



VLA MONTHLY SURVEILLANCE REPORT JANUARY 2009

Highlights

- **Thromboencephalitic Meningoencephalitis (TEME) in a dairy calf**
*This pathological feature of *Histophilus somni* infection also known as “sleeper sickness” is commonly seen in American feedlot cattle but is much less common in GB*
- **Deaths due to onion poisoning in two suckler cows**
Feeding cattle on vegetable and food waste needs to be done with careful consideration of possible toxic effects. Veterinary advice should be sought
- **Fasciolosis continuing to cause losses in cattle and sheep**
The latest reports confirm the lack of preparedness in affected flocks. The practice of returning treated animals to infected pasture indicates a lack of basic understanding of the disease and a failure to obtain veterinary advice.
- **Salmonella typhimurium U288 causing losses in growing pigs**
The cases reported here underline the difficulty in disinfecting premises adequately and the role of intercurrent PCV-2 infection in many outbreaks
- **Ostrich deaths caused by *Libyostrongylus* infection**
An example of a novel parasitic species being imported with exotic farmed species. The parasite only infects Rattites and poses no threat to domestic poultry
- **Death of a juvenile Red Squirrel caused by heavy sucking louse infestation**

VLA FARM INVESTIGATIONAL VISITS JANUARY 2009

| Reason for Farm Visit | Number of farm visits |
|---------------------------------|-----------------------|
| Animal health & welfare | 3 |
| Human & animal health & welfare | 5 |
| Human health only | 2 |
| Other projects | 7 |

CATTLE

Reproductive diseases

Abortion

BVD

Winchester investigated an incident in which three abortions were reported in a group of 25 bought-in suckler heifers. A foetus was submitted that had aborted at approximately 5-6 months' gestation. BVD virus was detected by PCR testing in the spleen of the calf, confirming that the foetus had been exposed to BVD *in utero*. No BVD antibodies were detected in the foetal body fluid although the dam had a high positive BVD titre. The positive BVD PCR and negative BVD serology result in the foetus matches the pattern reported in a recent article in the Vet Record (Vet Record, January 10th, page 56-57) in which PCR testing was found to be more sensitive than serology in detecting foetal exposure to BVD.

Yersinia enterocolitica

Yersinia enterocolitica was isolated in pure culture from foetal stomach contents of a bovine foetus of seven months gestation with no other significant findings, suggesting that this organism may have been implicated in the abortion.

Mycotic abortion

Shrewsbury reported three cases of mycotic abortion. *Aspergillus fumigatus* was confirmed as the causative fungus for two of the three cases.

Alimentary tract diseases

Salmonellosis

Penrith reported an increased in disease associated with *Salmonella dublin* infection affecting animals from a few days old to adults. In one outbreak the organism was isolated from one of four diarrhoeic cows from a dairy farm where *Salmonella dublin* had already been isolated from the youngstock. There had been a previous history of *S dublin* on the farm.

Salmonella Dublin was also isolated from the liver, lung and faeces of a one month old Friesian heifer calf submitted to VLA Carmarthen. The history indicated that 28 out of the last 30 calves born in this dairy herd had shown clinical signs of wasting, ill health and diarrhoea from approximately 2 weeks of age. Post mortem examination also revealed 30% of the total lung volume to be consolidated with a cranioventral distribution. No other bacteria were isolated from the lung, but PI3 virus was detected by fluorescent antibody tests.

Traumatic reticuloperitonitis

Traumatic reticuloperitonitis was diagnosed as the cause of death of a 7-month-old Limousin bull which had exhibited signs of melaena, lethargy and pyrexia prior to death. Post-mortem examination at Newcastle revealed extensive peritonitis and abscessation of the reticulum. The offending foreign body could not be located.

Johne's disease

A three-year-old cow which began to lose condition 4 months after she calved was submitted to Leahurst for post-mortem examination. The animal had been suspected of having Johne's disease but was found to be serologically negative. Post-mortem revealed no gross evidence of mucosal thickening in the terminal ileum or caecum but mucosal smears revealed acid-fast organisms with morphology typical of MAP. Histopathology confirmed the paucibacillary or tuberculoid form of Johne's disease.

Parasitic Gastroenteritis (PGE)

Parasitic gastro enteritis (PGE) was diagnosed in a six month old Friesian heifer examined at VLA Carmarthen. It was the only one to have died in a group of 8, all of which had lost condition. The animals had been housed six weeks previously and had been fed on concentrates and silage. The calf had received antibiotic treatment but no anthelmintic treatment. The abomasum was found to contain 30,000 nematode worms, 60% of which were *Trichostrongylus axei* and 40% *Ostertagia ostertagi*.

Fasciolosis

Patent fasciolosis was diagnosed at VLA Carmarthen in an organic, spring calving dairy herd. Of the 9 animals sampled, 8 had received triclabendazole 6 ½ weeks earlier. Ill-thrift and sub-mandibular oedema were reported in a number of animals. All animals had been housed for 2-3 weeks. They had previously been kept out on a bark pad which was described as free-draining. Triclabendazole had been used for a number of years on this farm, and the possibility of inefficacy of the product was raised. VMD were informed via a SARS report PVS advised an alternative flukicide as a treatment.

Coccidiosis

Langford investigated several outbreaks of coccidiosis. In one incident it presented as ill thrift and diarrhoea in a group of 12-week old Jersey heifer calves. All 28 in the group were affected but none died. The owner reported that the problems started when the calves were mixed at eight to ten weeks of age after weaning. The same problem had been encountered the previous year and despite moving into a new calf house the problem had returned this year.

Respiratory Diseases

Thromboencephalitic meningoencephalitis (TEME)

Two dairy calves from a closed herd were submitted to Thirsk from a farm where 75 from 100 developed pneumonia over a one week period. At the time of the investigation, eight calves had died. No vaccines were used. The lungs from both calves had extensive red/grey coloured consolidated areas with micro abscesses visible on cut surfaces. In one of the calves, large blood clots were present in the ventricles of the brain and surrounding the brain stem. The clots were adhering to dark red/black discoloured areas in the mid-brain and the brain stem. These lesions were consistent with thromboembolic meningoencephalitis (TEME). TEME is associated with *Histophilus somni* infection which was isolated from the brain lesions and from the lungs of these calves. *Mannheimia haemolytica*, *Arcanobacterium pyogenes*,

Pasteurella multocida and *Mycoplasma bovis* were also identified. No viruses were demonstrated.

Mannheimia haemolytica

Penrith necropsied a dead 10-week-old Holstein heifer from a farm that had been experiencing pneumonia in all ages of youngstock. *Mannheimia haemolytica* and *Mycoplasma arginini* were isolated from diseased lung. Although *M. arginini* is of unknown significance in the bovine respiratory disease complex it was the only pathogen recovered from the lungs of another 10-month-old heifer stirk suffering from chronic pneumonia on the same farm.

The acute onset of respiratory disease in a group of purchased calves was investigated by Shrewsbury. Post mortem examination of an animal which died after a short period of dyspnoea revealed diffuse consolidation of the lungs with pale foci suggestive of necrosis. *Mannheimia haemolytica* was isolated in pure culture with no other pathogens identified. The prompt treatment of all of the other 65 calves in the same airspace was instigated.

RSV

Shrewsbury also investigated three outbreaks of RSV infection. These were in calves aged between 4 and 10 months. In one of the outbreaks the manifestation of disease appeared more suggestive of IBR with ocular and nasal discharges, but FAT examinations proved negative for IBR and positive for RSV.

IBR

Luddington examined two plucks from cases of pneumonia from a group of 80 finishing cattle which had been affected for five weeks. Vaccination for IBR was carried out early on in the outbreak but some animals that were added to the group afterwards may have been missed.

Other Diseases

Myocardial necrosis

An adult dairy cow was submitted to Preston for examination, it was the second animal to develop recumbency with no concurrent clinical signs consistent with hypocalcaemia, trauma or botulism. The cow had been unresponsive to supportive treatment and at necropsy all the findings recorded were consistent with those expected in a recumbent animal. Histological investigation was undertaken and identified severe myocardial necrosis involving the purkinje cells. The resultant damage to these cells would lead to changes in cardiac conduction, predisposing to arrhythmias. A number of potential aetiologies are known for this type of necrosis, including vitamin E and selenium deficiency, and these are now being investigated.

Botulism

Three separate carcasses were submitted to Thirsk from a farm with beef finisher bullocks which had lost about 25 animals over a period of two months. Where clinical signs were seen they included recumbency and ataxia although most animals were found dead. The animals were housed in groups and bedded on poultry litter from a local broiler unit. Botulism was suspected as the main cause of the problem and this was confirmed in one of the

submitted carcasses by testing of intestinal contents for the presence of *Clostridium botulinum* toxin.

Onion poisoning

Two suckler cows belonging to a group of 130 were found dead over a period of two days. Post-mortem examination at Thirsk revealed an abnormal smell to both carcasses together with a pale tan swollen liver, thin watery blood and gross bladder distention with dark red urine. The rumen contents of each cow were dry and very occasional pieces of onion skin were seen within the contents. Further contact with the farmer revealed that these animals had been fed large numbers of onions in their diet and a diagnosis of onion poisoning was made. Of the domestic species, cattle are the most susceptible to onion poisoning and it has been suggested that diets containing greater than 25% dry matter of onion can cause clinical signs of anaemia. The causative alkaloid N-Propyl Disulphide is present in both cultivated and wild onions. This incident was similar to a case described by Van der Kolk in the Veterinary Record [Veterinary Record (2000):147 (18) p517].

Neuraxial Oedema

Leahurst diagnosed neuraxial oedema as the cause of neurological signs in a newborn polled Hereford calf. The calf had failed to stand and had exhibited whole body tremor and opisthotonus from birth, developing nystagmus before it was euthanased at a day old. The condition, which is heritable in Hereford cattle, was confirmed by histopathology.

SMALL RUMINANTS

Reproductive diseases

Toxoplasmosis

The submission of a freshly aborted lamb and a mummified fetus to Winchester resulted in the confirmation of toxoplasmosis by foetal serology in the fresh lamb. Ten tegs were reported to have produced dead lambs in the last fortnight, in this 300 ewe flock. Subsequent serological testing for *Toxoplasma* in five animals in the flock showed all five animals to be positive, with titres ranging from 1/64 to >1/4096, indicating the likelihood of recent exposure.

Enzootic abortion

Penrith confirmed Enzootic abortion in samples of aborted lambs from three farms. All showed typical gross placentitis. On one farm, six of 50 ewes had aborted; on the second four of 38 ewes in the group aborted; and on the third 10 of 300 ewes were affected.

Listeria ivanovii

Starcross identified *Listeria ivanovii* in foetal stomach contents and placenta from one of twins aborted three weeks early from a two-tooth ewe. It was the second abortion out of a group of 74 ewes that were vaccinated against both *Toxoplasma* and *Chlamydochloa*.

Alimentary tract diseases

Fasciolosis

Penrith described two cases in which animals were submitted with a clinical history of respiratory disease and were subsequently found to be suffering from sub-acute fasciolosis. In the first a 10-month-old lamb was submitted live as a suspect pneumonia with reported shortness of breath. Post-mortem examination revealed subacute/chronic fasciolosis and an extremely low albumin level. Twelve of a group of 380 had died. In the second case two Swaledale ewe carcasses were submitted for post-mortem examination. The ewes were reportedly dull and had been treated for pneumonia. Post-mortem revealed haemorrhagic tracts in the liver with free haemorrhage in the abdomen and liver indicating a diagnosis of fasciolosis.

Penrith also reported several cases of suspected triclabendazole resistance either from post-mortem submissions or telephone reports from local practitioners. They remarked that some farms seem to be relying on flukicides as a way of allowing the continued grazing of known highly infected pastures, this is unlikely to prove an animal health or economic success, and increases the chance of treatment failure with triclabendazole.

Carmarthen diagnosed acute fasciolosis as the cause of death of a of a speckled faced ewe. Six had died out of a group of one hundred and six ewes since shortly before Christmas. The group were treated for fluke (product unknown) in December. They were also treated with ivermectin at the same time. They were at grass and the grazing was wet. Necropsy revealed typical haemorrhagic tracks and a fibrinous exudate on the surface of the liver. (Fig.1)

Figure 1

Hemorrhagic tracts and fibrinous perihepatitis associated with acute fasciolosis in a ewe



Respiratory Diseases

Mannheimia haemolytica

Mannheimia haemolytica infection together with severe intestinal parasitism was the cause of death of two yearling ewe lambs. 15 animals had died in a group of 100 yearling ewe lambs in a 750-ewe flock. Animals had become ill and slowly deteriorated over a 2-day period. They had been housed eight days prior to their death. *M. haemolytica* was cultured from lung tissue at necropsy examination and an abomasal wash of one of the ewes revealed 10,000 *Trichostrongylus axei* worms and 8,000 *Teladorsagia circumcincta* worms. 400 *Teladorsagia circumcincta* worms were found in the abomasum of the second ewe lamb.

Other diseases

Streptococcal polyarthritis

A three-week-old lamb which had suffered joint ill for approximately 10 days and deteriorated to recumbency in spite of antibiotic treatment was submitted to RVC for post-mortem examination. Necropsy confirmed the presence of a severe suppurative and fibrinous polyarthritis in multiple joints including the atlanto-occipital joint. Bacteriological culture from one joint and the liver produced growth of *Streptococcus. agalactiae* , an unusual cause of suppurative arthritis.

Gid

VLA Aberystwyth diagnosed cerebral coenurosis (gid) in a 10 month old Beulah Speckled Face ram lamb. Since the Autumn, three or four lambs in a group of 520 had shown in coordination, especially when disturbed, but no circling had been observed. Similar cases had been seen the previous year. There was a large gid cyst with multiple scolices occupying the left cerebral hemisphere and part of the right hemisphere. Clinical signs in gid cases can be very variable according to the size and position of the cyst or cysts.

Gid was also diagnosed at VLA Carmarthen in a 9 month old speckle faced ewe lamb. It was one of 20 to be affected by nervous disorders over a six month period in this flock of 600 ewes. Animals of all ages down to 9 months were affected. Animals showed blindness, in coordination and recumbency prior to death. At necropsy, a large gid cyst was found in the left cerebral hemisphere of this animal.

PIGS

Alimentary tract diseases

Clostridial enteritis

The carcasses of seven piglets aged between 2-and-3-days were submitted as part of an investigation into increased mortality affecting litters on a unit with 250 breeding sows. Post mortem examination showed the presence of milk clot within the stomach together with liquid yellow blood-stained small intestinal content. One of the piglets showed evidence of subcutaneous haemorrhages and oedema and two of the piglets showed the presence of ruptured livers with free blood within the abdomen. *Clostridium perfringens*

toxin ELISA testing of intestinal content confirmed the presence of alpha and epsilon toxins in one of three samples tested confirming the presence of either type B or type D *Clostridium perfringens* enterotoxaemia.

A flare-up of scour affecting 25% of neonatal piglets with 10% mortality on a 1500-sow breeder finisher unit, prompted the submission of three live one-day-old piglets to Thirsk for investigation. The farm had recently begun a vaccination policy using a multivalent clostridial vaccine but the vaccine would not have yet had a chance to totally cover the herd. Post-mortem examination revealed yellow bubbly intestinal content along the entire length of the intestines and *Clostridium perfringens* was cultured from the faeces of each piglet. Alpha toxin was detectable in the small intestinal contents of one piglet confirming the diagnosis of Clostridial enteritis.

Salmonellosis

Bury investigated a case in which forty out of 230 five-week-old pigs were affected with diarrhoea, wasting with 30 deaths. On farm post mortem examination revealed diphtheritic colitis and *Salmonella* Typhimurium U288 was isolated from two specimens of colon submitted for post-mortem examination. Despite efforts to improve cleaning and disinfection between batches, subsequent weaned pigs suffered a similar problem and pigs submitted for post mortem examination at five to six-weeks-old were in poor body condition with enteric colibacillosis and, in some, salmonellosis. A post cleaning and disinfection visit was made to the unit and high levels of residual salmonella were cultured from swabs of the floor and feeders of cleaned and disinfected flat decks although visually a good standard of cleanliness had been achieved. Advice was given on improving efficacy of disinfection and preventing recontamination of disinfected areas.

Sutton Bonnington also investigated a case involving the same organism. Six, 14-week-old pigs, were submitted for necropsy from a finisher unit. Four of the pigs were from one breeder unit. Animals from this unit had been lethargic, and exhibited lameness, swollen joints and poor weight gain. An animal necropsied on-farm had lesions suggestive of a polyserositis. The other two pigs were from a different breeder unit and were described as 'poor doers'. In all six animals at necropsy, there was a variably severe necrotising and ulcerative colitis often with a diphtheritic membrane. *Salmonella* Typhimurium phage type U288 was cultured from pooled faecal samples of both groups of pigs. In addition, *Brachyspira pilosicoli* was cultured from the large intestines, but the severity of the colitis was more consistent with salmonellosis. Changes associated with PCV-2 were demonstrated in the two piglets exhibiting wasting indicating the presence of concurrent PMWS.

Swine Dysentery

Langford remarked that practitioners were reporting an increase in swine dysentery. They investigated a case with a history of fattening pigs showing wasting and diarrhoea. FAT tests on a faecal sample were positive for *Brachyspira*. *B. hyodysenteriae* was isolated using specific culture, confirming the diagnosis of Swine Dysentery

Respiratory Diseases

Influenza

Rapidly spreading coughing on a large continuous nursery finisher unit with a total of 11,000 pigs began on New Year's Eve and prompted submission of a dead pig to Bury to investigate possible swine influenza. In the rearing shed which was worst affected, approximately 700 of 3,500 pigs were coughing and although most affected pigs appeared bright there were with five deaths in the space of two days. Pigs had been vaccinated for *Mycoplasma hyopneumoniae* and PCV-2 at weaning. The pig submitted for necropsy had a severe fibrinopurulent tracheitis (see Figure 1) with a significant bronchopneumonia and unilateral fibrinous pleurisy from which *Pasteurella multocida* and *Streptococcus suis* type 2 were isolated. Swine influenza was confirmed by isolation of H1N2 influenza virus and immunohistochemistry. The virus isolated is being compared to the H1N2 virus also isolated in East Anglia from an outbreak of swine influenza on a breeding unit described in November's monthly surveillance report.

PRRSV

Bury diagnosed PRRSV associated respiratory disease in outdoor weaned pigs. Over a period of six to eight weeks, dyspnoea and coughing were noticed in each batch of weaners from four weeks of age after moving to outdoor nursery finisher sites. In one batch, 25% of pigs became affected with 7% mortality over three weeks. In a batch of 1000 four-week-old pigs, 30 were reported to be affected on arrival. Pigs were outdoors in tents with paddocks with no mixing of sources or ages.

Neurological Diseases

Streptococcal meningitis

Winchester investigated increasing mortality in 12 week old pigs which had demonstrated neurological signs. Two pigs submitted for post mortem examination demonstrated meningeal congestion and a fibrino-purulent meningitis. *Streptococcus suis* Type 2 was isolated from the meninges.

In another case piglets aged 10 – 14 days that were reportedly "going off their legs" and showing vague neurological signs were submitted for post mortem examination. There was a suppurative poly-arthritis, with fibrino-purulent deposits over the brain and abdominal viscera. On this occasion *Streptococcus suis* Type 1 was isolated.

Sutton Bonnington received a twelve-week-old piglet from a small unit that breeds and finishes pigs which had a history of anorexia, walking in circles, and eventual recumbent. At necropsy a heavy infestation of *Haematopinus* lice was present, along with a polyserositis affecting the right hock, left elbow and peritoneum. *Streptococcus suis* type II was cultured from the affected joints.

BIRDS

Broiler Chickens

Colisepticaemia

E. coli septicaemia in combination with yolk sac infection or septic arthritis was diagnosed in four batches of chicks aged between 3 and 4 days with increased mortality over the past two days.

Spiking mortality syndrome

Spiking mortality syndrome (probable hypoglycaemia) was thought to be the main cause of sharp and transient increase in mortality in a flock of 28 day-old broilers. Post-mortem examination findings included congested subcutaneous fat and livers, pale spleens with blood splashes and absence of food in the upper digestive tract. Although a definitive diagnosis for this condition depends on the demonstration of blood glucose levels below 150mg/dl, a microscopic finding of numerous lipid droplets in renal tubular epithelium and myocardial cells which are demonstrated by Oil Red 'O', supports the possibility of a metabolic problem e.g. hypoglycaemia resulting in the mobilisation of fat stores as an alternative energy source.

Broiler Breeders

Traumatic tendon ruptures

Traumatic tendon ruptures were diagnosed in a flock of 27 week old birds submitted with a history of increase lameness. The main finding at post mortem examination was of recent often unilateral gastrocnemius tendon rupture just above hock level accompanied by bruising and tissue discoloration.

Commercial Layers

Starve out and dehydration

High mortality in a flock of 7 day old chicks showing little or no sign of growth was associated with starve out and dehydration. Post mortem examination revealed virtually empty gastro-intestinal tracts with only small amounts of litter present in the gizzard. The kidneys were pale with small amount of urates present in the ureters.

Rickets

Rickets was diagnosed in two flocks aged 18 and 25 days. All had a history of recent onset of lameness and were below target weight and uneven. There was no increased mortality. Findings at post mortem examination were of poor bone strength affecting leg bones in particular, and slight enlargement of parathyroid glands in one of the cases. Histological examination of undecalcified sections of growth plates stained by von Kossa's method confirmed osteodystrophic changes and patchy mineralization failure consistent with rickets.

Erysipelas

Acute septicaemia due to *Erysipelothrix rhusiopathiae* was confirmed in two flocks of free range layers aged 65 and 76 weeks in which a slightly raised mortality rate had been in evidence over the past few weeks

MISCELLANEOUS SPECIES

Libyostrongylus infection in Ostrich

Post mortem samples including an entire heart and an opened proventriculus were submitted to Winchester as part of an investigation into weight loss and recumbency in an 18-month-old female ostrich. Three birds had died from a group of six. Examination of the heart showed the pericardium tightly adherent to the underlying epicardium. No coronary fat was present on the surface of the heart. Examination of the proventriculus showed evidence of a severe inflammation of the mucosa with a yellow/green coloured diphtheritic membrane present on the mucosal surface. Smears prepared from the proventricular surface showed the presence of large numbers of *Libyostrongylus* worms and eggs. This worm species is a recognised pathogen in ostriches particularly young ostriches where it can cause a severe proventriculitis leading to anorexia, weight loss, weakness and recumbency. A range of anthelmintic treatments are documented in the literature.

TB in a cat

A five-year-old domestic shorthair cat presented with several skin granulomas on its legs. A biopsy was suggestive of Mycobacterial infection and the cat was euthanased and submitted for necropsy. As well as the skin lesions (Fig.2), the cat had an atypical pneumonia but there was a complete absence of caseous/purulent lesions. Histology of lung and skin lesions was typical of a mycobacterial infection, and culture yielded *Mycobacterium bovis*, spoligotype 10. Advice regarding zoonotic risks was given

Figure 2
Skin lesion associated with TB in a cat



TB in an Alpaca

Lung and liver from an 18-month-old alpaca were submitted to Luddington for examination after the alpaca had shown respiratory signs and dramatic weight loss. A ZN smear on lung tissue showed Mycobacteria typical of *Mycobacterium bovis*, and culture confirmed this finding, spoligotype 17.

Animal Health were informed as soon as possible. Interestingly, in two carcasses submitted following the index case from animals exhibiting severe weight loss, fasciolosis was diagnosed in the absence of TB.

WILDLIFE

Penrith received several Red squirrels (*Sciurus vulgaris*) for post-mortem examination. Causes of death included predator attack and road traffic accidents however two cases were particularly notable. In the first a juvenile male Red squirrel, which had been found dead in thin body condition was found to have evidence of anaemia and dehydration. The underlying cause of was thought to be ectoparasitism due to louse infestation. The ectoparasites were identified as the sucking louse *Neohaematopinus scurius*.

In the second an animal was found to have died from an intussusception of the colon with a build-up of ingesta proximal to the intussusception. The other organ systems were unremarkable. This is the second colonic intussusception VLA have found in red squirrels, each without an obvious cause; there was no evidence of adenovirus enteritis as a predisposing condition. Other workers investigating Red squirrel disease have also reported finding this condition.