

REGIONAL VETERINARY LABORATORIES REPORT

December 2025

Regional Veterinary Laboratories (RVLs) carried out necropsy examinations on 689 carcasses and 308 fetuses during December 2025. Additionally, 1,533 diagnostic samples were tested to assist private veterinary practitioners with the diagnosis and control of disease in food-producing animals. This report describes a selection of cases investigated by the Department of Agriculture, Food and the Marine's (DAFM) veterinary laboratories in December 2025. The objective of this report is to provide feedback to veterinary practitioners on the pattern of disease syndromes at this time of the year by describing common and highlighting unusual cases. Moreover, we aim to assist with future diagnoses, encourage thorough investigations of clinical cases, highlight available laboratory diagnostic tools, and provide a better context for practitioners when interpreting laboratory reports.

Cattle

Pneumonia and enteritis were the most common diagnoses at necropsy in cattle in the RVLs during December 2025.

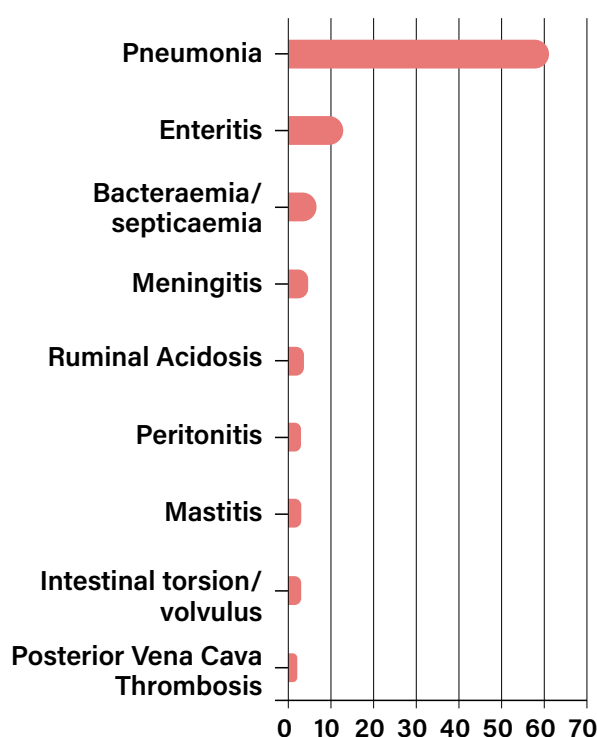


Table 1: The most common diagnoses in cattle submitted for necropsy in December 2025.

Gastrointestinal Tract

Adenoviral enteritis and nephritis

A nine-month-old Friesian heifer that showed no response to treatment for diarrhoea was submitted to Limerick RVL. Gross examination at post-mortem revealed a segmentally-inflamed small intestine with brown liquid contents. Histopathology of the kidneys showed a severe, multifocal, necrotising, tubulointerstitial nephritis with intranuclear inclusion bodies present in cells within the renal interstitium. The intestines were autolysed with evidence of one gland/crypt containing coccidia. No other significant findings were seen in the brain, liver or lung. The primary differential diagnoses for intranuclear inclusion bodies in the kidneys of cattle are certain viral infections and lead poisoning (renal lead concentration in this case was within the normal range), with adenovirus being the most common

Important Reminder re Bluetongue and Bovine Post-Abortion Maternal Blood Sampling

Veterinary practitioners are reminded of the legal requirement to investigate abortion in cattle, and that this requirement can be satisfied by either submitting a foetus for postmortem to an RVL, or by submitting a post-abortion blood sample from the dam that aborted to the Blood Testing Laboratory (BTL), Model Farm Road, Cork. While this requirement was introduced originally for brucellosis surveillance purposes (and now serves for proof of freedom), these samples are also being screened for bluetongue antibodies. These submissions are an important surveillance tool, as well as satisfying the legal obligation. Even when a foetus is submitted for PM, a maternal blood sample increases the prospects of a diagnosis, as the causative agent may no longer be detectable in the aborted foetus. In the case of bluetongue surveillance, this is even more important if the foetus shows birth defects or deformity.

strain Belfast 1 was detected in fixed kidney by the Animal and Plant Health Agency (APHA) using polymerase chain reaction (PCR). This virus is associated with severe enteric disease in cattle. A diagnosis of severe enteritis consistent with adenovirus was made.

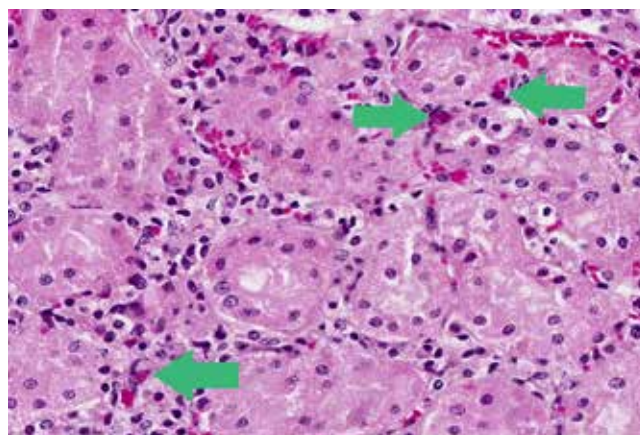


Figure 1: Photomicrograph of a section of kidney from a case of adenovirus infection in a heifer, showing interstitial intranuclear inclusion bodies (green arrows). Photo: Brian Toland.

Septicaemia

A three-year-old suckler cow with a history of chronic diarrhoea with no response to treatment was submitted to Limerick RVL. The main findings at post-mortem were multifocal coalescing ulcerative and necrotic lesions at the base of the tongue, and along the length of the oesophagus; there was marked inflammation with multifocal, raised, necrotic lesions of different sizes at the pyloric region of the abomasum and in the duodenum. There were also multifocal necrotic and haemorrhagic lesions of varying sizes on the pleural lung surface and in the pulmonary parenchyma. Histopathology showed: a multifocal, necrotising, bacterial glossitis; a multifocal, necrotising, bacterial abomasitis; and a multifocal, necrotising, fibrinous interstitial bacterial pneumonia with thrombosis. Fungi were not detected in any of these sections. *Bibersteinia trehalosi* and *Moraxella bovoculi* were detected by matrix-assisted laser desorption/ionisation-time of flight (MALDI-TOF) mass spectrometry from the pulmonary tissue. A diagnosis of septicaemia was made.



Figure 2: Ulcerative and necrotic oesophagitis from a case of septicaemia in a suckler cow. Photo: Brian Toland.

Respiratory Tract

Viral Pneumonia

A seven-month-old Friesian weanling with no response to treatment for pneumonia was submitted to Limerick RVL. Necropsy revealed consolidation of approximately 15 percent of the lungs with a cranioventral distribution, multifocal areas of 'ground glass' emphysema, and multifocal bullae of varied sizes. Ground glass emphysema is suggestive of airway obstruction and is seen frequently in cases of broncho-interstitial pneumonia caused by viruses or lungworm (none seen). Bullae are air-filled spaces greater than 1cm in diameter within the lung which have developed because of emphysematous destruction of the lung parenchyma. *Pasteurella multocida* was cultured from the lung and a PCR test was positive for bovine respiratory syncytial virus (BRSV) virus. A diagnosis of severe acute BRSV viral pneumonia with secondary bacterial infection was made.



Figure 3: 'Ground glass' emphysema in a case of severe BRSV viral pneumonia in a weanling. Photo: Brian Toland.

A four-month-old calf with respiratory signs was submitted to Kilkenny RVL. On necropsy, there was an interstitial pneumonia. The lungs were overinflated, and there was multifocal 'ground glass' emphysema and bullae. BRSV was identified on PCR.



Figure 4: Overinflated lungs with 'ground glass' emphysema (green arrow) in a calf. Photo: Aileen Kennedy.

Bronchopneumonia

Sligo RVL examined the carcass of a seven-month-old calf which had been observed with a mild cough but no other symptoms prior to death. On post-mortem examination, the ocular mucous membranes were severely congested. The lungs presented bilaterally with consolidation of the cranioventral and middle lobes, and a mottled appearance. Blood was present in the trachea. *Histophilus somni* and *P. multocida* were detected in a lung by culture and PCR. Bacterial bronchopneumonia was diagnosed as cause of death.

Laryngeal chondritis

A five-week-old calf, which had been observed sick for approximately three weeks prior to death with "croaky" and loud breathing, and relapses after treatment attempts, was submitted to Sligo RVL. On post-mortem examination, there was moderate laryngeal chondritis with abscessation. There were circular pale lesions present on the mucosa of the hard palate. The lung presented with multifocal abscessation. *Mannheimia haemolytica* was cultured from the laryngeal

lesion. *Mycoplasma bovis*, *P. multocida*, and *M. haemolytica* were detected by PCR in lung tissue. On histopathology, there was multifocal, acute, severe, necrotising bronchopneumonia. On the hard palate, there was diffuse, subacute, marked necrotising and proliferative stomatitis with ballooning and reticular degeneration, intraepithelial pustules, and numerous epithelial intracytoplasmic viral inclusion bodies. There was epidermal abscessation and excoriation of the surface layer with neutrophil exudation. Laryngeal chondritis and pneumonia were diagnosed. Histopathology was highly suggestive of concurrent bovine papular stomatitis caused by bovine parapox virus.

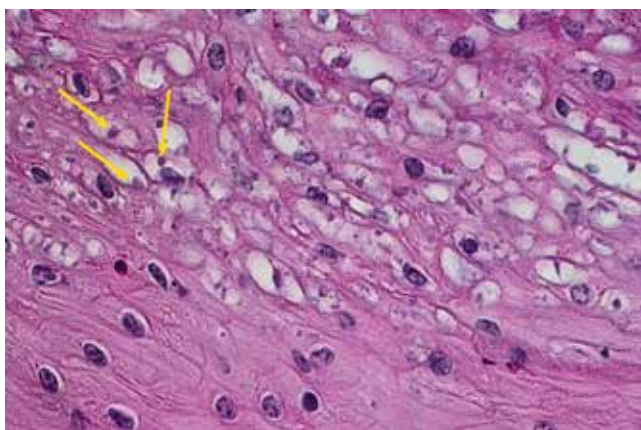


Figure 5: Ballooning degeneration on the hard palate of a calf with eosinophilic, intracytoplasmic inclusion bodies (yellow arrows) suggestive of parapox infection in a calf. Photo: Rebecca Froehlich-Kelly.

Necrotising pneumonia and systemic mycosis

Athlone RVL examined a nine-month-old weanling bull that had been sick for one week with respiratory signs, then developed a watery scour, showed no response to treatment, and died. On post-mortem examination, there was bilateral, anteroventral, fibrinous pleurisy and severe necro-haemorrhagic pneumonia extending into the caudal lobes. The liver was enlarged and orange-coloured, with multifocal circular necrotic lesions 1-2cm in diameter on the liver surface. There was thick bile in the gall bladder, indicating recent inappetence. The mesenteric lymph nodes were markedly enlarged with haemorrhage and necrosis on cross section, and there were serosal haemorrhages and multifocal serositis on sections of jejunum. There were haemorrhages on the serosa of the reticulum, and hyperaemic abomasal mucosa with severe ulceration and haemorrhage at the pylorus extending into the proximal duodenum, and loose black intestinal contents and faeces. *H. somni*, *M. haemolytica*, *P. multocida*, *Mycoplasma bovis*, BRSV, and parainfluenza virus 3 (PI3) were all detected in the lungs by PCR. In addition, a PCR for *Anaplasma phagocytophilum*, the causative organism of tick-borne fever (TBF), was also positive. Tick-borne fever can cause a profound immunosuppression, increasing susceptibility to other infections and/or the severity of concurrent infections. Histopathology of lung, abomasum, intestines, lymph nodes, and liver showed similar findings of severe fibrino-necrotic lesions with haemorrhage, vasculitis, and thrombosis, and copious numbers of fungal hyphae were seen. A conclusion of necrotising pneumonia and systemic mycosis secondary to tick-borne fever infection and prolonged antibiotic therapy was made.

Pulmonary abscessation

A four-year-old Holstein Friesian cow was submitted to Athlone RVL for post-mortem examination. She had calved 63 days previously. Two weeks previously, the animal had been flagged on the robotic milking machine for signs of ketosis, and her milk yield was down. After treatment her milk yield returned to normal two days later. A week later her milk yield dropped again, and she started showing signs of respiratory distress. She did not respond to veterinary treatment and died three days later. On necropsy, there was extensive lung abscessation. There were no other significant findings on post-mortem. *Trueperella pyogenes* was cultured from the lung abscesses.



Figure 6: Pulmonary abscessation in a Friesian dairy cow. Photo: Seamus Fagan.

Urinary/Reproductive Tract Abortion

Neospora caninum is internationally, as well as in Ireland, an important cause of bovine abortion with abortions predominantly occurring in the second trimester. Sligo RVL diagnosed *N. caninum* as cause of abortion in a six-month-gestation foetus by detecting both histopathological lesions, and a positive result upon PCR.

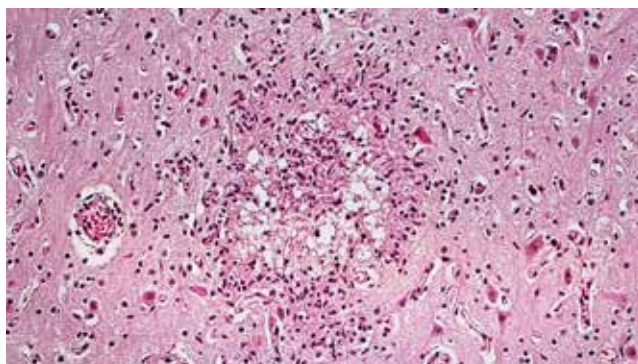


Figure 7: Typical *Neospora caninum* lesion in the brain (nonsuppurative encephalomyelitis) of an aborted foetal calf. Photo: Rebecca Froehlich-Kelly.

Mycotic abortion

A six-month-gestation foetus and its placenta were submitted to Kilkenny RVL. The foetus was autolysed with subcutaneous oedema. The placenta felt thickened and leathery. No significant agent was identified on culture and PCR results. Histopathology of the placenta revealed a fungal placentitis. Fungal abortions occur from four months to term and are most common in winter. It is believed the fungi gain entry through the oral or respiratory tracts and travel haematogenously to the placenta. Intercotyledonary areas of the placenta can appear thickened and leathery, and the cotyledons are necrotic.



Figure 8: Placentitis due to mycotic abortion. Photo: Aideen Kennedy.

Deformities

Sligo RVL examined the carcass of a 12-hour-old calf which had been weak from birth and had to be tube-fed with colostrum. On post-mortem examination, the lungs appeared slightly mottled indicating insufficient post-natal inflation. There was a large atrial septal defect. The kidneys were both enlarged and polycystic. These deformities were the cause of weakness and death in this calf.



Figure 9: Polycystic kidney in a neonatal calf. Photo: Rebecca Froehlich-Kelly.

Cardiovascular System

Myocarditis

A one-year-old heifer was submitted to Kilkenny RVL with no history of illness. There was a pericarditis with multifocal areas of myocardial necrosis. The lungs were congested and heavy. There were bilateral, white-spotted kidneys. *Staphylococcus aureus* was cultured from multiple organs indicating a bacteraemia.



Figure 10: Multifocal areas of myocardial necrosis due to *Staphylococcus aureus* septicaemia. Photo: Aideen Kennedy.

Babesiosis or 'red water'

Athlone RVL examined a two-year-old in-calf heifer with a history of sudden onset illness lasting only a couple of hours, passing red urine. She was given a blood transfusion but did not respond to treatment and died. On post-mortem examination, the carcass was mildly jaundiced. The spleen was markedly enlarged and congested. There were ecchymotic haemorrhages on the epicardial and endocardial surfaces and moderate pulmonary congestion and oedema. The urinary bladder was empty, but a dirty brown residue was evident. Liver copper concentrations were below the normal range. PCR was positive for *Babesia divergens*. A PCR test for tick-borne fever (TBF) was also positive. TBF can cause a profound immunosuppression and increase susceptibility to other infections and/or the severity of co-infections. A conclusion of babesiosis and tick-borne fever co-infection was made. Naïve animals brought into an area where *B. divergens* is endemic or a high-risk grazing area, i.e., under-grazed and rough pasture which are favourable tick habitats, are at a high risk of babesiosis. Pregnant cows and animals without previous exposure to *B. divergens* or *A. phagocytophilum* tend to be more severely affected.

Nervous System



Figure 11: Severe meningeal haemorrhage in the cranial cerebral area consistent with thrombotic meningoencephalitis (TME). Photo: Denise Murphy.

Thrombotic meningoencephalitis

Athlone RVL examined a nine-month-old weanling with a history of having been treated for pneumonia the previous week and responding; it became recumbent and was treated again, but there was no response to treatment, and the animal was euthanised. On post-mortem examination, there were patchy, collapsed lung lobules in the anteroventral lung lobes bilaterally. There was a yellow necrotic lesion in the papillary muscle of the left ventricular free wall and severe meningeal haemorrhage especially in the cranial cerebral area and into the cranial sinuses. A PCR for *H. somni* was positive. Histopathology of the brain showed multifocal, suppurative, thrombotic meningoencephalitis (TME) with vasculitis, fibrinoid vascular necrosis, and haemorrhage consistent with TME.



Figure 12: Fibrin exudate around the hindbrain and spinal cord in a case of meningitis. Photo: Denise Murphy.

Meningitis and pneumonia

Athlone RVL examined a six-month-old weanling with a history of being treated with antibiotics for pneumonia, then having a seizure and dying. On post-mortem examination, there was bilateral, anteroventral, pulmonary consolidation, and haemorrhage and petechial haemorrhages on the epicardial surface. There was fibrin exudate around the hindbrain and spinal cord, and at the base of the brain, and there was increased meningeal opacity in the sulci of the cerebral hemispheres suspicious for fibrin exudation. *M. haemolytica* was detected in lungs by PCR. Histopathology of the brain showed a suppurative meningitis and there was a fibrinosuppurative bronchopneumonia in the lungs. A conclusion of meningitis and pneumonia was reached.



Figure 13: Multifocal areas of haemorrhage within the cerebrum of a heifer (blue arrows), and diffusely opaque meninges. Photo: Sara Salgado.

One 19-month-old heifer was submitted to Dublin RVL. The animal was from a feedlot. It was found acutely in lateral recumbency in respiratory distress and in a moribund state. No treatment was given. It had been purchased two weeks previously. On gross post-mortem examination, there were multifocal red areas within the cerebrum, and the meninges were diffusely opaque. In the heart, there were large areas of haemorrhage within the myocardium and endocardium. The lungs showed cranioventral consolidation of approximately 5 per cent to 10 per cent of lung volume. *H. somni* was cultured from the lungs and brain and detected by PCR on lung samples. The histopathological examination revealed thrombosing bacterial meningoencephalitis and a severe fibrinosuppurative myocarditis with thrombosis and bacteria, and a fibrinous bacterial endocarditis. *H. somni* is an important pathogen in feedlot cattle, often implicated in bovine respiratory disease complex, and may reside in the upper respiratory and genital tracts of healthy cattle. Under stress (moving, transportation, weather changes, crowding, or changes in the diet) or immunosuppression, it can become pathogenic and cause a range of systemic disease, leading to septicaemia and vasculitis. The thrombus formation and vascular damage may result in thrombotic meningoencephalitis, myocarditis, or polyarthritis.

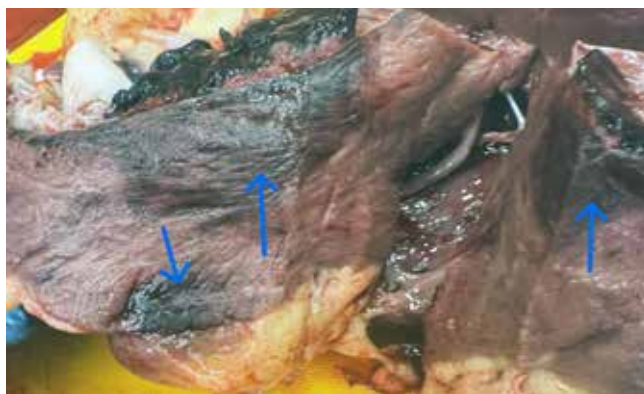


Figure 14: Areas of haemorrhage within the myocardium (blue arrows). Photo: Sara Salgado.

Sheep

Pneumonia and bacteraemia/septicaemia were the most common diagnoses at necropsy in sheep in the RVLs during December 2025.

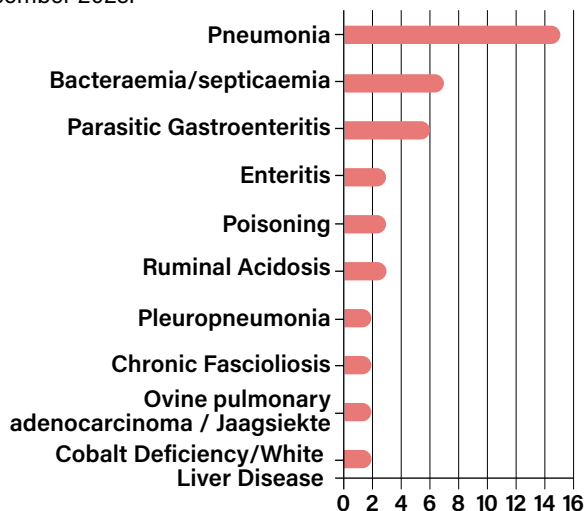


Table 2: The most common diagnoses in sheep submitted for necropsy in December 2025.

Gastrointestinal Tract

Enteritis and pneumonia

Two six-month-old lambs were submitted to Kilkenny RVL with a history of lethargy and scour. There had been a number of deaths in the flock over a short period. The intestinal contents in the first lamb were liquid and the mesenteric lymph nodes were enlarged. There was pneumonia with 15 per cent of lung tissue consolidated. The second lamb had a severe fibrinous pleuritis and pneumonia. The intestinal contents were liquid. *Salmonella enterica* serovar Typhimurium was cultured. In addition, PCR results from lung tissue tested positive for *M. haemolytica*, *P. multocida*, *B. trehalosi*, and *Mycoplasma ovipneumoniae*. Rumen contents were acidotic in one lamb and *Clostridium perfringens* epsilon toxin positive results were recorded.



Figure 15: Enlarged mesenteric lymph nodes in lambs with enteritis where *Salmonella enterica* serovar Typhimurium was cultured. Photo: Aideen Kennedy.

Salmonella Typhimurium has a different epidemiology to *Salmonella* Dublin. Transmission is mostly by the typical *Salmonella* faecal-oral route. Ruminants are atypical hosts, and the disease usually has a monogastric source (poultry, pigs, wild birds, or a rodent infestation). When the source is identified and removed, outbreaks are often self-limiting, with appropriate treatment of clinical cases and no specific prophylactic measures. The carrier state (familiar with *Salmonella* Dublin) is not really a feature of *S. Typhimurium* in ruminants, and faecal shedding lasts for days or weeks rather than weeks or months.



Figure 16: Pneumonia in lambs where multiple pathogens were detected. Photo: Aideen Kennedy.

Ruminal acidosis and enterotoxaemia

The carcase of an eight-month-old ram lamb which had been found dead was submitted to Sligo RVL. On post-mortem examination, there were soft, porridge-like, ruminal contents with a distinctive sour odour present. Rumen pH was 4.3. *A. phagocytophylum* was detected by PCR. *C. perfringens* and its epsilon toxin were detected in intestinal contents. Ruminal

acidosis with terminal clostridial enterotoxaemia was diagnosed as the cause of death. There was concurrent tick-borne fever likely to have caused immunosuppression.

Acute fascioliosis and parasitic gastroenteritis

Sligo RVL examined the carcase of a three-year old ewe which had been noticed dull, anaemic, and unable to stand prior to death. On post-mortem examination, there was severe, acute fluke damage present in the liver. There was ascites and anaemia. Trichostrongyle nematodes were present in the abomasum. Faecal strongyle egg counts were 800 eggs per gram (EPG). Acute fascioliosis and parasitic gastroenteritis were diagnosed as the cause of death.

Respiratory Tract

Ovine pulmonary adenocarcinoma

Athlone RVL examined a three-year-old ewe with a history of sudden death. The small intestinal contents were scant and loose faeces were soft. There were multifocal, circular, pale lesions, 1-2cm in diameter, on the dorsal surface of the caudal lung lobes, that were suspicious for lungworm granulomas due to *Muellerius capillaris*. Lungworm larvae were detected in the faeces along with a faecal egg count of 900 strongyle EPG. A PCR for the causative virus of ovine pulmonary adenocarcinoma (OPA) or Jaagsiekte sheep retrovirus was positive. Histopathology of the lungs showed a large number of lungworm in alveolar spaces and in parasitic granulomas. Additionally, there were well-scattered, multifocal, discrete tumour nodules with acinar and papillary patterns consistent with OPA. Ovine pulmonary adenocarcinoma is a notifiable disease. In addition to the OPA diagnosis, a review of the parasite control programme on farm was advised.

Cardiovascular System

Vegetative endocarditis

Athlone examined a four-year-old ewe with a history of sudden death. There were small subcutaneous abscesses in ventral areas at the level of the 12th/13th ribs and subcutaneous oedema around the right forelimb, and some around the right hindlimb also. There was a large vegetative endocarditis lesion on the tricuspid, or right atrioventricular (A-V) valve. There was right-sided fibrinous pleurisy with adhesions to the costal pleura and pinpoint microabscesses in all the lung lobes, likely due to septic emboli. *T. pyogenes* was isolated from the lungs, heart lesions and the abscesses. A conclusion of right-sided vegetative endocarditis and secondary pulmonary abscessation was reached. Vegetative endocarditis generally arises from primary bacterial infection elsewhere in the body and, in this case, the subcutaneous abscesses on the chest wall are a likely source.



Figure 17: Vegetative endocarditis lesion on the tricuspid or right atrioventricular (A-V) valve of a ewe. Photo: Denise Murphy.

Poisonings

Acorn poisoning

A ewe was submitted to Kilkenny RVL with a history of weight loss. On examination, both of the kidneys were pale in colour, and the intestinal contents were bloody in sections. There were occasional haemorrhages in the lungs. There were acorns, the nut of the oak tree, and their close relatives (genera *Quercus*, *Notholithocarpus* and *Lithocarpus*, in the family *Fagaceae*) among the ruminal contents. Urea concentrations were elevated suggesting renal disease; calcium levels were low. There was a moderate strongyle count. Histopathology changes were typical of acorn toxicity and it was advised to remove access. Acorns and oak leaves contain phenols and tannins which are toxic when ingested in sufficient quantities. Clinical signs can arise after three to seven days and may include anorexia, abdominal pain, and black tarry faeces. Polyuria/polydipsia, haematuria, and icterus may also be seen. Post-mortem findings can include pale, swollen kidneys, ascites, and oesophageal ulceration secondary to uraemia. Depending on the time scale, acorns may not be found within the rumen content. The year 2025 was a notable 'mast year', a year when trees bear atypically heavy crops of seeds and nuts, and this was particularly notable in the case of oak trees.



Figure 18: Pale enlarged kidneys in a case of acorn poisoning in a ewe. Photo: Aideen Kennedy.

Pieris poisoning

In Athlone RVL, *Pieris* species poisoning was diagnosed as the cause of death in three two-year-old pregnant hoggets where five had died on farm. They got access to a garden the previous day, and the presenting signs included: recumbency, convulsions, frothing at the mouth, and death. At post-mortem examination, multiple leaves typical of *Pieris* species were found in the rumen and reticulum. Gross pathology was considered typical of *Pieris* species poisoning and included acute pulmonary oedema, pulmonary congestion, aspiration pneumonia, and renal and liver congestion consistent with congestive heart failure. Grayanotoxins are the active toxic principles in *Pieris* species and *Rhododendron* species, and their common effect is that they bind sodium channels in excitable cells, thereby exerting their main effect on cardiac and skeletal musculature, and the nervous system.

The usual species grown in Irish gardens are either *Pieris japonica* or *Pieris floribunda*. These plants contain large amounts of andromeda toxin which is highly lethal to sheep. We encourage you to warn your clients regarding

preventing exposure to any potential toxic plants/shrubs etc. in gardens/hedge clippings etc.



Figure 19: Leaves from a plant in the *Pieris* genus. Photo: Aoife Coleman.

Miscellaneous

Goats

Parasitic bronchitis

Limerick RVL examined a nine-month-old male goat that had been bought three days previously, was noticed 'off form' with a watery diarrhoea, and showed no response to treatment (worming status unknown). The abomasum had a mild cobblestone appearance suggestive of parasitism, small intestine was filled with large numbers of tapeworms and bloody watery contents, lungs were firm and rubbery. Laboratory findings included *Escherichia coli* cultured from multiple organs suggestive of bacteraemia/septicaemia, and strongyle count of 100 eggs per gram (goats with watery diarrhoea may have a reduced egg count as a result of the dilution effect from the increased faecal volume). Histopathology of the lungs revealed multifocal, eosinophilic, granulomatous pneumonia, with scattered lymphoid follicles and lungworm visible. Lungworms that infect goats include: *Dictyocaulus filaria*, *Protostrongylus rufescens* and *M. capillaris*; severe infections can be pathogenic, causing losses. Tapeworms are generally not considered pathogenic in goats, but heavy infections may cause unthriftiness, diarrhoea, and even intestinal obstruction.

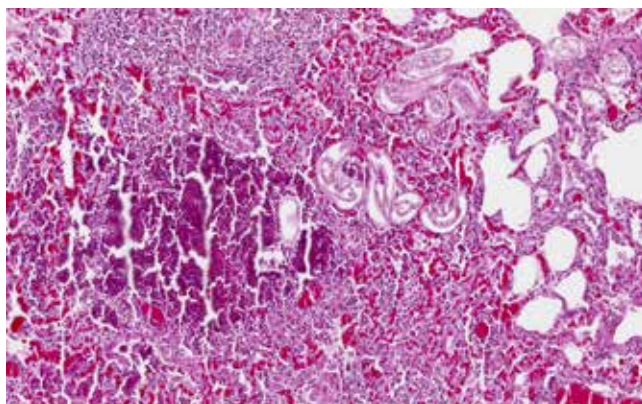


Figure 20: Eosinophilic, granulomatous pneumonia in a goat, with lungworm visible (top right). Photo: Brian Toland.