GB cattle quarterly report
Disease surveillance and emerging threats
Volume 22: Q2 – April-June 2018

Highlights

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Introduction and overview

This quarterly report reviews disease trends and disease threats for the second quarter of 2018 April – June. It contains analyses carried out on disease data gathered from APHA, SRUC Veterinary Services division of Scotland’s Rural College (SRUC) and partner post mortem providers and intelligence gathered through the Small Ruminant Species Expert networks. In addition, links to other sources of information including reports from other parts of the APHA and Defra agencies are included. A full explanation of how data is analysed is provided in the Annexe.

Issues and trends

Weather

Fig 1: Mean temperature for March (left) and June (right) 2018 as anomaly compared with 1981-2010 (Met Office)

Following a cold and prolonged winter 2017/18, in which there were concerns about the quantity and quality of forage harvested in 2017 impacting on livestock health and welfare, fig 1 illustrates the mean daily temperature anomalies in March and June 2018 compared to the 1981-2010 average. This shows a cold start over the whole country followed by a warm spring. The cold March had a negative impact on the planting and germination of cereal and maize crops.
Fig 2: Rainfall amount for May (left) and June (right) 2018 as anomaly compared with 1981-2010 (Met Office)

This was followed by generally very warm but dry weather in the second quarter (fig 2), which led to good quality first cut grass silage, but subsequently to very low quantities of later cuts and of grazed grass. This has led to concerns about the availability of grazed grass, grass silage and other forages leading into the winter housing period 2018 (see below).

**Dairy**

The most recent Defra statistics showed that average farm milk price fell between April and May 2018 to leave the average May 2018 price the same as that in 2017. Early indications are of price rises through the remainder of the summer which is welcome news. Overall milk production levels for the UK have been static between 2017 and 2018 and it is too early to know the impact of the summer heat wave on milk production levels.

What is much clearer is the significant effect that the heatwave is having on forage stocks and grazing availability. The effects are present throughout the UK and are more marked in the south. Many later cuts of silage have had to be sacrificed because of a lack of grass growth and grass availability for grazing has been much lower. This has led to many farmers already using 2018 first cut silages with less additional silage being made and a looming forage crisis for the winter of 2018. To compound problems maize growth has been badly affected, particularly in the south and straw availability is reduced due to a reduced crop bulk.
Farmers are reacting now by considering forage budgets for the coming winter, making more wholecrop cereals as an additional forage source and baling more straw than normal, all of which can help the situation. A wet, mild autumn with increased grass growth could help the situation further and is badly needed.

In response to the forage shortages many dairy farmers are considering their stock numbers and reducing as necessary. In particular, culling unproductive cows. This could have a negative effect on the cull cow price and may lead to further reductions in milk output as the year progresses.

The heatwave has led to increased risk of health issues directly or indirectly associated with ‘heat stress’ such as reduced herd fertility, increased mastitis risk and respiratory disease levels and digestive upsets as a result of variable feed intakes throughout the day.

The full effects of the summer heatwave will only be fully known in the coming months and will depend on the weather conditions in the second half of the summer.

**Beef**

Market prices for both prime cattle and manufacturing beef (bull beef and cull cows) have been generally good over quarter two, well ahead of both last year (~16p) and the five-year-averages (~10p). It is typical for prices to rise over this quarter, and this has generally been the case. Manufacturing beef did particularly well toward the end of the quarter, possibly driven by better BBQ weather driving demand for burgers.

Total bull beef production has been reducing for several years however, with various factors thought to be involved. Growth in veal has meant that more dairy bulls are going into veal rather than bull-beef. Other producers may have been put off by high price volatility of bull beef (steers finished to contract are more stable), plus there have been retailer concerns over consistency and quality. Prices are increasing however, and production may start to increase again, as contracts are starting to become available which would reduce the risk of price volatility.

Total beef production is still forecast to be higher in 2018 than 2017, and market summary reports for April are consistent with this (total production increased for everything except veal). There are reduced numbers of calves registered this year however, thought partly due to the very poor spring weather. Lower calf numbers will reduce supply of prime cattle into 2019 and 2020.

The dry weather and poor grass growth was starting to be a concern at the end of June, when prices were holding steady but not increasing much. There was expectation that farmers would either have to provide supplementary feed at grass, or send cattle lighter and later due to reduced grass growth.
The NFU has reopened its Fodder Bank in response to the late drilling of spring crops in the east which could lead to lower straw yields and the current hot dry weather which is limiting grass growth. This is a free service that helps NFU members find cattle feed and animal bedding for their farms or lets them sell any surplus.

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

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


**Bluetongue:** The vector season is well under way, and some clinical signs of acute bluetongue disease are similar to those seen in some plant poisonings, particularly photosensitization. Further information on the differential diagnosis of bluetongue is available (Williamson and others, 2008). Suspicion of bluetongue must be reported: [https://www.gov.uk/government/collections/notifiable-diseases-in-animals](https://www.gov.uk/government/collections/notifiable-diseases-in-animals)

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

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

**Severe Summer Scour Syndrome**

The livestock scanning surveillance networks in England and Wales, Scotland, Northern Ireland and the Republic of Ireland have identified in recent years a syndrome of severe, rapid onset diarrhoea and weight loss in weaned dairy calves up to 12 months of age, at grass (fig 3). Typically, this occurs within a month of turnout, with high morbidity. Routine investigations tend to rule out common parasitic, bacterial and viral causes. A proportion of outbreaks and individuals have oral and oesophageal ulceration and necrosis.

These have some similarity to a syndrome described in Australia called ‘Upper Alimentary Ulcerative Syndrome’.

The APHA and its partner post-mortem providers, SRUC Veterinary Services, AFBI in Northern Ireland and DAFM in the Republic of Ireland are undertaking a collaborative investigation this year and next, based on the case definition described above, and following a common investigation protocol in order to build up a case series. Should practitioners become aware of outbreaks that fit the case description they should contact their disease surveillance service to discuss further investigation.
In England and Wales the nearest APHA Veterinary Investigation Centre or Partner Postmortem Provider can be found via the Vet Gateway at http://apha.defra.gov.uk/vet-gateway/surveillance/diagnostic/national-network.htm or using the postcode checker at http://apha.defra.gov.uk/postcode/pme.asp.

In Scotland the local SRUC Veterinary Services Disease Surveillance Centre may be found via https://www.sruc.ac.uk/directory/17/locations_directory/category/52.

Fig 3: Weaned dairy calf showing signs typical of Severe Summer Scour Syndrome (Michael Millar, University of Bristol Fam Animal Pathology Services)

Unusual diagnoses

Suspect inhalation pneumonia (E’tizon)

Two adult dairy cows were submitted for post mortem having died with per-acute respiratory symptoms. Both cows had been dosed orally with an unlicensed product (E’tizon) immediately prior to the onset of clinical signs. A total of six cows had been treated with two others showing mild respiratory signs. The product used is marketed as an immune stimulant. At necropsy there was a stable froth extending along the tracheal lumen in which were discrete yellow flakes which crumbled when handled. There was pulmonary oedema in all lobes with a marked interlobular and intralobular septal pattern. The lungs were noticeably increased in weight and did not collapse when incised. Routine laboratory examination was unremarkable. Histology confirmed a severe necrotising bronchiolitis and mild multifocal necrotising interstitial pneumonia. A toxic aetiology was considered most likely. The Veterinary Medicines Directorate was made aware of the incident and further investigation is being undertaken into the use of this product in food producing animals.
Embolic pneumonia following severe udder cleft dermatitis

The death of a 5-year-old dairy cow was due to embolic pneumonia. The source of infection was a severe udder cleft dermatitis lesion. About 12 cows had died and 15-20 were affected with respiratory signs over the last year in this housed dairy herd. Typically affected cows had a milk drop and dyspnoea and did not run a high temperature. The cow examined post mortem had calved 10 days earlier but cows are affected at all stages of lactation. At post-mortem examination, there was a large ulcerated area of skin just cranial to the udder in the midline which tracked into the superficial right cranial mammary gland (fig 4). The tract contained grey foul-smelling liquid. There were focal grey lesions throughout the lung, sometimes containing grey liquid and adhered to the pleura. There was emphysema of all lung lobes especially the caudal lobes. *Trueperella pyogenes* was isolated from lung and spirochaetes were visible on special-stained histopathology sections of the udder cleft lesion. Embolic pneumonia in adult dairy cattle has been previously associated with udder cleft dermatitis (Millar and others 2017).

![Incised udder cleft dermatitis lesion showing lesions extending into mammary gland](image)

Suspected halofuginone toxicity

Suspected halofuginone toxicity was identified as the likely cause of calf deaths in a block-calving dairy herd of 400 cows. Sixty cows in a batch of 80 had calved prior to the submission. Ten calves aged less than one week were orally dosed with a product containing halofuginone lactate as a preventive for cryptosporidiosis, as the disease had previously been identified causing scouring in calves on the farm. The calves were dosed at 1.30pm and fed at 4pm. The following morning 4 were found dead. A fifth calf which was recumbent was euthanased and this animal and one other which was found dead were examined postmortem.
There were no specific findings. Both calves had faecal soiling of the perineal area and were dehydrated. They had liquid intestinal contents and the abomasum and fore-stomachs of each were distended with watery floccular fluid. The two calves weighed only 27kg and 34kg and had been dosed for animals weighing 40kg. This overdosing and the fact that the calves were given the drug on an empty stomach and were not fed for a further two and a half hours, were suspicious of halofuginone toxicity. Although halofuginone is licensed for the prevention and reduction of diarrhoea in calves, it can cause illness if the animals are over-dosed, and the manufacturer recommends that it should be given after feeding. A total of 20 calves died over a period of a few days, some having scoured and were euthanased. The pharmaceutical company was informed of the incident and a report was made to the Veterinary Medicines Directorate.

Psoroptic mange

Psoroptic mange was diagnosed in a group of housed finishing cattle. At least 6 of a group of 45 finishing bulls aged 15 to 16 months were clinically affected, exhibiting intense pruritus and self-inflicted skin trauma due to rubbing, the lesions extending from the shoulders to the tail head in the worst affected animal (fig 5). The condition was reported to rapidly become more severe as the ambient temperatures increased. The cattle had been purchased several months previously from several local markets in the English/Welsh border region, and the group had performed well prior to the outbreak.

Fig 5: Psoroptic mange on shoulders (left) and tailhead (right) of beef cattle (Sian Mitchell, APHA)

The affected animals were treated with a 4% permethrin pour-on under the Cascade, as the cattle were close to slaughter and the product has a short withdrawal period. A clinical improvement was reported and the animals have since been sent for slaughter. Checking the efficacy of any ectoparasiticide used for psoroptic mange is recommended, by collecting skin scrapes 3 weeks after application. In all cases it is good practice to treat all the animals in a group, and where possible to clip and shampoo to remove as much of the skin crust as possible, and to collect and burn that which is removed. As with sheep scab, the mites may survive in the environment for up to 21 days, so moving from an infected environment at first treatment and resting infested premises before using for more stock, should be done.
A report on past outbreaks investigated by APHA, and the treatment options, has been published (Mitchell and others 2012).

**Cutaneous actinobacillosis**

Infection by *Actinobacillus lignieresii* was diagnosed by histopathological examination of a skin biopsy taken by a practitioner from an 18 month old steer which was reported to have multiple skin lumps. Four animals in the herd of around 300 animals were first noticed in March with skin masses in the submandibular region, and these were presumed to be due to penetrating wounds caused by the sharp edges of wire which had recently been applied to support a feed trough. The wire was removed and the animals responded well to antibiotic treatment. When the animals were turned onto pasture in April a further five animals were detected with skin masses in the shoulder region and on the legs, and since then, more animals have become affected (fig 6). A total of 35 animals had developed skin lesions at the time a farm visit was made.

Cutaneous actinobacillosis is usually sporadically identified. It is rare for so many animals in a herd to be affected. The disease occurs due to infection of superficial skin abrasions and lacerations. Oral infections can also occur, and are commonly referred to as ‘wooden tongue’. *Actinobacillus lignieresii* is considered to be an environmental organism and is not uncommonly found in the upper alimentary tract of adult cattle. The farm investigation identified flies, thistles and blackthorn hedges as likely risk factors for spread of the infection when the animals were at pasture, following the initial cases which occurred due to the traumatic skin lesions caused by the wire which had been added to the feed trough.
Suspected congenital Bluetongue virus infection/BVD infection in a dairy herd

At postmortem examination of a two day old calf which had presented with nervous signs from birth, gross cavitation and thinning of the cerebral hemispheres were identified. These gross lesions were consistent with hydranencephaly which is one of the recognised manifestations of infection of pregnant animals by bluetongue virus. As a consequence, the case was reported as suspect notifiable disease and the farm was visited by an APHA Veterinary Officer. Samples collected at the visit and from the calf were tested and ruled out bluetongue virus infection. Subsequent tests for BVD virus and Schmallenberg virus by PCR were both negative. Histopathology on the brain confirmed porencephaly, hydranencephaly and severe cerebellar dysplasia.

The calf was one of seven similarly affected with nervous signs from birth, of twenty calvings which occurred over a 10 day period in a 340 cow dairy herd. Earlier in 2018 there had been twelve abortions in a group of 100 late lactation and 50 dry cows in the herd, and BVD virus was detected by PCR in one of two foetuses which were submitted for examination for infectious agents. This earlier identification of BVD virus in the herd strongly suggests that mid-gestational BVD virus infection caused the later crop of calves born with congenital neurological signs, while the earlier abortion outbreak was due to BVD virus infecting cows in early gestation. The brain lesions in the calf examined postmortem are the result of BVD infection in mid-gestation, which causes developmental damage to the brain, resulting in the hydranencephaly and cerebellar hypoplasia. Such calves are, however, usually BVD virus negative. Further investigations of the herd did not identify a persistently-infected (PI) animal, which suggests that the infection may have been introduced from contact with animals on an adjacent holding, or possibly indirectly on fomites, or that the source animal might have been one of several cows which were culled after the abortions occurred. This case highlights the scale of losses which can occur
when BVD virus infection occurs in pregnant cattle, and the potential for identifying lesions suggestive of a notifiable disease when investigating disease outbreaks.

Changes in disease patterns and risk factors

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

Circulatory system

Bovine Neonatal Pancytopenia (BNP)

There was a significant decrease in % diagnoses for BNP during Q2 2018, from 32% to 26%. Numbers are low, which likely explain the flag, but the Cattle Expert Group (CEG) will monitor this trend, which could reflect declining numbers of Pregsure-vaccinated dams.

Reproductive system

Tritrichomonas spp

In May a sheath wash sample was submitted for routine screening by an AI company. The sampled bull was a virgin bull still residing on his farm of birth and undergoing quarantine processes prior to entry to the AI stud. The sample recorded a positive result on culture for Tritrichomonas spp. A repeat sample was also positive. This disease has not been diagnosed in the UK cattle herd for over two decades, with only two cases recorded in the two decade prior to this period (Taylor and others 1994). It is commonly identified in cats as a cause of enteritis. Field services were informed of the findings. Given the potential impact of the diagnosis molecular analysis of the isolate was conducted. It is known that other Tritrichomonas spp can be recovered from the bovine genital tract so confirmation of the isolate identity was sought. Specific primers were used and it was confirmed that the isolate was not Tritrichomonas fetus. Thus, no further action was required by APHA Field Services.

The AI company opted not to continue with the bull's selection process. It was considered that if the bull’s urogenital tract had now been colonised by a Tritrichomonas spp it would lead to subsequent issues in future sheath wash screens. The exact identification of the species involved is still ongoing, with the assistance of a research group at Newcastle University.
Centre of Expertise for Extensively Managed Livestock

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

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

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

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

Bluetongue

There have been very few outbreaks of bluetongue (BTV) across Europe through early summer. This may be due in part to the exceptionally warm weather experienced across mainland Europe, which has been sufficiently warm as to reduce the efficiency of virus replication in the vector midges. This may well change as we enter autumn. The midge season in GB began in late April; the July risk of windborne midge transmission to the UK is low, but this could rise. Susceptible animals travelling to and from affected areas in Europe to the UK must be vaccinated against both BTV-4 and BTV-8.

Besnoitiosis

This disease is caused by a cyst-forming intracellular protozoan parasite *Besnoitia besnoiti* which can be spread by insect vectors. Direct spread through close contact or the use of hypodermic needles for multiple animals could also transfer infection. There are no reports of vertical transmission. The disease has been recognised in France and Portugal for over 100 years but has spread to other countries and was reported in July 2015 in the Republic of Ireland. It has probably spread through the movement of sub-clinical infected cattle. There are no known food safety or human health risks associated with the disease.

APHA have recently validated a serological test for besnoitiosis. A preliminary investigation into its presence in the UK was undertaken on 277 bloods submitted for post-
import bluetongue testing from animals imported from mainland Europe, since many of the
current bluetongue control zones coincide with the areas in mainland Europe where
besnoitiosis is known to be present. All 277 bloods were seronegative for besnoitiosis.
Further surveillance work is being considered.

Besnoitiosis is not notifiable, but APHA would wish to know about any suspect cases.
Further information is available on the Vet Gateway at
http://apha.defra.gov.uk/documents/surveillance/diseases/vetinfonote-bovine-
besnoitiosis.pdf

References

Embolic pneumonia in adult dairy cattle associated with udder cleft dermatitis (letter).
Veterinary Record 180: 205-206 http://veterinaryrecord.bmj.com/content/180/8/205

Clinical features of psoroptic mange in cattle in England and Wales. Veterinary Record
170: 359-364

Tritrichomonas foetus from other protozoa of the bovine reproductive tract. Br Vet J 150:
73-80

cattle and sheep. In Practice 30: 242-251
Annexe

VIDA diagnoses are recorded on the APHA FarmFile database and SRUC Veterinary Services LIMS database and comply with agreed diagnostic criteria against which regular validations and audits are undertaken.

The investigational expertise and comprehensive diagnostic laboratory facilities of both APHA and SRUC Veterinary Services are widely acknowledged, and unusual disease problems tend to be referred to either. However recognised conditions where there is either no diagnostic test, or for which a clinical diagnosis offers sufficient specificity to negate the need for laboratory investigation, are unlikely to be represented. The report may therefore be biased in favour of unusual incidents or those diseases that require laboratory investigation for confirmation.

APHA VICS have UKAS Accreditation and comply with ISO 17025 standard. SRUC Veterinary Services has UKAS accreditation at their central diagnostic laboratory and at the Aberdeen, Edinburgh, Perth, Ayr, Dumfries, Inverness, St Boswells and Thurso Disease Surveillance Centres which comply with ISO 17025 standard.

From September 2014 APHA contracted the services of partner Post Mortem providers. From April 2015, these services were provided by the Royal Veterinary College, the University of Bristol, University of Surrey and SRUC Veterinary Services. These providers contribute to the VIDA diagnoses recorded on the APHA FarmFile database and comply with agreed diagnostic criteria. To achieve a VIDA diagnosis, all testing must be carried out by a laboratory with ISO 17025 accreditation.

This report contains analysis of disease data from APHA, SRUC Veterinary Services division of Scotland’s Rural College (SRUC) and partner post mortem providers (SRUC Veterinary Services, University of Bristol Veterinary School, Royal Veterinary College, University of Surrey, Wales Veterinary Science Centre) from samples submitted in the first quarter of 2018 compared to the equivalent quarter of previous years. It aims to identify emerging small ruminant disease related threats. The production of the report is underpinned by a large quantity of surveillance data and information, compiled as part of the Defra Plant and Animal Health and Animal Health and Policy Implementation Directorates. Further information can be found at http://apha.defra.gov.uk/vet-gateway/surveillance/index.htm.

New and re-emerging diseases and threats

Monitoring the trends in diagnoses of known diseases cannot, by definition, detect either new diseases or changes in endemic diseases that would prevent a diagnosis from being reached (for example a change in the pathogen that compromised the usual diagnostic test). Such new or emerging diseases would probably first be detected by observation of increased numbers of submissions for clinical and/or pathological syndromes for which a diagnosis could not be reached in the normal way. Submissions for which no diagnosis is
reached (DNR) despite testing deemed to allow reasonable potential for a diagnosis to be reached are regularly analysed to look for increases in undiagnosed disease which could indicate the presence of a new or emerging disease. Undiagnosed disease submissions are summarised broadly by the clinical presentation of disease and, once this has been determined by further investigation, the body system affected. Both groups are investigated and trends in the levels are compared over time.

Data recording by APHA and SRUC Veterinary Services was harmonised from 2007. The Species Expert Group reviews trends in VIDA DNR data each quarter with the aim of providing information on potential new or emerging diseases or syndromes. ‘Prior years’ refers to pooled data for 2008 - 2016 for GB VIDA data.

Supplementary analysis of APHA DNR data is also undertaken using an early detection system (EDS). This uses a statistical algorithm to estimate an expected number of DNR reports and a threshold value. If the current number of DNR reports exceeds the threshold (i.e. exceedance score>1), this indicates that the number of reports is statistically higher than expected. When this EDS identifies categories of submissions where the threshold DNR has been exceeded, the Species Expert Group reviews the data to investigate further. This review may involve assessment of individual DNR submissions. Where this DNR analysis finds no evidence of a new and emerging threat or other issue, the detail of these reviews in response to thresholds being exceeded may not be reported here.

Changes in disease patterns and risk factors

This section of the report gives information on occurrence of selected diseases. The data originate from submissions and are summarised and presented according to the diagnosis reached and assigned as a VIDA code. Our charts show the number of diagnoses (numerator) as a proportion of the number of submissions in which that diagnosis was possible (denominator), for all of GB, England & Wales and for Scotland. The bars indicate the 95% confidence limits. Note that the y-axis of the charts varies and therefore care must be taken when comparing individual charts.
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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.