



## VLA MONTHLY SCANNING SURVEILLANCE REPORT June 2009

### HIGHLIGHTS

- **Increase in Salmonellosis Dublin in cattle** – *The anecdotal reports are supported by the early detection model which shows a significant June increase (using 5 years data). One hypothesis for this increase is the current high incidence of fasciolosis which is a recognised predisposing factor. A spacio-temporal cluster has been identified which is being analysed further by the VLA Cattle Expert Group.*
- **Outbreaks of lungworm in cattle indicate increased risk of disease at pasture** – *This is earlier in the season than Dictyocaulus infection usually causes problems. The warm and wet weather will have provided good environmental conditions for the parasite.*
- **Parasitic gastroenteritis affecting both ewes and lambs with Haemonchus contortus playing a prominent role** – *This is an early start for PGE and will be related to the presence of the same environmental conditions referred to above*
- **Tick pyaemia and louping ill outbreaks indicate continuing tick activity**- *Tick born diseases provide good evidence of high tick activity. This was reported last month and has been sustained in June.*
- **Further outbreak of QX strain Infectious bronchitis in chickens**- *This strain of IB virus is believed to have been imported into GB having originated in China. This outbreak provides further evidence that the backyard poultry population can act as a reservoir of infection.*
- **Disease outbreaks in gamebirds associated with coccidiosis, coronavirus, rotavirus, Salmonellosis and Spironucleosis** – *The seasonally associated increase in diagnostic submissions has identified a familiar spectrum of diseases including Salmonella Kottbus and S. Binza.*
- **TB in a pet dog caused by M. bovis spoligotype 17** – *Circumstantial evidence of the disease having been acquired by consumption of dead badger tissues.*

## **CATTLE**

### ***Reproductive diseases***

#### **Mycotic abortion**

Mycotic infection was diagnosed by Shrewsbury as the cause of an abortion, the second in a few weeks in a herd of 200 dairy cows. Fungal hyphae were evident in smears prepared from a placental cotyledon and histopathology confirmed a necrotising placentitis with penetrating fungi.

### ***Alimentary tract diseases***

#### **Salmonella Dublin**

Salmonella Dublin infection was frequently diagnosed during the month. This follows a statistically significant increase in cases in the first quarter of the year compared to 2008.

Thirsk diagnosed Salmonella Dublin septicaemia as the cause of death of 18 out of a group of 63 Stabiliser cows with calves at foot. They demonstrated a rapid progression of illness with signs of panting, loss of balance, redness around the eyes and a poor response to treatment. In another case, a two and a half-month-old Jersey cross calf, one of a group of 40 that were out at grass, died after a week having exhibited malaise and jaundice. Other calves in the same group were affected by coughing, pyrexia, diarrhoea and some exhibited joint-ill.

Shrewsbury diagnosed five outbreaks of enteritis associated with the organism. In one dairy herd on Anglesey, 3 cows were reported to have developed a profuse watery diarrhoea, pyrexia and agalactia over a 2 week period.

#### **BVD**

A yearling bullock was submitted to Thirsk as part of an investigation of proliferative crusting lesions around the muzzle (Figure 1) and lateral canthus of the eyes. Three yearling beef suckler animals from a group of 55 cows and calves, which had been grazed on away rented grazing for the summer for the past two seasons, were affected. All affected animals lost condition very rapidly, displayed bloody scour and died within three weeks of the onset of clinical signs. Other than the external lesions, the gross post mortem examination was unremarkable; however an RT PCR for BVD on blood proved positive. The unusual thing about this post mortem examination was that the crusting lesions were confined to the external mucocutaneous junctions, internal lesions were minimal.

#### **Parasitic Gastroenteritis**

Winchester investigated ill thrift and diarrhoea affecting 15 in a group of 40 grazing yearling cattle. Many also had poor coats with red discolouration. Examination of faeces samples revealed trichostrongyle egg counts up to 1850 epg suggesting parasitic gastroenteritis. The condition of the animals improved following worming.

**Fig 1**  
**Crusting lesions around the muzzle-one-year-old bullock with BVD**



### **Coccidiosis**

The carcass of a nine-month-old Holstein/Friesian heifer was presented for necropsy at Sutton Bonnington following a history of failure to thrive and developing ringworm despite vaccination. The rest of the group of 20 heifers were also failing to thrive. Necropsy revealed small intestinal mucosa, mucosal thickening in the caecum and large intestines and evidence of anaemia. Examination of the faeces revealed a coccidial oocyst count of 7750opg of which 95% were *E. alabamensis* and 5% *E. bovis*. and subsequent histopathology confirmed the diagnosis of coccidiosis

A coccidial oocyst count of 2,142,000 was found in a faeces sample submitted to Langford from a three-month old scouring Friesian heifer. Speciation subsequently confirmed 98% of the oocysts to be *E. zuerni* and 2% *E. bovis*.

Shrewsbury also diagnosed 9 outbreaks.

### **Abomasal disease associated with poor silage**

Preston diagnosed right sided abomasal displacement in a dairy cow submitted for necropsy. Significant losses had arisen on this farm following the introduction of third cut silage to the milking herd and the owner reported that between 10 and 20 animals had been lost over the preceding months. A variety of clinical presentations had been recorded indicative of nutritional/metabolic disease, and the situation resolved following removal of the silage from the group.

### **Traumatic reticuloperitonitis**

A 4½-year-old Holstein Friesian cow which had developed an unsteadiness of its hind limbs progressing to recumbency and death was necropsied at Starcross. It was reported there had been another 30 cases in the dairy herd since Christmas, the animals had either died or been euthanased after showing similar clinical signs. Post-mortem revealed a severe reticuloperitonitis associated with penetration of the reticular wall by a sliver of steel. Rumenal magnets were recommended.

### **Yersina Enterocolitica**

Foul smelling diarrhoea, with pyrexia, in a group of 3-4 month old dairy heifer calves at grass was suspected to be due to *Yersinia enterocolitica* infection after the organism was cultured from faeces samples at VLA Carmarthen. Salmonellosis had been initially suspected but ruled out after culture. Diarrhoea due to *Y. enterocolitica* is not well understood, but it is thought that outbreaks can occur under stressful circumstances or in animals on a poor plane of nutrition. The farm staff was advised of the zoonotic potential of this organism.

## ***Respiratory Diseases***

### **Bibersteinia trehalosi**

Penrith diagnosed *Bibersteinia trehalosi* septicaemia as the cause of death of a 17 day old calf which had demonstrated malaise for 12 hours prior to death. Necropsy findings included petechial haemorrhages in the oral mucous membranes, bladder mucosa, pleura, serosal surface of the abomasum and small intestine, and meninges. There was also severe haemorrhage and subcutaneous oedema in the submandibular and laryngeal region and over the left tarsal joint. *B.trehalosi* was isolated in pure growth from liver, spleen and haemorrhagic tissue from the neck. Histology confirmed septicaemia and disseminated intravascular coagulation (DIC) as the cause of death. This is an uncommon cause of septicaemia in cattle.

### **Lungworm (Husk/Dictyocaulosis)**

There were frequent diagnoses of lungworm during the month. Leahurst found evidence of lungworm infection in a 15-month-old Limousin heifer, one of a group of 80 which had been at grass for 6 weeks when it suffered acute respiratory distress with stridor and rectal temperature of 41.7°C. One other animal had died following similar respiratory distress, without treatment, 2 weeks earlier. Animals in the group had been given oxfendazole pulse release boluses before turnout. The diagnosis was confirmed by histopathology.

Starcross diagnosed the disease in a 15-month-old Friesian from a group of 60 animals of which 55 of which were affected. Treatment with antibiotics and NSAIDs had proved unsuccessful.

Winchester diagnosed the disease in a nine-month-old Aberdeen Angus cross steer with a history of respiratory disease prior to death. It was the only death in a group of 52 animals in which coughing was widespread.

Shrewsbury also diagnosed an outbreak in dairy cows in two herds by identification of the larvae of *Dictyocaulus viviparus* in faeces. One of the

herds comprised around 900 cattle with a large number reported to be coughing and with a reduced milk yield. .

## ***Nervous diseases***

### **Clostridial enterotoxaemia**

A 2-day-old Limousin-cross calf was submitted to Penrith with suspected meningitis. The calf had been treated with antibiotics prior to death. At necropsy the meninges appeared emphysematous and the kidneys appeared autolysed relative to the state of the carcass as a whole. Histopathology confirmed acute bilateral necrotising encephalopathy typical of the effects of *Clostridium perfringens* epsilon toxin.

## ***Metabolic diseases***

### **Fatty liver syndrome**

Starcross diagnosed fatty liver syndrome in a British Friesian cow that had rapidly lost condition since calving, being body condition score (BCS) 5 at calving reducing to BCS 2.5 in less than two months. Biochemistry identified hugely elevated BHB 6.72 mmol/l (ref range 0-1.2 mmol/l), NEFA 1719 µmol/l (ref range 0-600 µmol/l) and GLDH 167 U/l (ref range 0-25 U/l) levels indicating a severe ketosis and liver dysfunction.

Fatty liver syndrome was also diagnosed by Langford in three herd biochemistry screens with all cows tested having elevated NEFA's suggestive of fatty liver disease. In one of these herds there was a high incidence of metritis, LDA's and milk fever and in another fertility was described as poor.

Shrewsbury diagnosed acetoanaemia in cows in three dairy herds. In each case the cattle were described with nervous signs; elevated blood beta hydroxybutyrate concentrations confirmed the diagnoses.

## ***Other Diseases***

### **Parapoxvirus**

Parapox virus was detected by electron microscopy in scrapings from lesions on the muzzles of calves submitted to VLA Aberystwyth (Figure 2). Three animals had developed severe nasal ulceration with granulomatous lesions on rostral and ventral aspects of the tongues. They were markedly pyrexical. Trauma caused by rushes in the field had been noted and there had been a severe orf outbreak in this year's lamb crop. The attending veterinarian had reported the incident to Animal Health as suspect bluetongue.

**Fig 2**

**Severe ulceration of the muzzle of a calf from which parapox was detected (picture from Margaret Williams, Milfeddygfa Glantwymyn) .**



## **SMALL RUMINANTS**

### ***Alimentary tract diseases***

#### **Abomasal emptying defect**

A four-year-old vasectomised Suffolk ram was euthanased due to ill thrift. Post-mortem examination at Bury revealed lesions consistent with abomasal emptying defect (AED). The farm had previously had a case of AED in a Suffolk ram.

#### **Parasitic Gastroenteritis (PGE)**

A feature of the cases reported in June was that both ewes and lambs were affected by the disease, with *Haemonchus contortus* playing a major role.

Bury described a case involving five ewes from a group of 300 which died over seven days with clinical signs of ill thrift and anorexia. Although diarrhoea was not reported there was considerable faecal soiling around the anus and tail area. *Haemonchus*, *Nematodirus*, *Teladorsagia* and *Trichostrongylus* species were identified at necropsy.

PGE was also confirmed by Starcross as the cause of ill health and death in a group of 300 adults out of which 20 had died over the last year. Necropsy of one ewe revealed least 23,000 worms present of which 80% were *H contortus*

and 20% were *O circumcincta*. A pre-mortem blood sample confirmed severe anaemia and hypoproteinaemia.

Langford diagnosed haemonchosis as the cause of death of seven ewe lambs in a 100 ewe flock which had had died over the previous three weeks with no prior clinical signs reported.

Carmarthen diagnosed PGE as the cause of death of a three month old lamb with significant numbers of *Nematodirus battus* demonstrated at necropsy. The animal had also suffered fly strike.

### **Fasciolosis**

Langford investigated the sudden deaths of two out of a group of 40 Suffolk cross ewes. One was submitted for post mortem which revealed a very shrunken firm liver with many adult fluke within the bile ducts and gall bladder. The ewe had been drenched for fluke two months previously which appeared to have been unsuccessful in eliminating the infection.

## ***Respiratory Diseases***

### ***Bibersteinia trehalosi***

An adult ewe was submitted to Preston for post mortem examination after 3/250 ewes had been found dead in a short period of time. There was a pleuropneumonia with serosanguinous pleural fluid, diffuse sub pleural haemorrhage and consolidation of cranioventral lung regions, which were coated in fibrinous exudate. *Bibersteinia trehalosi* was recovered in profuse pure growth from lung tissue. There was no evidence of concurrent mycoplasma infection.

*Bibersteinia trehalosi* septicaemia was also confirmed by Penrith in a 3-year-old ewe, from a farm where 3/450 ewes had died. Post-mortem examination revealed severe oesophagitis and hepatitis.

## ***Nervous Diseases***

### **Louping Ill**

Aberystwyth diagnosed Louping ill in three yearling ewes, that were submitted live to investigate the cause of sudden death and neurological signs in the group. Lateral recumbency, opisthotonus, nystagmus, frothing at the mouth, fitting and 'padding' had been seen in the affected cases. The yearlings had been turned out onto hill pasture three weeks before. Ten out of a group of one hundred had so far been affected within a two-day period, five of which had died. The diagnosis of Louping ill was confirmed by detection of high antibody titres of >1/640, and by immunohistochemistry on brain.

### **Toxoplasmosis**

One five-day-old lamb was submitted live for post mortem examination as part of an investigation into "floppy" lambs born to a group of 50 Texel and Mule cross ewes in a 450-ewe spring-lambing flock. All 50 ewes in the batch were served by the same shearling Texel tup. A total of six lambs had been euthanased on account of these clinical signs and another ten had been turned out with their dams and were doing moderately well. Clinical signs in the lamb submitted, one of the worst affected, included hind limb paresis with head tilt and tremor. Histopathology of brain tissue revealed multifocal non-

suppurative encephalomyelitis with parasitic cysts and occipital periventricular necrotising leucoencephalopathy. These findings were strongly suggestive of toxoplasmosis and a tentative diagnosis of toxoplasmosis was made.

### ***Other diseases***

#### **Tick pyaemia**

A 13-month-old Scottish Blackface hogg was submitted live to Penrith from a hill farm experiencing unexplained deaths in sheep turned onto the hill. The animal had been dull and recumbent for several days. Post-mortem examination revealed widespread abscessation of internal organs with *Staphylococcus aureus* isolated in pure growth. Although tick-borne fever organisms could not be demonstrated in blood smears, this was diagnosed as a case of tick pyaemia. Two more deaths from the group were then submitted for post-mortem examination. Both had died suddenly with no preceding signs. One hogg had evidence of tick pyaemia and both animals were found to have louping ill following brain histopathology.

#### **White Liver Disease**

Thirsk diagnosed ovine white liver disease (OWLD) in a yearling Lleyn hogg lamb, one of a group of 200 lambs intended as flock replacements on a 650-ewe upland Lleyn flock. Management of these lambs was exemplary but growth rates were poor, and approximately five had died. Gross post mortem examination revealed pneumonic pasteurellosis (likely cause of death) but the liver showed uniform grey/beige discolouration, and histopathology revealed a severe subacute to chronic hepatopathy with severe vacuolation of hepatocytes. Liver B12 was 0.11 µg/g WM (reference range: < 0.19 µg/g WM) indicating a borderline B12 deficiency. Blood samples from cohorts, as well as from last year's hogs (by now shearlings) taken on a farm visit, revealed widespread low serum B12 levels confirming the diagnosis of cobalt pine. Silage and soil analysis revealed soil and pasture deficiencies of cobalt.

## **PIGS**

### ***Alimentary tract diseases***

#### **Colienteritis**

Three 10-day-old pigs which had recently started to scour were submitted live to Bury. Piglets were reported to show reduced growth rates from 10 to 20-days-old and then to pick up again. Post-mortem examination revealed reddening of the small intestine with no specific mucosal lesions. Pathogenic *E.coli* strain V189 (serotype O108: K'V189) was isolated from the intestines of two of the piglets; however histopathology revealed severe villus atrophy suggestive of earlier rotaviral infection.

### ***Respiratory Diseases***

#### **Actinobacillus pleuropneumoniae**

Two pigs found dead were submitted to Bury to investigate an upsurge in respiratory disease on a 700-sow indoor breeder finisher unit. There had been on-going respiratory disease problems after pigs entered finishing houses at 12 to 14 weeks of age. More recently, younger pigs around 11-

weeks-old were affected with coughing, sneezing, some ocular discharges and some deaths. Mortality from weaning to slaughter was regularly greater than 10%. Sows were vaccinated with PCV2; rearing pigs were vaccinated for PRRSV and *Mycoplasma hyopneumoniae*. Gross lesions in all three pigs were consistent with acute *Actinobacillus pleuropneumoniae* and APP was isolated. PRRS virus RNA was also detected in the spleen of one of the pigs and immunohistochemistry is in progress on the lungs to determine the degree of PRRSV involvement. There was no evidence of PCV2 or swine influenza virus.

## ***Nervous Diseases***

### **Salt poisoning/Water deprivation**

Salt poisoning/water deprivation was confirmed as the cause of tremors and staggering in a group of five to six-week-old piglets investigated by Bury. Pigs were housed in seven tents of which only one tent of smaller pigs, which had been scouring, was affected. Pigs were found dull, recumbent and shaking. The weather was hot and the pigs had been noted to be lethargic, these factors, together with the pigs' increased need for fluid due to the scour, could have predisposed to water deprivation. Two were submitted for post mortem examination in which there were no remarkable gross lesions and no significant bacteria were isolated, histopathology confirmed the diagnosis.

## ***Other diseases***

### **Epyphysiolosis**

The carcass of a 190kg boar was presented to Shrewsbury for post-mortem examination with a history of hind limb paresis, in which the boar could walk once standing but was unable to get up unaided. Post-mortem examination revealed avulsion of the head of the right femur confirming a diagnosis of epiphyseolysis

## **BIRDS**

### ***Commercial Layers and Layer Breeders***

#### **Enterococcus faecalis**

Septic arthritis localised in the hock and knee joints was found the cause of lameness in three flocks of layer pullets aged between 20 and 28 days old. Moderate growth of *Enterococcus faecalis* was obtained from affected joints in all three submissions.

#### **Erysipelas**

*Erysipelothrix rhusiopathiae* septicaemia was diagnosed in two flocks of 54 and 55 week-old free range layers with a history of ongoing mortality from around 40 weeks. Egg production was not significantly affected. The organism was recovered in heavy pure growths from cultures of liver, spleen and endocardial vegetations.

## ***Broilers and Broiler Breeders***

### **Encephalomalacia**

Vitamin E deficiency- Encephalomalacia, currently a rare condition in domestic poultry, was diagnosed in a flock of 1300, 25 day old free-range organic broilers. A history of nervous signs developing two days prior death and clinical signs including ataxia, lateral recumbency and tremors. At post mortem examination varying degrees of congestion and petechiation of the cerebellum were noted. Histological examination of brains revealed large areas of necrosis in the cerebellar folia with local haemorrhages and prominent hyaline fibrin microthrombi in blood vessels. No other part of the brain was affected.

### **Rickets**

Rickets was diagnosed in a flock of 4500, 20 day-old free range organic broilers with a history of recent onset of lameness. Findings at post mortem examination were of poor bone strength affecting leg bones in particular, and slight enlargement of parathyroid glands. Histological examination of undecalcified sections of growth plates stained by Von Kossa's method confirmed mild osteodystrophic changes and patchy mineralization failure consistent with rickets.

## ***Backyard Flocks***

### **QX strain Infectious Bronchitis Virus**

Winchester diagnosed the QX strain of infectious bronchitis virus as the cause of an outbreak of respiratory disease among approximately 1,200 rare breed chickens. An estimated 40% of a group of 500 young birds were affected by respiratory disease manifested principally as sneezing. Post-mortem examination revealed inflammation of the tracheal mucosa with patchy congestion of the lungs. This strain of infectious bronchitis virus has been isolated previously from backyard chickens (Veterinary Record (2008), **162**, 99-100.)

## ***Gamebirds***

### **Coccidiosis**

Coccidiosis was diagnosed in 6-week-old Red-legged partridges submitted to Penrith. The birds appeared thin and dull before death but there was no obvious diarrhoea. In the two birds submitted, profuse numbers of coccidial oocysts were found in bright yellow, necrotic cores found in the caecae. Coccidiosis was also diagnosed in a separate submission of 4-week-old Red-legged partridges. In this case, the parasite was found in the small intestine however there were no obvious gross lesions.

### **Coronavirus**

Deaths in 40/80 breeding pheasants were investigated and two 12-month-old birds were submitted. The principal finding at post-mortem was pale mottled kidneys. Histopathological examination of the kidneys revealed changes consistent with those described in coronavirus nephritis of pheasants. This disease had been diagnosed the previous year in breeding birds in the flock and it was noteworthy that a few cock birds had been retained from the previous year.

### **Rotavirus**

Five, 4-7-day-old pheasant poult carcasses were submitted to Sutton Bonnington . Approximately 200 of 800 birds were presenting with malaise, ill thrift, recumbency and death. At post-mortem the caecae of all birds were distended with frothy, wet, mustard yellow content. Rotavirus was detected in all samples by PAGE.

### **Salmonellosis**

A batch of 8 day old pheasant chicks was submitted to Preston to investigate a rapid increase in mortality (100/300 dead) after 5 days of age. All birds examined showed gross evidence of enteritis. Laboratory tests confirmed the presence of *Salmonella* Kottbus in 3 and rotavirus in 4 out of five birds examined.

Winchester diagnosed enteritis associated with *Salmonella* Binza as the cause of death of 1,000 chicks out of a group of 10,000 6-day-old partridge chicks.

### **Spirochaetosis**

Winchester diagnosed Spirochaetosis (hexamita infection) as the cause of runny, yellow, frothy droppings affecting 10% of a group of 4000 birds with 50 deaths.

## **MISCELLANEOUS SPECIES**

### **Tuberculosis in an Alpaca**

A very thin 48 kg alpaca carcass was presented to Luddington for post mortem examination. There were no grossly visible adipose reserves and serous atrophy of fat was present diffusely throughout the subcutaneous tissue. Upon incising in to the abdomen approximately 500ml of serous fluid was evident. Multiple, spherical, white, firm, caseous foci measuring between 2-3mm and 1cm in diameter were present scattered throughout the hepatic parenchyma. There were up to 20 in number. There was no grossly visible normal parenchyma remaining in the lungs with extensive, caseous, white tissue occupying more than 80% of the lung volume. Multifocal, caseous nodules were present on the pericardium and throughout the mediastinum. A ZN smear revealed acid-fast bacteria typical of *Mycobacterium* spp. The case was reported to the local Animal Health office.

### **Tuberculosis in a Patterdale Terrier**

A Patterdale terrier was submitted for necropsy after the attending veterinary surgeon had found lesions suspicious of TB on post mortem examination. Two months previously the terrier had reportedly killed and partly eaten a moribund badger found in a hollow in a hedge. At this time the attending veterinarian had advised the owner of the dog to keep the animal in a kennel outside the house and avoid contact with the family, including a 4 year old child. Necropsy revealed typical tubercular lesions in liver, lungs and kidneys. *M.bovis* spoligotype 17, a type prevalent in the area, was isolated on culture.

## WILDLIFE

### Red Squirrel

A squirrel found dead at the foot of a tree was found at post-mortem to have a friable yellow liver and a significantly enlarged spleen. No bacteria were cultured from viscera however histopathological examination revealed subacute necrotising hepatitis, splenitis, pneumonia and myocarditis, and subsequent specific staining confirmed an associated systemic toxoplasma infection. Subacute systemic toxoplasmosis is identified sporadically in Red squirrels (Duff & others, 2001 Veterinary Record 148, 4, 123-124)

### Water voles

Water voles (*Arvicola terrestris*), a conservation priority species, were submitted to Penrith from a captive breeding project. One of the animals had a fungal gastritis. This individual had been transported many miles by road recently and it was considered that stress may have played a part in the disease.

### Red Deer

A live calf and the carcass of a calf were submitted to Thirsk from a herd of 180 parkland Red Deer with a history of high mortality. Post-mortem examination of both carcasses revealed the small intestinal and caecal contents to be extremely fluid and green in colour. The rectal contents of the calf submitted dead were likewise green and very watery. There was no evidence of scour but the carcass was extremely dehydrated, as shown by severe enophthalmos. Laboratory investigations revealed cryptosporidia to be present and subsequent histological examination of the gut of the animal submitted live showed large numbers of cryptosporidia particularly noticeable in the distal small intestine. A farm visit was undertaken on the strength of the problem, as the mortality was exceptionally high both in 2008 and was looking like being so in 2009. In 2008, 40 deer calves died within the first week of life and this year so far 31 have died. Last year, cryptosporidia were also identified and were typed as *Cryptosporidium parvum*. Zoonotic implications were discussed at the farm visit and several management alterations were recommended.

## VLA FARM INVESTIGATIONAL VISITS JUNE 2009

Reason for Farm Visit	Number of farm visits
Animal health & welfare	3
Human & animal health & welfare	10
Human health only	3
Other projects	6