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Highlights

- Suspect Oxyclozanide toxicity                          | 4    |
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- Peste de Petite Ruminants                              | 15   |

VIDA diagnoses are recorded on the APHA FarmFile database and SAC Consultancy: 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 SAC C VS 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. SAC C VS have 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, the Wales Veterinary Science Centre and SACCVS. 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.
INTRODUCTION

This report contains analysis of disease data from APHA, SAC Consulting: Veterinary Services (SAC CVS) division of Scotland’s Rural College (SRUC) and partner post-mortem providers (SAC CVS, University of Bristol Veterinary School, Royal Veterinary College, University of Surrey and Wales Veterinary Science Centre) from samples submitted in the third quarter of 2016 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://ahvla.defra.gov.uk/vet-gateway/surveillance/index.htm.

OVERVIEW

Issues & Trends

Weather

In September UK mean temperature was 14.6 °C, which is 2.0 °C above the 1981-2010 long-term average and Rainfall was 103% of average with the west experiencing more rainfall than other regions.

This period of warm weather increased the risk of incursion of midges infected with BTV8 and the Met office carried out daily runs of its NAME forecast. This forecast indicates whether midges could have been transported to the UK from a number of theoretical sites on the coast of Northern France if the prevailing wind was from the continent. In February 2016 the risk of incursion of BTV 8 from France was assessed to be high; however over the summer months the risk was reassessed to be moderate. Factors such as midge activity, weather conditions and the level of disease in northern France affect how the risk level changes in the UK.

A mild winter followed by a wet summer has caused both NADIS and SCOPS to issue alerts for farmers to be on guard for liver fluke this autumn. SCOPS have posted a ‘fluke alert’: http://www.scops.org.uk/alert_pdf/1013-SCOPS-Press-Release-FlukeWarning13102016160237.pdf.

NADIS also publish monthly parasite alerts on their website. Their fluke forecasts are based on climate data particularly rainfall and warn that the risk may be higher in Scotland, North West England and North Wales this Autumn/Winter.: http://www.nadis.org.uk/parasite-forecast.aspx
Industry

Despite some fluctuation, lamb prices were unexpectedly stable during the third quarter of 2016. The anticipated seasonal decline as supplies on the market rise was noticeably absent. This lack of seasonality was initially evident in early summer, when prices did not reach the usual peak. Subsequently, moving into Q3 the devaluation of sterling following the Brexit vote in July cushioned the expected seasonal price fall. This was due to increased demand for UK product as it became more competitive on both the domestic and continental market. The Muslim festival of Eid also provided a further short-term boost to the price in September. Coupled to this, a tightening supply situation was also evident, with lamb slaughterings back by almost 150,000 head (-4%) on Q3 last year. Nonetheless, retail demand for lamb from UK consumers remained poor, and consumer purchases of fresh/frozen lamb were down 12% in the twelve weeks leading to 09 October. Moving into the start of Q4, prices have now finally begun their seasonal decline. However, the continuing weakening of the pound has ensured prices remain comfortably above year earlier levels.

Provided by Bethan Wilkins AHDB Beef & Lamb

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 SACCVS 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 2010-2014 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.

Analysis of Diagnosis Not Reached (DNR)

Sheep & Goats

Analysis of cases with DNR is performed every quarter by the Small Ruminant Species Expert group. There are no indications of any new or emerging disease syndrome. There was no significant change in the overall %DNR and no significant increases for any of the presenting signs or syndromes.

ONGOING NEW AND RE-EMERGING DISEASE INVESTIGATIONS

There were no ongoing investigations this quarter

UNUSUAL DIAGNOSES

Adverse reactions – Suspect oxyclozanide toxicity

The University of Bristol Farm Animal Pathology Service recently investigated a case where sheep developed swollen faces and heads. A group of 300 replacement ewe lambs had been drenched with a combination product (containing oxyclozanide and levamisole); three days later at least six of these animals were off-colour, developed droopy ears, had high temperatures and their faces began to slowly swell (figure 1); two affected ewe lambs died. A further 13 animals in the group developed the same clinical signs the following day.
Figure 1. Swollen face in a ewe lamb with suspected oxyclozanide poisoning.

Swelling of the head is also a sign of Bluetongue, which is a notifiable disease. Therefore, this case was reported to APHA and an official disease investigation was carried out by APHA vets. Samples were taken from sheep on the farm and tested for Bluetongue which, fortunately, was ruled out.

Oxyclozanide poisoning due to overdosing was suspected as the cause of the observed clinical signs and similar cases have been seen before following post-mortem examinations carried out by APHA Veterinary Investigation Centres (VIC) and SAC Disease Surveillance Centres (DSC). Combination oxyclozanide and levamisole products require frequent mixing while carrying out dosing to prevent possible settling out of the suspension. Weighing of stock prior to worm and fluke treatments is also essential to ensure effective dosing (not overdosing) and preventing inadequate dosing which is a known risk factor in the development of anthelmintic resistance.

In this case advice was also provided to report the episode to the Veterinary Medicines Directorate as an adverse effect to a veterinary product and a food safety risk assessment was carried out. The farmer was advised that affected sheep should not be slaughtered for 28 days after drenching. [https://www.vmd.defra.gov.uk/adversereactionreporting/](https://www.vmd.defra.gov.uk/adversereactionreporting/)

**Unusual presentation of orf**

The Dumfries DSC of SAC reported an unusual presentation of orf in three to six-month-old Scottish Blackface sheep (Fig 2).
Fig 2 Prominent orf lesions around the muzzle

All three sheep had severe non resolving orf despite vaccination earlier this year. The farmer had a few similar cases last year. Testing for Border disease and Tick Borne Fever was negative. The most striking finding at post-mortem examination was an apparent absence of lymph nodes in all cases, which was confirmed on histopathology. Thymic tissue was also not detected on gross examination, but histopathology revealed very small lobules with no cortical medullary demarcation and very few lymphocytes. An underlying genetic cause resulting in impaired immune function was proposed as the most likely explanation. Further information is being gathered from the farmer to determine if there are potentially inherited factors.

A request has been sent around the Small Ruminant Species Expert Group for any similar cases identified.

**Poisoning due to Galega**

*Galega officinalis*, also commonly known as Galega, goat's-rue or French Lilac, is a toxic plant that is found in many European countries and is reported to be widespread in the SE of England (Fig 3). At the European College of Small Ruminant Health Management conference in June 2016 Professor Karim Adjou of the Ecole Nationale Veterinaire d'Alfort presented a case of Galega poisoning that was remarkable for the distinctive pathology. On a French farm 48 sheep and fourteen died suddenly after exhibiting signs of respiratory distress, dyspnea with a white foamy nasal discharge. On postmortem examination a severe, voluminous, citric yellow hydrothorax was found that coagulated on contact with air (Fig 4). Galega was found in the hay which had been made from a parcel of land under exceptional circumstances due to a severe drought in that region. Galegine, a guanidine compound believed to be responsible for these effects although the toxic mechanism is unknown (Puyt and others 1981).
APHA receive reports of accidental poisoning in sheep more commonly in the winter months when available grazing is reduced, when sheep inadvertently escape into gardens or when sheep are introduced to unmanaged grassland for conservation grazing. Poisoning due to Pieris is most commonly reported, but the PME findings reported here are quite distinctive.

Cardiovascular disease

St. Boswells DSC investigated sudden deaths in two Lleyn ewes from a group of 140 that died over a two-day-period. *Streptococcus suis* was isolated from bilateral atrio-ventricular vegetative endocarditis lesions in one ewe. *S. suis* is more commonly considered to be a pathogen of pigs and is potentially zoonotic, particularly serotype 2. This bacterium has been isolated from previous cases of ovine endocarditis and previously isolates have typed as serotype 33. The second ewe had *Staphylococcus aureus* mastitis with associated nephropathy and uraemia.

### 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.

**Parasitology**

**Parasitic Gastroenteritis**
214 incidents of parasitic gastro-enteritis (PGE) were diagnosed in GB this quarter (July to Sept 2016). This was 30.7% of diagnosable submissions and had increased, but not significantly, from the same quarter last year. Often cases were diagnosed together with *Bibersteinia trehalosi* or *Mannheimia haemolytica* where the parasitism was likely to be precipitating the bacterial disease. These cases often presented with a number of lambs dying very suddenly which prompted submissions.

There was much evidence of lambs being treated with benzimidazoles throughout the summer with most farmers not knowing which classes of anthelmintics were effective on their holding. Resistance to benzimidazoles is the most common anthelminic resistance detected in the UK, with the most recent study in 2015 detecting it on 94% of the farms that took part.

Also notable were a small number of cases where chronic gastro-intestinal parasitism produced lambs that were visibly anaemic, occasionally with intermandibular oedema (‘bottle-jaw’), but no *Haemonchus contortus* or liver fluke were detected on postmortem examination. It is essential that neither of these parasites is diagnosed purely on the basis of anaemia alone.

**Acute fasciolosis**

Two cases of black disease and one of acute fasciolosis causing liver haemorrhage were recorded by the Wales Veterinary Science Centre in Aberystwyth. One case of acute fasciolosis was recorded by APHA Carmarthen VIC at the end of October, before this report was completed.

It is interesting to note that large numbers of carcasses of young lambs have been received with septicaemic pasteurellosis by a number of VI centres in England and Wales and none have shown evidence of liver fluke larval migration. Nevertheless a forecast of a high risk of infection has been issued for Scotland, the north of England and north Wales, all regions which experienced months with a higher than average rainfall, notably April, June and July.

**Chronic fasciolosis**

No significant change in data for this quarter.

**Systemic disease**

**Septicaemic *Bibersteinia trehalosi***

Increased numbers of *Bibersteinia trehalosi* septicaemia were diagnosed by APHA during quarter 3 when compared to the same quarter in previous years. Twenty one cases were diagnosed by APHA, which represented 8.33% of diagnosable submissions, a marked increase when compared to previous years, although not statistically significant. In contrast there were 12 cases diagnosed by SAC, a consistent number with previous years for the SAC.

The animals affected were predominantly this year’s lambs, with only a single adult case recorded by SAC and by APHA, which is typical for this disease. Concurrent disease was only recorded in two cases by SAC (both were tick borne fever) and APHA recorded four cases with PGE, one case with PGE and fasciolosis and two cases with concurrent *Mannheimia*
pneumonia. Of the 21 diagnoses recorded by APHA 14 cases were in Wales, 4 were in the West Midlands, 2 were in Devon and 1 case was in the North East.

Systemic infections with *Bibersteinia trehalosi* have been frequently diagnosed this autumn. In some cases it was concurrent with parasitic gastro-enteritis, but in others it was primary or pure infections. The increased numbers are not statistically significant but there has been a steady rise since 2012, with 33 incidents recorded this quarter for GB, compared to 18 for the 3d quarter in 2015 (Fig 5). Outbreaks affected both vaccinated and unvaccinated flocks. Systemic *Bibersteinia trehalosi* infections typically affect six- to nine-month-old lambs with outbreaks usually occurring between October and December. This pathogen is considered a normal resident of the tonsils and throat of healthy animals. However, under stress, the immune system becomes suppressed and the bacteria multiply. The environment in which animals are kept; nutrition and management of animals may all contribute and increase the risk of infection and incidence on individual farms. Controlling *Bibersteinia* infections is by minimising stress such as changes in diet and by vaccination. Where deaths are confirmed in a fully vaccinated flock, this should be reported to the VMD as a suspect adverse event.

![Fig 5. Incidents of P Septicaemic Biberstini trehalosi in Sheep as % diagnosable submissions 2012 - 2016](image)

**Mannheimiosis**

Similar to systemic infections with *Bibersteinia trehalosi*, mannheimiosis (*systemic infections with Mannheimia haemolytica*) was diagnosed on a few occasions in lambs this autumn. The risk factors are similar and outbreaks in fully vaccinated flocks should be reported to the VMD as a suspect adverse event.

**Tick-borne fever**

A single five-to-six week old lamb was submitted for post-mortem investigation. This was the seventh lamb in a group of 200 lambs that had died in the last four days. Several ticks were seen in the animals recently and the group was treated to resolve the problem. At post-mortem
examination there was an increase of serous fluid in the abdominal cavity. The liver was swollen and had miliary spots on the surface. The spleen was swollen and pinpoint haemorrhages were present on the surface. There was marked generalised lymphadenopathy with red discolouration of the majority of the lymph nodes. Non-haemolytic gram negative rods, resembling *Bibersteinia trehalosi*, were detected in the liver, brain swab and lung and therefore a diagnosis of *Bibersteinia* septicaemia was made. Acute, suppurative and necrotising hepatitis, splenitis and lymphadenitis were also confirmed by histopathology examination. Furthermore, the spleen was positive on PCR for *Anaplasma phagocytophilum* which causes tick-borne fever. The *Anaplasma* would have caused immunosuppression which had increased the lamb’s susceptibility to *Bibersteinia* infection.

**Musculo skeletal disease**

**Rhabdomyolysis following suspect trauma**

The carcase of a five-month-old weaned Texel ram lamb was submitted to APHA VIC Shrewsbury. The lamb had been found cast on its back eight or nine days previously. It had been treated with antibiotics and pain killers at the time and it was then seen to pass red urine 2-3 days later. The lamb subsequently died and was submitted for post-mortem examination. Gross findings included generalised carcase haemorrhages and blackened kidneys. There was no appreciable reddening of the urine. Biochemical testing of liver and kidney ruled out copper toxicity. Histopathological examination of liver, kidney and lung also ruled out a haemolytic episode, but there was evidence of severe renal medullary necrosis. It was suggested that the kidney discolouration and medullary necrosis were most likely due to rhabdomyolysis resulting in myoglobinuria and kidney failure. Rhabdomyolysis is an unusual finding in sheep, but has been described following dog worrying and after sheep have been driven for extended distances. The prior history of this animal being cast seemed the most feasible explanation for the rhabdomyolysis with the associated hypovolaemia and non-steroidal anti-inflammatory drug treatment contributing to the kidney damage.

**Enteric disease, Urinary disease, Skin disease, Metabolic disease, Reproductive & Mammary disease, Respiratory disease**

No statistical significant increases for any of the diseases monitored

**Salmonella**

The *Salmonella* in livestock production in Great Britain, 2015 has been published. This report provides data on reports of Salmonella in livestock, birds and wildlife in Great Britain during 2015.

The report on sheep and goats can be found at the link below.

A total of 66 *Salmonella* isolations from sheep in 2015 represented a 5.7% decrease, compared with 70 isolations in 2014 and there were no isolations of *Salmonella* recorded.
from goats in 2015. The three consistently most common *Salmonella* isolates in sheep are *Salmonella enterica* subspecies *diarizonae*, *S.* Montevideo and *S.* Dublin.


**Chemical Food Safety**

The latest Chemical Food Safety Report has been published. A case of accidental oral administration of Diazanon is reported:


**TSE**

Statistics on the active disease surveillance of transmissible spongiform encephalopathies (TSEs) and the Compulsory Scrapie Flock Scheme can be found at the link:


APHA collates summary statistics on the number of cases of TSE disease found through active and passive disease surveillance of animals. This includes summary statistics on the number of submissions tested and cases found from through the Compulsory Scrapie Flocks Scheme.

**Active disease surveillance**

European law requires all Member States to carry out active disease surveillance for bovine spongiform encephalopathy (BSE) in cattle, and scrapie in sheep and goats. This data is used to determine the TSE disease status of each country.

**Compulsory Scrapie Flocks Scheme**

Since 2004, disease control measures require sheep flocks and goat herds to join the Compulsory Scrapie Flocks Scheme (CSFS) when a case of scrapie is confirmed. Subsequent cases of scrapie in these flocks and herds are reported separately.

APHA provides summary statistics on the number of submissions tested and cases found through the CSFS testing routes (initial cull, annual cull and fallen stock) in Great Britain.

**Passive disease surveillance**

Passive disease surveillance takes place when an animal with clinical signs suspicious of a TSE disease is reported to an APHA office, and further investigation determines whether the animal was affected by scrapie.

From 1st January 2016 – 30th September 2016 in sheep there were no confirmed cases of scrapie and 9 cases of atypical scrapie. In goats there were 6 confirmed cases of scrapie identified through the compulsory scrapie scheme.
The number of cases of classical scrapie in sheep has been steadily declining over recent years (Table 1).

Table 1 Number of cases of classical scrapie in Sheep 2010 - 2015

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Confirmed cases of scrapie</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
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Bovine TB in non-bovine species

Statistics for Bovine TB in non-bovine species have recently been updated for the period 1\textsuperscript{st} January 2016 – 30\textsuperscript{th} June 2016 on the Gov.uk webpages. 

The data show that for the reporting period 3 sheep were submitted to APHA laboratories for post mortem examination due to suspected TB. These animals came from 2 flocks in England which have been placed under restrictions. Culture results from these cases are pending.

HORIZON SCANNING

International Disease Monitoring
Bluetongue

FRANCE

On 29th September 2016, a new case of bluetongue serotype 8 was reported in France in the district Meuse, less than 85 km from the Belgian border. The French safety zone thus is basically a part of Belgium; the Belgian food service AFSCA wants as yet to set no restriction zone. During the past year, several hundred BTV-8 infections have been recorded in France. The disease has recently resumed its spread, currently northwards. The cow in the Meuse region is so far the only known case of infection within a zone short of 200 km from the Belgian border, says the Farmers Association in a statement: "restriction zone will be implemented in Belgium itself only if, during the coming weeks, new cases appear and their number is indicative of virus circulation on our border".

Measures in restricted zone: in case a restriction zone is declared, then ruminants will be allowed to exit the zone only if vaccinated and tests confirm that they are immune and not infected. Pregnant animals must be tested or vaccinated prior to being covered or inseminated. For slaughter animals, more flexible conditions are applicable.

France has reported a further 231 outbreaks during October, across various regions but none in the free zone in the north. All appear to be a result of surveillance rather than clinical report cases. Although all within the restriction zone, several of the outbreaks are in new
départements, such as Ardeche, Corrèze, Drôme, Meuse, Haute Alpes, Tarn, Vosges, Yonne and Deux-Sevres. Two of these outbreaks were reported as clinical cases, one in sheep and one in cattle but all the others were detected as a result of pre-movement testing. The main focus of virus circulation remains the central regions of France. Sentinel surveillance in young cattle (>12 <48 months old) in the (BTV-free) north regions and along the border of the restriction zone has not detected any new cases in this region. Animals are being tested by serology and positive animals are followed up for PCR testing. Seropositive and PCR negative animals are not considered new outbreaks.


**Midge activity** (Completed by The Pirbright Institute): Midge activity continues at all sites.

Seasonal vector free periods for the past three years have been

17th December – 12th April (2015/16)
26th November – 14th April (2014/15)
14th January – 1st April (2013/14)

Temperature range limit for replication of BTV is currently considered to be 12oC.

BTV 8 has also been reported in Cyprus and is thought to be due to spread from the Middle East but has not yet been confirmed. BTV 4 continues to circulate in Italy and the Balkans.
Schmallenberg

Resurgence of Schmallenberg virus: update reports from mainland Europe indicate a resurgence of Schmallenberg virus (SBV) in the last few weeks. The European Vet Surveillance Network exchanged information on small numbers of cases of congenital deformities typical of SBV infection in Belgium and Germany, and on acute disease in the Netherlands: serosurveillance in 2013 and 2015 detected only small numbers of younger animals that had seroconverted there; recently their Veekijker phone reporting service reports in cattle fever, milk drop and diarrhea on multiple farms with seroconversion and positive PCR tests to SBV. The likelihood is that the proportion of adults in herds having had historical infection is declining. In GB there has been a report of a single case of congenital deformity confirmed as SBV in a stillborn calf in Cornwall, and reports of small numbers of seroconversions in cattle in the Midlands (as a result of screening prior to export rather than evidence of infection). Therefore there is evidence of low level SBV activity in GB also. Mitigating measures: APHA, partner PME providers and SAC are continuing to actively look for SBV in aborted/stillborn lambs that fit the case definition (i.e. arthrogryposis, hydranencephaly syndrome) and also calves. There is currently no vaccine availability: Seed stock has been maintained but due to lack of demand production ceased. The lead time for vaccine to be produced again would be likely 3-6 months. A study carried out by Jessica Stokes University of Liverpool has been published in the Veterinary Record (Stokes and others 2016). Of 1444 samples taken from lambs from 180 farms across the South of England 5 samples were positive on Elisa but when tested by CFT were negative. This study has highlighted a large, naive population susceptible to future potential outbreaks, within the south of England.
Peste de Petite Ruminants

The USD 996.4-million plan launched by the Food and Agriculture Organization of the United Nations (FAO) and the World Organisation for Animal Health (OIE) 28 Oct 2016 is the 1st phase of what will be a 15-year effort to eradicate PPR by 2030.

"Wiping out PPR will have a major positive impact on the lives of pastoralist communities in all developing countries and directly support global efforts to end poverty and hunger by 2030," FAO Director-General José Graziano da Silva said about the plan. "When it comes to viral animal diseases, much attention falls on the threats they pose to human health -- but their effects on economic growth, human livelihoods, quality nutrition and food security can be equally devastating. That's why this campaign needs wide support," he added.

"We have international standards for surveillance and diagnosis of PPR, a global system to report outbreaks, and standards for vaccines that are highly effective when applied appropriately," OIE Director-General Monique Eloit said. "We also have international standards to prevent spread through trade, to officially recognise the control programmes of our Members, and their status as free when those programmes achieve success," she added. "So all the tools are available to us, and are integrated into the plan. Its successful implementation now relies on the capacity of Veterinary Services at national level -- the OIE is committed to provide them with ongoing support."

Since it was 1st identified in Côte d'Ivoire in 1942, PPR has spread to some 70 countries in Africa, the Middle East and Asia -- in September 2016, Mongolia reported its 1st-ever case of PPR. Over 80 percent of the world's sheep and goats are found in these regions, where many families rely heavily on products like goat milk, mutton and wool for their nutrition and livelihoods. FAO estimates some 300 million small-scale farming families worldwide depend on small ruminants for food and income.


Paramphistomes

Vets in Ireland are reported apparent cases of acute larval paramphistomosis causing significant morbidity and mortality in calves on a farm in the eastern midlands of Ireland at the end of September. Nineteen out of 31 six-month-old weanling dairy calves died over the course of a week. Other calves were ill but responded to treatment with oxyclozanide. While this was initially suspected of being some kind of a toxicity event, histopathology brought the focus onto larval paramphistomosis, apparently a massive & acute infection with the larvae of the rumen fluke Calicophoron daubneyi. This is regarded in Ireland as an ‘emerging’ parasite, causing some clinical disease & ill-thrift. As it is not universally accepted as a significant pathogen, it has not previously been considered a cause of sudden death. Northern Ireland has reported two similar cases in sheep flocks in September, where acute larval paramphistomosis was the only significant pathology detected at post mortem, in flocks with numbers of sudden deaths. One flock suffered 25 deaths. In those cases, as in the cattle case, very severe watery diarrhoea
was associated with severe parasitic enteritis in the upper small intestine especially the duodenum, and large numbers of larvae in the duodenum were the only significant findings. Fig 6 shows larvae recovered from 30ml of the watery intestinal contents from a ram necropsied in Sligo RVL where enteritis associated with acute larval paramphistomosis was the only significant finding.

Ireland also seeing acute liver fluke cases. Dumfries DSC also reported a similar case of severe paramphistomosis in August.

Rumen fluke infection is common in NI but have they have recently been seeing more pathology associated with infection. This is most likely due to higher levels of challenge and awareness of potentially increasing challenge in GB has been discussed by the SR SEG.

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Centre of Expertise in Extensively Managed Livestock

APHA recently held its first conference to discuss issues faced monitoring the health and welfare of extensively managed livestock. The conference brought interested parties together to share information and develop collaborative ways of working to detect and manage disease and welfare threats. 55 delegates attended the event on 29 July at the University of Bristol, including industry, academia, retail, government and veterinary representatives.

A full report will be published on the vet gateway in December.
Diagnostic submission trend

Throughput

Contributors of diagnostic submission data include APHA VI Centres, SAC C VS Disease Surveillance Centres and partner post-mortem providers. Annual diagnostic submissions are provided for sheep Table 2 and goats Table 3. It is worth noting that a submission may be comprised of a number of carcases submitted for examination, therefore these do not represent a count of carcases received. The increase in submissions in Wales is attributed to the success of the Wales Veterinary Science Centre.

Table 2. Sheep Submissions by Country for Q 3 2016

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</tr>
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<tbody>
<tr>
<td>England</td>
<td>140</td>
<td>167 %</td>
<td>102 %</td>
<td>19</td>
<td>2375 %</td>
<td>93 %</td>
<td>558</td>
<td>102 %</td>
<td>93 %</td>
<td>717</td>
</tr>
<tr>
<td>Wales</td>
<td>76</td>
<td>230 %</td>
<td>216 %</td>
<td></td>
<td>180</td>
<td>111 %</td>
<td>105 %</td>
<td></td>
<td></td>
<td>256</td>
</tr>
<tr>
<td>Scotland</td>
<td>156</td>
<td>113 %</td>
<td>96 %</td>
<td></td>
<td>348</td>
<td>103 %</td>
<td>101 %</td>
<td></td>
<td></td>
<td>504</td>
</tr>
<tr>
<td>Unknown/Non-GB</td>
<td>3</td>
<td>100 %</td>
<td>79 %</td>
<td></td>
<td>69</td>
<td>107 %</td>
<td>133 %</td>
<td></td>
<td></td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>375</td>
<td>145 %</td>
<td>112 %</td>
<td>19</td>
<td>1900 %</td>
<td>99 %</td>
<td>1,155</td>
<td>104 %</td>
<td>99 %</td>
<td>1,549</td>
</tr>
</tbody>
</table>

Table 3. Goat diagnostic submissions by APHA & SAC for Q3 2016

<table>
<thead>
<tr>
<th>Jul-Sept</th>
<th>Non Carcase Submissions</th>
<th>Carcase Submissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>APHA</td>
<td>SAC</td>
</tr>
<tr>
<td>2016</td>
<td>98</td>
<td>26</td>
</tr>
<tr>
<td>2015</td>
<td>109</td>
<td>33</td>
</tr>
<tr>
<td>2014</td>
<td>117</td>
<td>65</td>
</tr>
<tr>
<td>2013</td>
<td>123</td>
<td>56</td>
</tr>
<tr>
<td>2012</td>
<td>98</td>
<td>46</td>
</tr>
</tbody>
</table>

Diagnostic Sheep & Goat submissions by syndrome

Fig 7 shows the profile of syndromes for all sheep diagnostic submissions for each year and Fig 8 for goats, and shows that there is little variation over time. The syndrome comes entirely from the classification to which the VIDA diagnosis code belongs, for unknown these represent all diagnostic codes where the disease type is unknown or the diagnosis is not applicable.
Maps
The map Fig 9 showing submissions for sheep has been developed in collaboration with the Data Systems Group GIS team at APHA Weybridge, who generate the outputs to support the work of the SIU in evaluating the coverage of scanning surveillance activities in England and Wales.
Submission data was extracted from the VIDA database in order to include submissions to the diagnostic laboratories of the Scottish Agricultural College (SAC) from holdings in England and Wales and are limited to those holdings that could be georeferenced.
Demographic data on the underlying population of holdings by species is based on the work of the Livestock and Demographic Data Groups and derived from Sheep and Goats: Annual Inventory extracts as at December 2015.
The submission ratio for each species is the proportion of holdings that submitted at least one carcase or diagnostic sample in the reference period over all holdings of that species in the spatial unit county.
Future enhancements are planned to incorporate data on other sources of surveillance information, from within and external to APHA, such as statutory disease notifications, inspection visits or submissions to other diagnostic laboratories. The map shows that
submissions have been received from all parts of England and Wales with a greater number of submissions received from those regions with higher numbers of sheep in the North, Wales and South West.

Fig 9: Spatial distribution of Small Ruminant submissions Q1 – Q3 2016

Publications of interest

Sheep and goats papers published by APHA staff January - March 2016

APHA SMALL RUMINANT EXPERT GROUP; MITCHELL S 2016
Parasitic gastroenteritis in sheep.
Veterinary Record 179 (9) 223-224.

Gocmen H; ROSALES RS; AYLING RD; Ulgen M 2016
Comparison of PCR tests for the detection of Mycoplasma agalactiae in sheep and goats.
Turkish Journal of Veterinary and Animal Sciences 40 (4) 421-427.

KONOLD T; PHELAN LJ; CAWTHRAW S; SIMMONS MM; CHAPLIN MJ; GONZALEZ L 2016
Abnormalities in brainstem auditory evoked potentials in sheep with transmissible spongiform encephalopathies and lack of a clear pathological relationship.
Frontiers in Veterinary Science 3:60.

KONOLD T; THORNE L; SIMMONS HA; HAWKINS SAC; SIMMONS MM; GONZALEZ L 2016
Evidence of scrapie transmission to sheep via goat milk.
BMC Veterinary Research 12:208.

LEARMOUNT J; STEPHENS N; BOUGHTFLOWER V; BARRECHEGUREN A; RICKELL K; MASSEI G; Taylor M 2016
Three-year evaluation of best practice guidelines for nematode control on commercial sheep farms in the UK.
Veterinary Parasitology 226, 116-123.

Millar M; BELL S; Gilboa YA; CARSON A 2016
Transient agalactia in ewes (letter).
Veterinary Record 179 (1) 21-22.

Rowell S; King C; Jenkins C; Dallman TJ; Decraene V; Lamden K; Howard A; FEATHERSTONE CA; Cleary P 2016
An outbreak of shiga toxin-producing Escherichia coli serogroup O157 linked to a lamb-feeding event.
Epidemiology and Infection 144 (12) 2494-2500.

Other publications of interest
Bayrou C; Garigliany M; Cassart D; Sartelet A; Desmecht DJ (2016) Re-emergence of the Schmallenberg virus associated triad hydranencephaly-micromyelia-arthrogryposis in a newborn calf in Belgium, 2016. Veterinary Record Case Reports 4 (2)


Dhand NK; Eppleston J; Whittington RJ; Windsor PA (2016) Changes in prevalence of ovine paratuberculosis following vaccination with Gudair®: Results of a longitudinal study conducted over a decade. Vaccine 34 (42) 5107-5113

Féboli A; Laurentiz AC; Soares SCS; Augusto JG; Anjos LA; Magalhães LG; Filardi RS; Laurentiz RS (2016) Ovicidal and larvicidal activity of extracts of Opuntia ficus-indica against gastrointestinal nematodes of naturally infected sheep. Veterinary Parasitology 226 65-68

Gaudin E; Simon M; Quijada J; Schelcher F; Sutra J-F; Lespine A; Hoste H (2016) Efficacy of sainfoin (Onobrychis vicilifolia) pellets against multi resistant Haemonchus contortus and interaction with oral ivermectin: Implications for on-farm control. Veterinary Parasitology 227 122-129

Laurenson YCSM; Kahn LP; Bishop SC; Kyriazakis I (2016) Which is the best phenotypic trait for use in a targeted selective treatment strategy for growing lambs in temperate climates?

Marinho, RC; Martins, GR; de Souza, KC; Bezerra, RQ; Teixeira, MFD (2016) Detection of Maedi-Visna Virus from Sheep Bronchoalveolar Lavage by Nested PCR Evaluation of Different Primers Pairs. *ACTA SCIENTIAE VETERINARIAE*, 44 JUN 24 2016


Paraud C; Marcotty T; Lespine A; Sutra JF; Pors I; Devos I (2016) Cross-resistance to moxidectin and ivermectin on a meat sheep farm in France. *Veterinary Parasitology* 226 88-92


Sales N; Love S (2016) Resistance of Haemonchus sp. to monepantel and reduced efficacy of a derquantel / abamectin combination confirmed in sheep in NSW, Australia. *Veterinary Parasitology* 228 193-196


**References**
