Record rainfall puts animal owners on high alert

TVMDL offers guidance for owners and practitioners

For years, many in Texas have been hoping for rain, yet no one expected the record rainfall that has swept the state in recent weeks. With the rain comes a flood of potential problems for animal owners, from insect-borne diseases to skin irritations caused by excessive moisture. No species is immune—poultry, horses, dogs, cattle and cats can all be affected by the wet weather.

The Texas A&M Veterinary Medical Diagnostic Laboratory (TVMDL) sees an upswing in testing for mosquito-borne diseases like West Nile virus in the spring months, but this year, the excessive rains could produce a host of other animal health problems. TVMDL offers a range of test services, including bacteriology, serology, molecular diagnostics and much more.

"An animal living on wet ground with no shelter from the rain, or standing in water, can potentially develop hoof abscesses, various dermatologic conditions and a host of other diseases," said Terry Hensley, MS, DVM, TVMDL assistant director and Texas A&M AgriLife Extension veterinarian.

There are also a number of plants that can turn deadly when stressed by too much water, or too much heat. The Toxicology Section at TVMDL can identify whether toxic feeds or forages are the culprit in an animal's decline in health, and even determine if the plant was a factor in death.

Here is a list of potential health threats to your companion animal and/or livestock that TVMDL can help you to diagnose or rule out.

ANIMAL DISEASES

• Leptospirosis

Transmission of the spirochetes causing leptospirosis increases when environmental conditions favor their survival. Wet conditions increase the potential for leptospirosis exposure. Leptospirosis affects a wide range of animals from livestock, horses, and dogs to wildlife. Once infected, the animal will shed spirochetes in urine for various periods of time; and therefore, contaminate the environment and provide a source of infection for other animals.

The clinical signs of leptospirosis vary and are nonspecific, according to the Centers for Disease Control and Prevention (CDC). Some clinical signs in canines include: fever, vomiting, abdominal pain, diarrhea, refusal to eat, severe weakness and depression, stiffness, severe muscle pain and, infertility in breeding dogs. Generally, younger animals are more seriously affected than older animals.

Various species of wildlife (rodents, skunks, raccoons and other small mammals) serve as maintenance hosts for leptospirosis; therefore even "city dogs" that are allowed access to parks, nature trails ,and even the backyard, where wet areas can exist, are at risk of being exposed to leptospirosis

Leptospirosis can be the cause of reproductive problems, as well as other medical conditions in livestock and horses. Veterinarians can work with TVMDL to perform tests to determine if leptospirosis is the cause of an animal's illness.

TVMDL performs a microscopic agglutination test (MAT) and polymerase chain reaction (PCR) test for leptospirosis. The MAT can provide titers that indicate infection in the presence of compatible clinical signs. The PCR test can detect the presence of the organism in clinical specimens, which helps differentiate an infected animal from one that may be showing vaccine titers.

• Clostridial diseases

Herds can be vaccinated to protect against clostridial diseases such as Blackleg, Malignant Edema, Red Water disease and other clostridial infections. Spores from the bacteria that cause these diseases can reside in the soil for a few months or even years. Disturbance of the soil can expose the spores and make them more accessible to grazing animals. There can be an increase in clostridial infections in years of high rainfall and flooding. The spores can be spread to new pastures by flood water and run-off. TVMDL offers the following diagnostic tests for diagnosing clostridial infections.

- **Blackleg**

  The Bacteriology Section at the Amarillo and College Station labs can perform a Clostridium fluorescent antibody (FA) assay on bovine, ovine, and cervid samples. This acute, highly fatal disease of cattle and sheep is caused by the Clostridium chauvoei bacteria and is one of the more common clostridial infections. The bacterial spores may be found on farms after flooding where it was not previously known to exist. This is also true for the other clostridial diseases. Signs of infection include emphysematous swelling, commonly affecting heavy muscles (clostridial myositis).

  Commonly contracted by beef breeds, cattle 6-24 months old are the most susceptible, but disease may occur in as young as 6-week-old cattle and as old as 10-12 years old. In sheep, Blackleg often follows a wound infection following procedures such as shearing, docking or castration. Onset can be sudden, with large, hot and painful lesions; death can occur within 12-48 hours. For more information on testing, visit tvmdl.tamu.edu/tests/clostridium-fa/.

• Anthrax

Anthrax is endemic in some areas of Texas and is caused by the spore forming bacterium Bacillus anthracis. Anthrax cases are often associated with periods of weather extremes. Cases may increase in years of high rainfall and flooding, especially when preceded by a drought; floodwaters may carry spores to new areas.

Anthrax should be considered in cases of sudden death in livestock, especially when dark or tar-like blood exudes from all orifices. If there is good reason to suspect Anthrax the carcass should not be opened. A cotton or Dacron tipped swab can be soaked in the bloody discharge, placed in a red top tube and submitted to the diagnostic laboratory. TVMDL is equipped with capabilities for properly, and safely, testing the sample for anthrax.

Confirmed cases of Anthrax are reported to the Texas Animal Health Commission. Livestock owners should work with their veterinarian and the commission concerning vaccination protocols and proper disposal of infected carcasses. Laboratory testing is needed to confirm a suspected case of Anthrax.

For more information on sample collection or testing please contact the Bacteriology Section at either full service lab, Amarillo at 1.888.646.5624 or College Station at 1.888.646.5623.

• Mastitis
An inflammation of the mammary gland, mastitis is usually due to infection by bacterial pathogens. Mastitis outbreaks are an issue in flooded areas and areas that have been very wet for prolonged periods. The wet, muddy conditions contaminate the teats and predispose the udder to mastitis.

Preparing animals for milking is important to preventing mastitis. Clean and dry the teats; signs of flakes, clots, watery milk, or hard and swollen quarters at milking are signs of mastitis.

Proper diagnosis and treatment of mastitis is important in an attempt to preserve as much functional mammary tissue as possible. Bacteriology culture and sensitivity results are used to select the proper antibiotic for the treatment of mastitis.

INSECT-BORNE DISEASES
• Eastern and Western Equine Encephalitis
• West Nile Virus
Biting insect populations increase significantly following excessive rainfall and thrive in flooded and previously flooded areas. Mosquitoes and biting flies spread a number of viral diseases, such as Eastern Equine Encephalitis (EEE), Western Equine Encephalitis (WEE) and West Nile virus (WNV). Although predominantly associated with disease in horses, these viruses can infect and cause disease in birds, dogs, cats, and humans. The natural disease cycle is a bird/mosquito transmission cycle. When the virus becomes more prevalent in nature, it may "spill over" into horses, other animals and humans.

Typically, these diseases manifest through neurologic symptoms caused by inflammation of the brain and spinal cord. Vaccines for EEE, WEE and WNV are available to prevent disease in horses.

"The equine vaccines that are available for the prevention of these mosquito borne diseases are effective. Horse owners should contact their veterinarian concerning a vaccination protocol for their horses," said Dr. Hensley.

TVMDL offers serologic assays to determine whether an animal is infected with EEE, WEE or WNV. TVMDL also offers a molecular assay (RT-qPCR) for the detection of WNV. In addition, necropsy and histopathology can assist in the diagnosis of neurologic disease.

• Heartworm Disease
Heartworm disease is caused by a parasitic filarial worm Dirofilaria immitis. This parasite is transmitted by mosquitoes. Dogs are primarily infected but this disease is also seen to a lesser extent in cats. As a result of the extensive rainfall around the state, there is an uptick in mosquito populations, which increases the risk of heartworm infection for dogs and cats.

Consult a veterinarian concerning heartworm prevention, testing and treatment. TVMDL offers serologic testing for heartworm disease diagnosis in canine and feline specimens.

SKIN AND FOOT PROBLEMS
The prolonged wet weather increases the risk of skin and feet infections in both companion animals and livestock.

• Dermatophilosis
(Rain rot, rain scald, scratches, mud fever)
This is a common bacterial dermatitis caused by Dermatophilis congolensis. The most important factors in the initiation of dermatophilosis are skin damage and moisture. The exudative, crusted lesions are found over the rump and topline, face and neck and pasterns, coronets and heels in horses. Wet, poorly drained pastures and paddocks are commonly associated with the distal limb dermatitis. This skin infection can also be seen in cattle and sheep/goats. TVMDL can perform diagnostic testing for this skin infection. A definitive diagnosis is based on cytology, skin biopsy and culture. Consult a veterinarian for treatment options.

• Foot Abscesses/Foot Rot
Wet muddy conditions can predispose livestock and horses to foot infections. Horses who are in wet, muddy pastures/paddocks are at increased risk of developing a sub-solar abscess. The horse will present with lameness and should be examined by a veterinarian to determine the extent of the infection and foot structures involved.

Cattle and sheep/goats who are in wet/muddy conditions are more likely to develop foot rot which is a bacterial infection involving structures of the foot. The infection involves the skin in the interdigital space (between the toes) and swelling of this area is often present. The animal will be lame and usually only in one leg. While spontaneous recovery is not

uncommon, if left untreated the infection may progress to involve the joints and tendon sheaths of the foot and lower leg. If this occurs the lameness will become more severe and swelling may extend up the leg. The treatment will depend on how extensive the infection is and it is recommended you consult a veterinarian for options.

POTENTIALLY POISIONOUS PLANTS

Livestock producers can quickly lose valuable animals if they fail to carefully monitor prussic acid and nitrate levels in drought--stressed forages, or forages that may be heat stressed after all the recent moisture. Any of the sorghum species – such as Johnson grass, hay grazer, sorghum sudan, grazing corn and some milo – may also contain high levels of prussic acid. TVMDL's diagnostic testing is the best way to monitor prussic acid and nitrate levels.

• **Johnsongrass**

A common grass in Texas, Johnsongrass can become especially lethal during stressed conditions, or when it grows very quickly. Prussic acid, aka cyanide, builds up causing acute death losses when consumed by ruminants. Beware when the Johnson grass leaves have a ribbon-like appearance; this can be an indicator that it has high prussic acid.

TVMDL tests can test forages and hay for dangerous levels of prussic acid or nitrate. It is good practice to test all forages from well-used grazing land that are known to accumulate high levels nitrates. Information on sending samples to TVMDL can be found at tvmdl.tamu.edu/shipping/. Additionally, TVMDL can some animal samples for nitrates and prussic acid. Please consult your veterinarian in cases where animals have died.

Your veterinarian is the best source of information for potential health threats relating to your area. TVMDL offers an extensive array of assays to help practitioners diagnose a range of animal health diseases. For a full list of services or specific test information, visit TVMDL's website or contact one of the full service laboratories.

TEXAS A&M TVMDL VETERINARY MEDICAL DIAGNOSTIC LABORATORY

- **Online at tvmdl.tamu.edu**
- **Facebook: facebook.com/tvmdl**
- **Twitter: twitter.com/tvmdl**

About TVMDL:
The Texas A&M Veterinary Medical Diagnostic Laboratory protects animal and human health through diagnostics. An agency of the Texas A&M University System, TVMDL comprises two full-service laboratories, in College Station and Amarillo, and two poultry laboratories, in Center and Gonzales.

TVMDL is among 12 core laboratories in the National Animal Health Laboratory Network, a group of state and regional laboratories designed to provide a nationwide surge testing, response, and recovery capacity in the event of an animal disease outbreak.

- TVMDL-College Station
  PO Drawer 3040
  College Station,TX 77841-3040

  1 Sippel Road, TAMU 4471
  College Station, TX 77841-3040

  Tel. 979.845.3414
  Fax. 979.845.1794

- TVMDL-Amarillo
  PO Box 3200
  Amarillo, TX 78116-3200

  6610 Amarillo Blvd. West
  Amarillo, TX 79106

  Tel. 806.353.7478
  Fax. 806.359.0636