The VIDA diagnoses are recorded on the AHVLA FarmFile database and SAC 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 AHVLA and SAC are widely acknowledged, and unusual disease problems tend to be referred to either. However, recognised conditions where there is either no diagnostic test, or 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.

AHVLA RLs have UKAS Accreditation and comply with ISO 17025 standard. SAC Veterinary Services have UKAS accreditation at their central diagnostic laboratory and at their Edinburgh and St Boswells Disease Surveillance Centres which comply with ISO 17025 standard.

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Highlights

Similar number of carcase submissions to AHVLA for scanning surveillance in the fourth quarters of 2011 and 2010, which is significantly fewer than in 2008 and 2009.

First diagnosis of psoroptic mange in cattle in northern England, further cases in Wales

Statistically significant decrease in undiagnosed cases presenting as reproductive disease, but not abortion, for GB.

Ureaplasmal and mycoplasmal abortions diagnosed in 2011

Fewer reports of Salmonella from cattle in 2011 compared with 2010

Increased risk of fasciolosis for cattle in Scotland, north-west England and Wales predicted for 2012
INTRODUCTION

Introduction

The weather in 2011 was notable for a very warm spring and autumn and a pronounced difference between the north-west to south-east of GB in rainfall. It was the second warmest year since 1910. Scotland and north-west England experienced heavy rainfall, 150% of the monthly average in September alone, whereas the Midlands, East Anglia and south-east England had one of the driest years on record.

Economics of the dairy industry in 2011

The average milk price was at an all time high, averaging just under 30p/litre in December 2011, more than 3 p/litre higher than 12 months previously. Stock prices were also high. Input costs such as fuel continued to rise, but feed prices fell compared to the winter of 2010: rapeseed meal, feed wheat and soya prices were all £40-50/tonne lower than the winter of 2010. Milk production was 1.9% higher in 2011 compared to 2010; the relatively positive outlook for the dairy industry should encourage submissions of surveillance samples.

Economics of the beef industry in 2011

The British Cattle Movement Service (BCMS) released figures for calf registration for the 12 month period to July 2011. Of 2.63 million calves that were registered with BCMS, 2.16 million were thought to be available for rearing by the beef industry, a rise of 2% over the same period in 2008/9, which had the lowest registration figures in recent years. This rise was countered by an estimated reduction of 100,000 in the supply of male dairy calves for bull beef rearing. Two likely reasons for this reduction were the use of single-sex semen to select for female calves of dairy breeds, and the continued high price of feed to rear these animals.

The economics of rearing beef cattle therefore remains challenging. The retail price for beef exceeded 300 pence per kilo for the first time in 2011, but high feed prices continued to affect profitability. Defra’s farm business income report for 10/11 showed that livestock farmers saw a fall in their income of 29% in lowland areas and 19% in upland areas during 2011. For Wales, livestock income in lowland areas dropped 16% and upland 25%. However, predictions for incomes for 11/12 are significant increases. A reduction in beef farmers’ income may affect the provision and affordability of veterinary services.

Scanning surveillance submission numbers

Fourth quarter numbers
The number of carcases submitted to the AHVLA in the fourth quarter of 2011 was almost identical to that of the fourth quarter in 2010, 345 compared to 342, (figure 1). However, this is significantly fewer than in the fourth quarter of 2009 and 2008. In each of the three previous quarters of 2011 there was a reduction in carcase submissions compared to 2010. Possible reasons for this reduction include the increase in price for necropsy examinations that came into effect in October 2010, and the introduction of a triage system, so that some categories of submissions were diverted from investigation by necropsy to other samples e.g. faeces rather than carcases from diarrhoeic calves. However, analysis of information on submissions for necropsy has yet to be completed.

The number of non-carcase submissions received by AHVLA and SAC in the fourth quarter of 2011 was similar to that of Q4, 2010 (see figure 1).
There was a large (36%) reduction in the number of bovine carcase submissions to the AHVLA in 2011 (1,567) compared to 2010 (2,436) - Figure 3. There was also a reduction in non-carcase submissions to both AHVLA and SAC in 2011, compared to 2010.

NEW AND EMERGING DISEASES IDENTIFIED IN THE QUARTER

Analysis of diagnostic submissions from which no diagnosis was made

Overview

During the fourth quarter of 2011, 25% of cattle submissions remained undiagnosed, which is a decrease compared to the equivalent period in previous years (27%). The 2011 annual figures indicate a decrease in undiagnosed submissions compared to previous years from 28% to 27%.

The only statistically significant annual increase was in abortions. This related to SAC submissions in the second quarter and a full account of the potential reasons for this was given in the second quarter GB Cattle Emerging Threats Report (http://vla.defra.gov.uk/reports/docs/rep_survrep_qtlyc0211.pdf).

Reproductive Disease

The VIDA reproductive category includes diagnosis of abortion, and investigations of infertility. The final quarter of the year saw a statistically insignificant rise in abortions compared to Q4 in previous years, and a decrease from the previous quarter (June – October 2011). A statistically significant decrease in undiagnosed cases presenting as reproductive disease, but not abortion, was noted for GB.

The Early Detection Model, AHVLA data only, complements these findings showing low activity within 2011 for undiagnosed reproductive disease (Figure 4).
Historical Early Detection System results for the Reproductive system.

ON-GOING NEW AND EMERGING DISEASE INVESTIGATIONS

Bovine Psoroptic Mange
There were two diagnosed incidents of psoroptic mange in cattle in the last quarter of 2011. The first was in a group of beef animals in North Yorkshire. The initial case was in a purchased animal. It is not known if this incident was linked to the cases previously described in Wales. The affected animals were treated and later sold for slaughter.

The second case was in south-west Wales, in a group of approximately ten, six-month-old beef calves.

These incidents provide evidence of ongoing outbreaks of psoroptic mange in Wales, and of the first case in northern England. Twenty five outbreaks have now been diagnosed by AHVLA since October 2007. More, undiagnosed, cases are likely to have occurred during this time. There is a risk of disease spreading from cattle farms where a diagnosis has not been sought, or where disease has been diagnosed and the mite has not been eliminated, or from imported animals from endemically infected countries on mainland Europe. The AHVLA continues to inform veterinary surgeons and the farming industry of the risk of spread, and requirements for successful treatment. A paper entitled ‘The clinical features of psoroptic mange cases in GB’ will shortly be published in the Veterinary Record.

UNUSUAL DIAGNOSES

Botulism in a dairy herd
A devastating outbreak of suspected botulism led to the death of 120 out of a group of 160 high yielding dairy cows in a herd in North Yorkshire. The AHVLA investigation of this outbreak included post-mortem examinations and an immediate farm visit. Botulism was suspected on clinical grounds.
In this case it was not possible to confirm the diagnosis with botulinum toxin testing, and there was no link with poultry litter, which is the commonest source of the toxin. The putative source in this case was the carcass of a small mammal or bird that became incorporated in a single batch of feed mixed on the farm. Voluntary restrictions placed on the farm protected the food chain, and vaccination of the whole herd prevented further losses. Further information on botulism is available to vets and farmers on the Defra and FSA websites:
http://www.food.gov.uk/multimedia/pdfs/botulismincattlereport1206.pdf

**Mycoplasmal and ureaplasmal infections**

*Ureaplasma diversum* was diagnosed as the cause of a sporadic abortion in a dairy herd, in this quarter. No other abortifacient agents were identified in the foetus. Further support for the diagnosis was provided by histopathological examination of foetal lung, the character of the lung changes being strongly supportive of *U. diversum* foetal infection. *U.diversum* is commonly present in the lower reproductive tract of beef and dairy cows and bulls, and is associated with granular vulvovaginitis, which can lead to infertility, sporadic abortions and neonatal mortality (Radostits, 2007). *U. diversum* has been reported as one of the most common causes of sporadic abortion in cattle in Finland (Syrjala, 2007).

*Mycoplasma bovirhinis* infection was diagnosed as the cause of abortion of an eight month gestational age foetus in the first quarter of 2011. This is a rare finding and *M. bovirhinis* is not believed to be a primary pathogen of cattle.

Mycoplasmal and ureaplasmal abortions are rarely diagnosed in cattle in GB. However, the AHVLA and SAC standard laboratory protocols for bovine abortion investigation do not usually include the specialist examinations required to identify these organisms, unless the herd history or other factors suggest that use of these specialist examinations is indicated.

**References**


**Red-brown-orange urine discolouration**

Approximately five minutes after micturition red-brown-orange discolouration of urine was noted in approximately 20% of a 100 cow dairy herd in South-West England. The cows were clinically well, but some affected animals had a small, temporary drop in milk yield. The cows had been housed for three weeks, and fed a Total Mixed Ration, including purchased concentrate. A new batch of concentrate had been delivered three days before the onset of discolouration, but any association between this and the urine discolouration is unproven. Tests for common causes of haematuria and haemoglobinuria were negative. Similar cases have also been described in the UK during the 1970s and also in Australia, with signs often following a change in batch of concentrate feed; however, no definitive cause has been identified. For two affected Australian herds, it was hypothesised that the urine discolouration may have been caused by the presence of a metabolite of caffeic acid in the urine; caffeic acid is normally found in plant cell walls. The hazard is minor and the risk to animal and public health is considered extremely low, but the incident identifies an unusual and uncharacterised differential diagnosis of urine discolouration in cows.

**Jejunal haemorrhage syndrome**

This cause of sudden death in adult, predominantly dairy, cows can follow sudden drop in milk yield, and has been recognised in GB for the past few years. Pathology is of a segmental acute haemorrhage into the lumen or wall of the jejunum leading to a functional obstruction. The cause is unclear. The AHVLA has now introduced a diagnostic VIDA code to monitor this condition and characterise its appearance in GB. The disease currently appears to be rare and sporadic in GB.
CHANGES IN DISEASE PATTERNS AND RISK FACTORS

Fasciolosis

There was a significant decrease in the rate of diagnosis of fasciolosis for England and Wales but not for Scotland in the fourth quarter. One of the factors influencing the life cycle of *Fasciola hepatica* is rainfall. The average rainfall for Scotland was the highest since 1910. This provided ideal conditions for the parasite and ensured that there were large numbers of infective metacercariae on the pasture. The risk of infection to cattle will continue to be high in Scotland, north-west England and Wales because of the mild, wet winter experienced there. Further evidence for this risk is the high percentage diagnosis of acute fasciolosis in sheep for this quarter in Scotland and north-west England, which provides evidence of large numbers of infective metacercariae on pasture for the spring. The situation will be monitored and AHVLA will alert farmers to this disease risk in the spring if cases continue.

Brucellosis surveillance in cattle in England and Wales 2011

Statutory cattle submissions for brucella testing (BS7) continue a downward trend evident since the last outbreak of brucellosis in Cornwall in 2004 – down from 6,241 submissions in 2004, to 2,137 submissions in 2011, a 66% fall (see Figure 1). This decline is greater than that in the overall number of cattle over the same time period, probably indicating that awareness of the need, and importance to report abortions, has declined. The data for Scotland does not show such a steep decline in reporting.
In contrast, the number of non-statutory submissions (i.e. diagnostic submissions) that are routinely tested for brucella infection by the AHVLA, have increased since 2006.

In quarter 4 of 2011 non statutory submissions accounted for more than twice the number of statutory (BS7) submissions (Figure 7).

However, this surveillance is less focused than BS7 submissions and is largely based on serology (Rose Bengal Testing) of aborting dairy cows (but does include brucella culture of foetuses and foetal samples submitted to the AHVLA regional laboratories). Dairy herds are screened for brucellosis on a quarterly basis by serology on bulk milk.

**Brucella surveillance submissions Q4 2011**

Defra and the AHVLA are to undertake a campaign to raise awareness of the requirements to report abortions in cattle, in order to ensure adequate surveillance for this notifiable disease, particularly in beef herds.
Salmonellosis in cattle in 2011

There was a 21% reduction in all serotypes of salmonella isolated in 2011, with S. Dublin still being the most common isolate. There was a very slight reduction in monophasic strains 4,5,12:i:- and 4,12:i:, from 32 in 2010 to 31 in 2011.

HORIZON-SCANNING – OTHER RISKS IDENTIFIED

Schmallenberg virus (SBV)

In response to reports from mainland Europe of an unknown disease in cattle, there was enhanced surveillance for disease incursion. AHVLA undertook a review of undiagnosed disease in adult cattle with corresponding clinical signs to those exhibited in Germany and The Netherlands. The number of undiagnosed submissions with the main clinical sign of milk drop, malaise and diarrhoea in adult cattle are shown in Figure 8. There was no obvious increase in undiagnosed submissions from adult cattle with these clinical signs in the summer and autumn of 2011 compared to the previous two years. Indeed, the number of undiagnosed submissions from adult cattle with diarrhoea was reduced. (The reasons for this reduction have not been fully determined but may be related to a small decline in total submission numbers and the increased use of a more sensitive test for Johne’s disease.)

There was a small increase in the proportion (rather than the total number) of undiagnosed submissions from adult cattle with “malaise” in July, August and September 2011. This was associated with submissions from Somerset, Gloucestershire and Devon. Whether this small increase reflected a genuine novel disease event in the local cattle population, or is due to other reasons is not known.

The number of undiagnosed, scanning surveillance submissions from adult cattle with malaise, milk drop and diarrhoea.

SBV-related foetal abnormalities were diagnosed for the first time in GB in January 2012, in sheep and cattle.