vet Rec 183, 300

HATELEY, G., MASON, C., HENDERSON, K., FAGAN, S., MILLAR, M., NEALE, S. & MCINERNEY, B. (2019) Severe summer scour syndrome in recently turned out dairy calves. Vet Rec 184, 416-417

Respiratory system

Husk

Quarter 4 is generally the time of year when an increase in respiratory diseases is seen in cattle. This coincides with the housing of animals and the gradually colder weather.

In 2020, a true rising trend was seen in the percentage of diagnosable submissions where a diagnosis of parasitic pneumonia/Husk was reached. This is particularly true for Scotland, where, both in Q4 (Figure 8) and overall during the year (Figure 9), the percentage kept increasing reaching an all-time high in Q4 2020.

The cattle expert group will keep monitoring these trends.

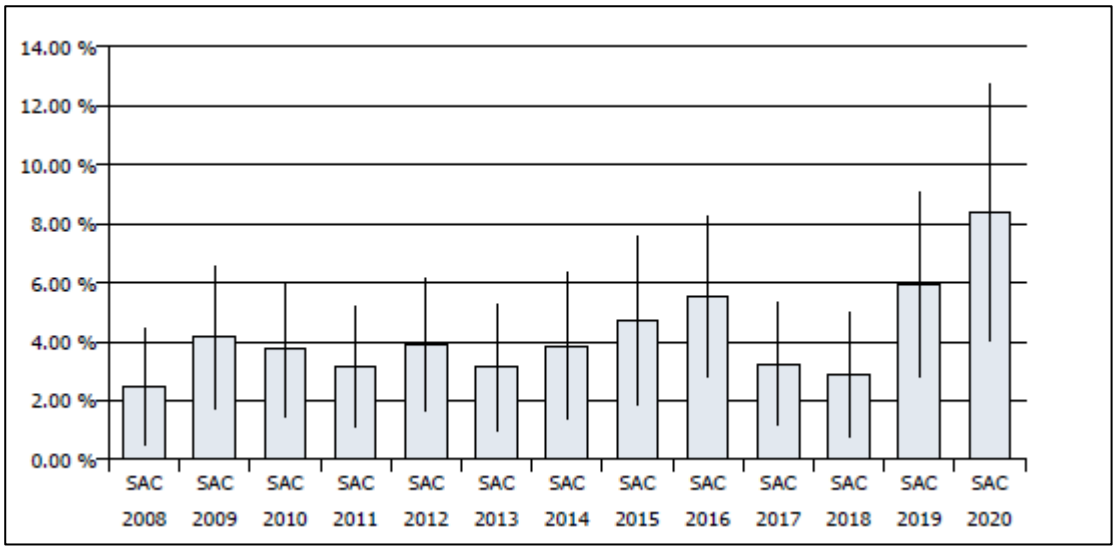

Figure 8: SRUC incidents of husk in cattle as % of diagnosable submissions in Q4 2008 - 2020

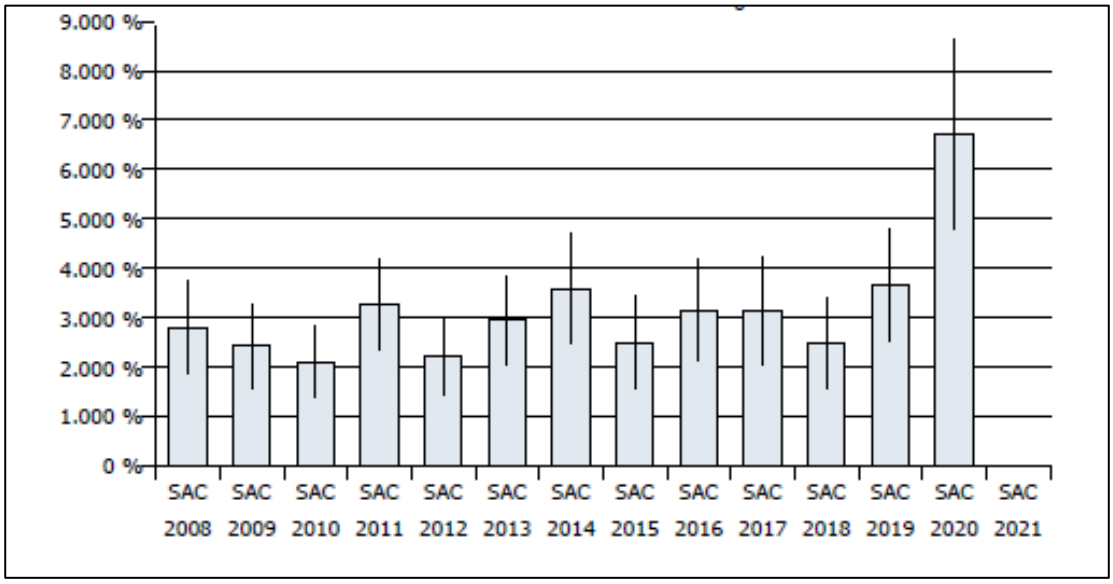

Figure 9: SRUC incidents of Husk in Cattle as % of diagnosable submissions 2008 - 2020

Lungworm in dairy cows with suspected failure of previous pour-on eprinomectin treatment

A 4-5 year old dairy cow was euthanased to investigate persistent coughing, abortion, weight loss and milk drop in around 20-30 cows from a group of 60 dry cows, part of a closed herd of 250 milking cows. The dry cow group had been at grass since July. A pour-on containing eprinomectin had been administered in late August 2020 and cows then returned to the same pasture. No reduction in coughing was observed after treatment.

At postmortem examination, live adult lungworm were seen in the airways. Lungworm larvae were detected by Baermann's examination of faeces from the submitted cow, and six other affected cows in the group, confirming patent lungworm infection.

The worst affected cows were subsequently treated with oral albendazole with good clinical response seen within a few days.

Eprinomectin is licensed for the treatment of adult and L4 *Dictyocaulus viviparus* and for control of reinfection for 28 days. Treated cows had been returned to the same pasture and were thus likely to have become reinfected. However, the claimed 28 day persistency plus the 25 day prepatent period of *D. viviparus* should not have resulted in patent lungworm infection 39 days after treatment. Failure of efficacy of the eprinomectin pour-on was suspected and it was advised that this be reported to the VMD and the drug company.

Eprinomectin is commonly used for treatment of lungworm in dairy herds, due to the zero milk withdrawal; repeated use of the same active ingredient is a recognised predisposing factor for the development of anthelmintic resistance. Treatment failure may potentially also be related to the method of administration (pour on) leading to variable absorption.

The Veterinary Medicines Directorate (VMD) and APHA would be interested to hear of any further cases of suspected lack of efficacy of lungworm treatments and the cattle expert group will be closely monitoring this during 2021.

Mannheimia haemolytica and Respiratory Syncitial Virus (BRSV)

Similar rising trends were noted for diagnoses of pneumonia due to *Mannheimia haemolytica* and BRSV across APHA in Q4 (Figure 10), although these were not considered statistically significant.

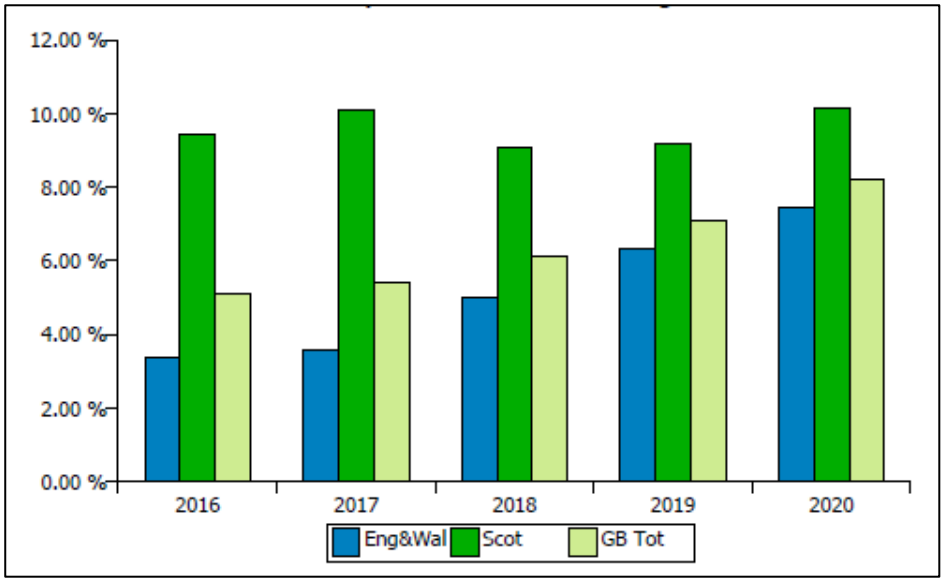

Figure 10: GB Incidents of *Mannheimia haemolytica* as % of diagnosable submissions Q4 2016 - 2020

Mycoplasma bovis

The percentage of diagnosable submissions, where a diagnosis of ***Mycoplasma bovis*** pneumonia was reached, continues to see an upward trend (Figure 11). This has been

reported in previous quarters and it is mirrored by the annual figures. We will continue to monitor these trends.

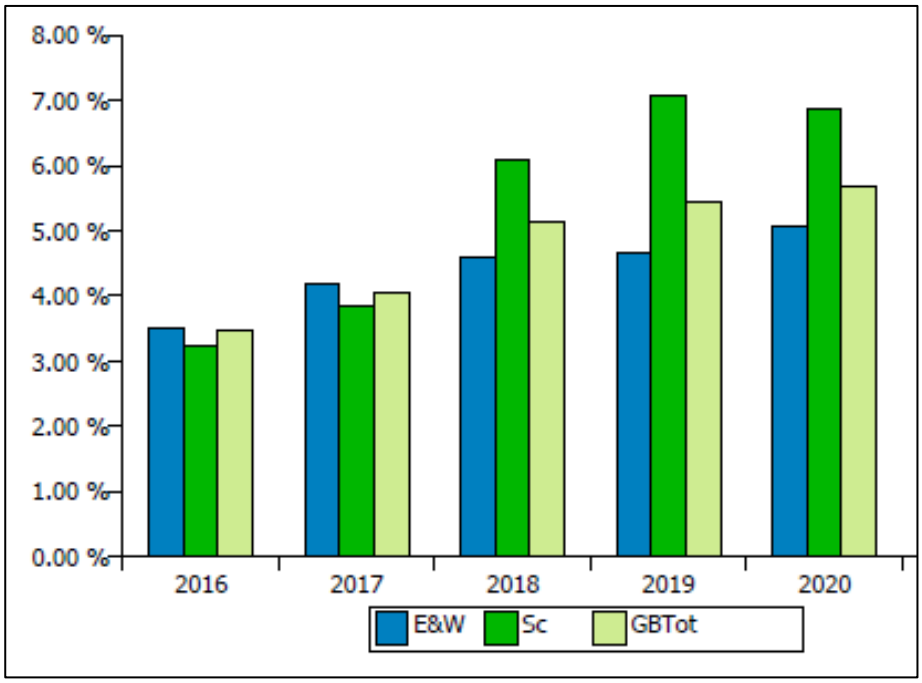

Figure 11: GB Incidents of *Mycoplasma bovis* in Cattle as % of diagnosable submissions Q4 2016 - 2020

Centre of Expertise for Extensively Managed Livestock

On 9th December 2020, expert speakers from the fields of animal and human health came together to talk about tick-borne diseases, via a webinar organised by the APHA Centre of Expertise for Extensively Managed Livestock.

Paul Phipps, a scientist based at APHA Weybridge in the Wildlife Zoonoses and Vector Borne Disease Research Group, delivered the first talk describing the role of ticks as important disease vectors, and how their geographical range, abundance and period of activity seems to be changing in the UK.

Dr. Jolyon Medlock, the PHE Head of Medical Entomology, presented findings from the PHE national Tick Surveillance Scheme (TSS), which was established in 2005, to monitor tick distribution and seasonality on a nationwide scale.

Katie Lihou, a PhD student in the department of Veterinary Parasitology and Ecology at the University of Bristol, gave an overview of her research into the distribution and prevalence of ticks and tick-borne disease on sheep and cattle farms in Great Britain.

Suzanna Bell, vector borne disease discipline champion within APHA and Veterinary Investigation Officer at APHA Shrewsbury, covered the diagnosis, treatment and

management options for tick-borne diseases in livestock, including Tick-borne Fever, Louping ill, Redwater Fever (bovine babesiosis) and Tick pyaemia.

To end the webinar we had two interesting case studies, firstly from Bev Hopkins, a Veterinary Investigation Officer at the Wales Veterinary Science Centre, who presented a case of high mortality in a sheep flock, caused by co-infection with Louping ill virus and Tick-borne Fever. Harriet McFadzean, a Veterinary Investigation Officer at APHA Starcross, presented a case of Redwater Fever (bovine babesiosis) and Tick-borne Fever in a small beef herd in Dorset, associated with early and high burdens of ticks on pasture. Both cases demonstrated how significant losses can be incurred by cattle and sheep farmers as a result of tick-borne diseases.

Further information can be found in previous APHA Science Blogs:

- Centre of Expertise for Extensively Managed Livestock

https://aphascience.blog.gov.uk/2018/09/07/caring-for-extensively-managed-livestock/

- Ticks as vectors of disease

https://aphascience.blog.gov.uk/2019/06/11/ticks/

TSEs

Surveillance for TSEs is carried out in the United Kingdom in animals susceptible to these diseases. This includes cattle, sheep and goats. The main aim is to monitor trends in disease incidence and prevalence, to evaluate the effectiveness of TSE disease controls.

https://www.gov.uk/government/collections/tse-disease-surveillance-statistics

There are two categories of surveillance:

Passive surveillance

This is when an animal with clinical signs suspicious of BSE or scrapie is reported to an APHA Office to be investigated. Such cases are slaughtered and the examination of the brain determines whether the animal was affected by BSE or scrapie.

APHA has been recording and analyzing data from reported cases in cattle since the start of the BSE epidemic in 1986, and for scrapie in sheep and goats since this disease became notifiable in 1993.

Active surveillance

The UK carries out active surveillance for TSEs. The UK has:

- tested cattle since July 2001

- tested sheep and goats since January 2002
- conducted a survey in 2007 and 2008 of farmed and wild deer

APHA also provides summary statistics on the number of submissions tested and cases confirmed through the Compulsory Scrapie Flocks Scheme.

Chemical food safety

The latest Chemical Food Safety report can be found at this link:

https://www.gov.uk/government/publications/chemical-food-safety-reports

Horizon scanning

Bluetongue (BTV) update

BTV continues to be reported in Europe and Figure 12 shows Bluetongue disease in Europe August 2020 – January 2021. In December, in Europe, there were cases of BTV-8 in France (6), Luxemburg (7) and Spain (17), and BTV-4 in Bosnia and Herzegovina (1), Bulgaria (2), Croatia (14), France (3), Greece (31), Italy (38), and Serbia (3). BTV-1 was also reported in Spain (3) and BTV-16 in Greece (5).

Cases in sheep were reported from Bosnia and Herzegovina, Bulgaria, France, Greece and Spain and in sheep and goats in Italy.

In January 2021 One case of BTV-8 in cattle in Antwerp was reported to OIE in January, where 31/1104 cattle tested positive by RRT-PCR.

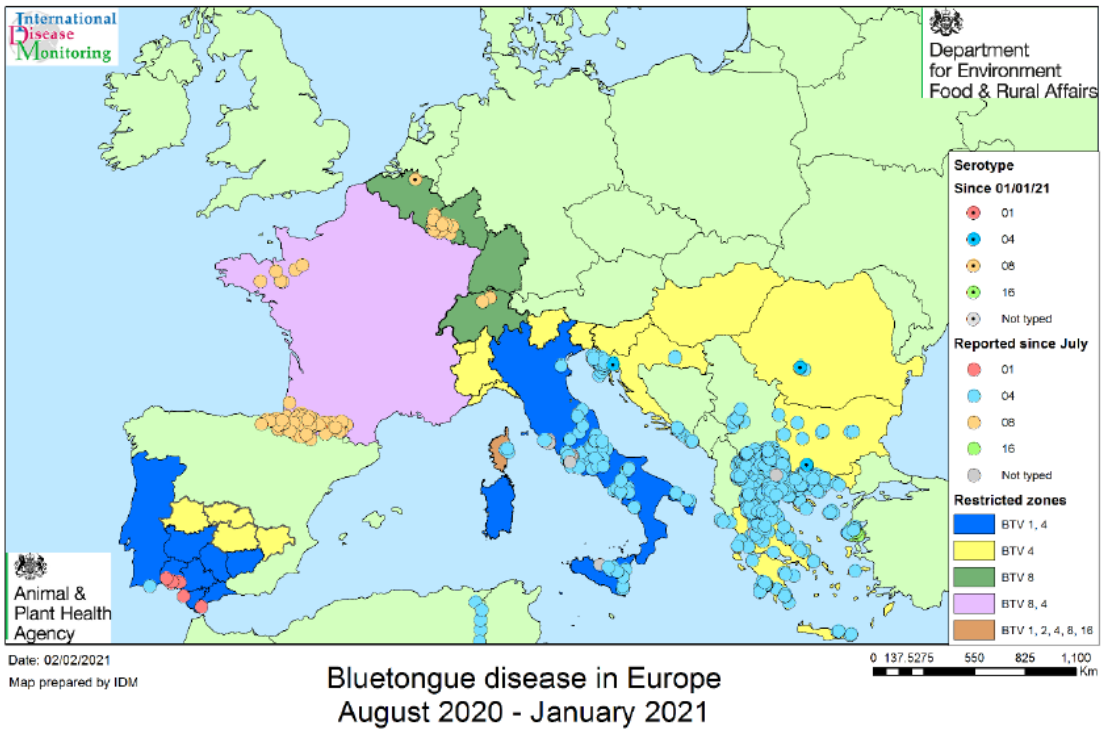

Figure 12: Bluetongue disease in Europe August 2020 – January 2021

The Pirbright Institute through their midge monitoring activities (active midges trapped at various sites =/>5 pigmented vectors) communicated that **28th December 2020** was the start date for the seasonal vector-free period (SFVP). This was later than in some previous years which has been as early as the end of November or beginning of December.

Some risk always remains from illegal imports of animals or germplasm. The risk of introduction of BTV-4 or BTV-8 to the UK is considered to be **LOW.**

For more information, see our Outbreak Assessment at:

https://www.gov.uk/government/publications/bluetongue-virus-in-europe

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

For more information, see the updated situation assessment, at:
https://www.gov.uk/government/publications/bluetongue-virus-in-europe

Publications

APHA Staff

Arrieta-Villegas C; Vidal E; Martin M; Verdes J; Moll X; Espada Y; Singh M;

VILLARREAL-RAMOS B; Domingo M; Perez de Val B (2020)
Immunogenicity and protection against Mycobacterium caprae challenge in goats vaccinated with BCG and revaccinated after one year.
Vaccines 8 (4) 751

Bartley DJ; JEWELL NJ; Andrews LM; MITCHELL S; Morrison AA (2021)
Molecular and phenotypic characterisation of fenbendazole resistance in a field-derived isolate of *Ostertagia ostertagi*.
Veterinary Parasitology 289, 109319.

BIANCO C (2021)
Image challenge in Veterinary Pathology: Questions.
Veterinary Pathology 58 (1) 5.

BIANCO C (2021)
Image challenge in Veterinary Pathology, answers: Ruminant diseases.
Veterinary Pathology 58 (1) 225-226

Clark JJ; Gilray J; Orton RJ; Baird M; Wilkie G; da Silva Filipe A; JOHNSON N; McInnes CJ; Kohl A; Biek R (2020) Population genomics of louping ill virus provide new insights into the evolution of tick-borne flaviviruses. . PLoS Negl Trop Dis 14, e0008133

HENNESSEY, M., WHATFORD, L., PAYNE-GIFFORD, S., JOHNSON, K. F., VAN WINDEN, S., BARLING, D. & HÄSLER, B. (2020) Antimicrobial & antiparasitic use and resistance in British sheep and cattle: a systematic review. Preventive Veterinary Medicine 185, 105174

KONOLD T; DALE J; SPIROPOULOS J; SIMMONS H; Godinho A (2020)
Case of TB in a sheep caused by Mycobacterium bovis with transmission to another sheep and a steer in the same building.
Veterinary Record Case Reports 8 (4) e001151.

Melville LA; Redman E; Morrison AA; Chen PCR; Avramenko R; MITCHELL S; Van Dijk J; Innocent G; Sargison F; Aitken C; Gilleard JS; Bartley DJ (2020)
Large scale screening for benzimidazole resistance mutations in Nematodirus battus, using both pyro sequence genotyping and deep amplicon sequencing, indicates the early emergence of resistance on UK sheep farms.
International Journal for Parasitology: Drugs and Drug Resistance 12, 68-76.

Melville LA; Van Dijk J; MITCHELL S; Innocent G; Bartley DJ (2020)
Variation in hatching responses of Nematodirus battus eggs to temperature experiences.
Parasites & Vectors 13, Article number: 494.

Other publications of interest

Campbell, E., Mcconville, J., Clarke, J., Donaghy, A., Moyce, A., Byrne, A. W., Verner, S., Strain, S., Mckeown, I. M., Borne, P. & Guelbenzu-Gonzalo, M. (2021) Pestivirus apparent prevalence in sheep and goats in Northern Ireland: A serological survey. Veterinary Record 188, 42-48

Chan KW; Bard AM; Adam KE; Rees GM; Morgans L; Cresswell L; Hinchliffe S; Barrett DC; Reyher KK; Buller H (2020) Diagnostics and the challenge of antimicrobial resistance: a survey of UK livestock veterinarians' perceptions and practices. Veterinary Record 187 (12) e125

Doidge, C., Ferguson, E., Lovatt, F. & Kaler, J. (2021) Understanding farmers' naturalistic decision making around prophylactic antibiotic use in lambs using a grounded theory and natural language processing approach. Preventive Veterinary Medicine 186

Evans CA; Woolford L; Hemmatzadeh F; Reichel MP; Cockcroft PD (2021) Pathological lesions of lambs infected in utero with bovine viral diarrhoea virus type 1c (BVDV-1c). Veterinary Record 183 (3) 187-196

Pfeiffer, C., Stevenson, M., Firestone, S., Larsen, J. & Campbell, A. (2021) Using farmer observations for animal health syndromic surveillance: Participation and performance of an online enhanced passive surveillance system. Prev Vet Med 188, 105262

Wernike, K. & Beer, M. (2020) Schmallenberg Virus: To Vaccinate, or Not to Vaccinate? Vaccines 8, 287

Zafra, R., Buffoni, L., Pérez-Caballero, R., Molina-Hernández, V., Ruiz-Campillo, M. T., Pérez, J., Martínez-Moreno, Á. & Martínez Moreno, F. J. (2021) Efficacy of a multivalent vaccine against Fasciola hepatica infection in sheep. Veterinary Research 52, 13

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.