

# Animal Health Bulletin

Fall 2009

Division of Animal Industry

## 2009 (Novel) H1N1 Influenza: An Animal Perspective

By: Pamela A. Hunter, D.V.M. and  
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Influenza, commonly referred to as the flu, is an ancient infectious disease caused by an RNA virus that affects animals and man. The earliest pandemic in recorded history that can definitely be attributed to the flu virus is thought to have been an outbreak in 1580, which began in Asia, spread to Africa and then Europe. According to a 2001 paper in the *Journal of Applied Microbiology*, that pandemic left entire cities in Spain devoid of people, and killed more than 8,000 in Rome. It was in fact the Italian phrase "influenza del freddo," or "influence of the cold" used during that pandemic that led to the word "influenza." Since that time, every 30 to 40 years, an aggressive flu virus emerges, one that has changed just enough that the body's natural defenses are not prepared to tackle the virus.

Influenzas can be divided into three types: A, B, and C. It is the type A viruses that are found in different animals and in humans, while the type B viruses circulate only in humans. Influenza C viruses are known to infect humans and swine, but are rarely encountered when compared to types A or B. Influenza A viruses are further divided into subtypes based on two proteins on the surface of the virus: the hemagglutinin (H) and the neuraminidase (N). All of the 16 different hemagglutinin subtypes and 9 different neuraminidase subtypes have been found among influenza A viruses in wild birds, which are the primary natural reservoir for all subtypes of influenza A viruses and are thought to be the source of influenza A viruses in all other animals.

Swine influenza is a respiratory disease that regularly causes illness in swine. It has been found in North and South America, Asia, Europe, and Africa. In the past, outbreaks were associated with commercial herds especially after the introduction of new animals. Most affected swine will recover within five to seven days in the absence of complications, but in some cases, severe bronchopneumonia may develop as a secondary complication, and is a high risk factor for mortality. Typically, influenza is transmitted through the air by aerosols containing the virus. Bird droppings, saliva, nasal secretions, feces and blood can also

transmit the virus. Infection can also occur through contact with these body fluids or through contact with contaminated surfaces. Once introduced, the swine influenza virus may become endemic in herds. Annual outbreaks may be observed, primarily during the colder months of the year. Young, naive pigs are at the greatest risk of infection.

Some strains of swine influenza have infected humans; however, reports are infrequent and infections are typically not severe or life threatening. Due to the nature of the swine flu virus, it seems more likely for it to spread from infected people to pigs. Precautions include vaccinating the pigs against swine influenza and keeping the pigs away from people and other swine that are suspected of having influenza. Commercial vaccines are available against the most commonly encountered strains of swine influenza. The influenza virus is easily killed by disinfectants commonly used in veterinary facilities such as quaternary ammonium compounds and bleach solutions. Animals showing signs of influenza infection should be isolated. Clothing, equipment, surfaces and hands should be cleaned and disinfected after exposure to these animals.

Although initially misnamed "swine flu," the 2009 (Novel) H1N1 influenza virus actually appears to be a human disease, a hybrid of North American swine influenza viruses, North American avian influenza viruses, human influenza viruses,

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Florida Department  
of Agriculture and  
Consumer Services

Charles H. Bronson,  
Commissioner

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## Bureau of Animal Disease Control Inspections at Livestock Markets, Animal Sales and Exhibitions.

By: Ed Poppell  
*Agriculture and Consumer Protection Administrator*

The Bureau of Animal Disease Control is primarily responsible for administering Florida's animal disease prevention, control and eradication program activities. Most of these required inspection activities, performed by field inspectors and veterinarians, are conducted behind the scenes on livestock and poultry premises throughout the state and draw little public attention. However, one of the more important activities performed by field personnel that is very visible to the public involves the inspection of livestock presented for sale at public auctions and animals exhibited at fairs and shows statewide, throughout the year. The purpose of these inspections is to ensure that only healthy livestock and poultry are sold at public auction and enter the food chain or are exhibited at fairs and other exhibitions.

These activities require field personnel to schedule their work activities beyond the traditional 8:00-5:00 five day work week. For example, many fairs and exhibitions have "check in" of livestock and poultry during non-traditional work days and hours. Additionally, many of the livestock and poultry sales operate long hours during weekday or at night and on weekends. The inspectors are required to adjust their work schedules to ensure that required inspection activities are preformed.

Currently, there are eleven USDA approved livestock markets operating weekly as well as 20-25 smaller markets that operate at night and on weekends. There are 52 Florida Fairs and Livestock Shows that operate from 3-15 consecutive days throughout the year and throughout the state. During FY '08, inspectors conducted over 741,000 livestock and poultry inspections at these events which included 450,000 cattle, 12,000 horses, 47,000 sheep and goats, 29,000 swine and 198,000 poultry. ■

### **Feral 2009 (Novel) H1N1 Influenza: An Animal Perspective** *Continued from page 1*

and swine influenza viruses found in both Asia and Europe. The virus is readily spread from human to human and, to date, there is no evidence supporting its transmission from swine to humans so the myth that pigs initially spread the virus is false. While there have been anecdotal cases of the 2009 (Novel) H1N1 virus appearing in pigs and turkeys in countries outside the United States, no cases of this strain of flu virus has been diagnosed in any of the domestic swine. The few incidences of infection produced a

## Emergency Training Efforts

By: David Perry  
*Agriculture and Consumer Protection Administrator*

In an effort to better train agriculture and animal responders for an all hazards response, David Perry with the Florida Department of Agriculture and Consumer Services, Division of Animal Industry, and John Haven, the University of Florida, College of Veterinary Medicine (UF CVM), have teamed together to provide training opportunities for responders.

Incident Command System (ICS) 300 and 400 classes have been held statewide. These classes are designed for upper level management personnel, and instruct responders on subjects such as Unified Command, Area Command, Multiagency Coordination, and management topics. ICS 300 and 400 classes held in Quincy, Florida were attended by Department employees, and Bay Area Disaster Animal Response Team (DART) members attended classes at the Largo SPCA. At UF CVM, classes were targeted at veterinarians and veterinary students to better prepare them for response with the College's Veterinary Emergency Treatment Service (VETS) team and for response with the Veterinarian Reserve Corps.

In the fall, an ICS 300 class is planned for the Food Safety Response Team.

Online training is also available to interested parties at: [www.flsart.org](http://www.flsart.org) and at <http://training.fema.gov/IS/crslist.asp>. ■

mild to moderate illness in swine and swine that recover from the illness are no longer infectious. Due to the low number of domestic swine in Florida, and because most are raised in small backyard herds, the risk of introduction and spread of the 2009 (Novel) H1N1 virus in Florida swine is small. Another myth is that the virus is spread through eating pork; this is also false. Properly prepared pork poses no threat of virus transmission from swine to humans. While work is feverishly being done to produce a vaccine for 2009 (Novel) H1N1 in humans, no such vaccine exists for the virus in swine. In an effort to ensure that swine in the U.S. remains safe and disease free, cooperative state/federal 2009 (Novel) H1N1 influenza surveillance procedures have been established in Florida. In the event of a suspected case in a swine herd, the Kissimmee Animal Disease Diagnostic Laboratory has the ability to screen and diagnose this virus. ■



# Electron Microscopy (EM)

By: Woody Fraser, Biological Scientist IV  
Kissimmee Animal Disease Diagnostic Laboratory

Viruses are too small to be seen with a light microscope. At the Kissimmee Animal Disease Diagnostic Laboratory (KADDL), we are able to see images of viruses using an electron microscope. The limit of magnification for a light microscope is approximately 1000X. By using electrons instead of photons to examine a specimen, magnification up to 250,000X can be achieved.

Negative stain transmission electron microscopy is the technique used at KADDL. Negative staining is accomplished by mixing the specimen with a metal stain (tungsten is most commonly used) which surrounds the virus particle. Electrons pass through the virus, but not through the metal. The electrons are focused by magnetic lenses and create an image on a fluorescent screen. Transmission electron microscopy refers to imaging, by passing electrons through the specimen, as opposed to scanning electron microscopy which bounces electrons off of the specimen.

Fecal samples are the most common specimen submitted for EM. In cases of viral enteritis, large numbers of virus particles are shed in feces. Tissue samples and viral cultures can also be examined after first being thoroughly homogenized to release virus from cells.

Before a specimen is examined in the electron microscope, it is subjected to differential centrifugation which separates virus-sized particles from larger particles. The procedure concentrates any viruses that may be present and increases the sensitivity of the test.

Most viruses have a characteristic appearance and size under EM that allows them to be identified, but a few viruses do not have any features that allow them to be identified by EM (BVD and EVA are examples).

Following is a list of viruses that have been identified by EM at KADDL:

Parvovirus	Reovirus	Poxvirus	Flavivirus
Rotavirus	Orbivirus	Myxovirus	Adenovirus
Coronavirus	Circovirus	Paramyxovirus	Herpesvirus
Iridovirus	Polyomavirus	Birnavirus	Calicivirus
Astrovirus	Papillomavirus	Alphavirus	Bunyavirus
			Picornavirus



*Paramyxovirus ribonuclear protein is recognized by its distinct herringbone pattern. The Paramyxovirus family includes canine distemper virus and newcastle disease virus.*

EM is useful in identifying both known and unknown viruses. Several previously unknown viral diseases of fish have been identified at KADDL by examining tissues and virus isolates from diseased fish with the electron microscope. Iridoviruses affecting largemouth bass, gouramis, tilapia, swordtails and angelfish have been identified as well as herpesvirus infections in angelfish and plecostomus. These discoveries have directly benefitted Florida's aquaculture industry and wildlife management.

Clients that benefit from EM service include zoos, universities, ranchers, farmers, animal shelters, veterinarians and state and federal government agencies.

No special transport medium is required for submission of samples for EM. Feces or tissues should be submitted with no additives. Ice packs and overnight shipment are recommended to ensure the quality of the specimen when it arrives at the laboratory.



# The Kissimmee Animal Disease Diagnostic Laboratory (KADDL) Open House and Current Updates

By: J. A. Agasan, Ph.D. and J. Maxwell, D.V.M.

On July 29th, 2009, the Division of Animal Industry's (DAI) Kissimmee Animal Disease Diagnostic Laboratory held an Open House at the completion of construction of the new Necropsy and Incineration (N & I) facility. The new 4,609-sq. ft. N & I is a Bio-safety Level 2-plus facility and is the third and latest addition to the new Shipping/Receiving facility and Bio-safety Level 3 laboratory. It is equipped with multiple necropsy tables, a large capacity cooler and incinerator, an automated hoist-monorail system, a water decontamination system and other pieces of equipment. The new N & I replaces the older facility constructed in the late 1950s. It will provide improved capacity for animal disease diagnosis for a wide variety of species submitted for examinations to determine cause of death. At necropsy, a wide variety of postmortem samples are collected for further analysis including bacteriology, virology, parasitology, histology, toxicology and molecular diagnostics. Suspicious high-risk samples are forwarded to USDA reference laboratories for confirmatory analysis.

The laboratory was honored to have the Commissioner of Agriculture and Consumer Services, Charles H. Bronson, perform the ribbon-cutting ceremony to mark the event. The Open House was attended by a number of community partners and stakeholders including Osceola County and City of Kissimmee elected officials, veterinarian practitioners, USDA Area Office leadership, a University of Florida veterinary pathologist and residents, along with the State Veterinarian, Dr. Thomas Holt. Tours of the facility were provided throughout the day to guests and also attendees at the Animal Industry Technical Council quarterly meeting that was held in conjunction with the Open House. The meeting highlighted the role of the laboratory in veterinary practice and medicine.

Relative to the goal of obtaining approval for select agent handling and testing, a delegation from the Department of Homeland Security visited KADDL on September 29, 2009 to render assessment of the laboratory's biological safety, security and containment systems. This assessment will provide guidance for facility improvements and upgrades, if any, in order to pass licensure.

On October 14-17, 2009, Dr. J. Maxwell, the Laboratories



Director and Dr. L. Arzeno, Quality Systems Manager, attended the annual American Association of Veterinary Laboratory Diagnosticians (AAVLD) and the United States Animal Health Association (USAHA) conference in San Diego, CA. Dr. Maxwell participated in Emergency Response Preparedness, along with the National Animal Health Laboratory Network initiatives. Dr. Arzeno met with the Quality Management group.

On October 18-21, 2009, Dr. J. A. Agasan, Bureau Chief, attended the 52nd Annual Biological Safety Conference of the American Biological Safety Association (ABSA) in Miami, Florida. The conference focused on an effective institutional biological safety program, designs, management and techniques. The Department will seek accreditation by the ABSA for institutional biological safety and security.

The laboratory conducted its second Foreign Animal Disease outbreak drill with Dr. G. Christy, Emergency Coordinator of the Division of Animal Industry (DAI), managing and coordinating the drill on October 27-29, 2009. L. Humphreys, DAI Assistant Director, participated as an evaluator. The drill was attended by personnel from the Bureau of Animal Disease Control as facilitators. ■

## Equine Rabies

By: Danielle Stanek, D.V.M.  
DOH Medical Epidemiologist

Rabies is endemic in our Florida wildlife, with the primary reservoirs being raccoons and bats. Pets and livestock, including horses, coming into contact with rabid animals are at risk of infection with the virus. Veterinary staff and others who come into contact with saliva and nerve tissue from a rabid horse may also be exposed to the virus. In Florida, on average, one horse per year is diagnosed with rabies, although in the recent past, as many as four cases have been diagnosed in a single year. Since Florida, like most other states, only tests suspect animals that may have exposed people or domestic animals

to the rabies virus, the number of reported cases almost certainly under-represents the true incidence of equine rabies. The most recent Florida equine rabies case occurred in June of this year. Following is a brief description of the response by Hillsborough County Health Department (CHD) and Florida Department of Agriculture and Consumer Services (FDACS), Division of Animal Industry.

The case involved a 3-year old paint mare who had been moved from her home pasture to a training facility in another area of Hillsborough County about 10 days

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## Equine Rabies

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before becoming seriously ill. On the second day at the facility, the horse's behavior started to become abnormal and the animal appeared anxious. The animal was described as "pushy, hyper and uneasy in the stall, walking in circles, squealing when the halter was put on, and putting its front feet out." According to the owner, the horse had never acted this way before, but also had never previously been separated from its mother. The animal's behavior alternated between normal and abnormal over the next few days. On June 5th, it became colicky, laid down, gnawed holes in the 3/4" plywood of the stall, and frequently chewed at a lesion on its side. It also attacked the owner's other (unvaccinated) mare which was sharing the stall. A veterinarian evaluated and treated the mare. The owner then moved the affected animal back home and another veterinarian took over care. After brief improvement, the horse became very aggressive on June 6th, chasing people and other animals, and breaking fences. The horse was euthanized after injuring itself running into a tree. Fortunately, the veterinarian suspected rabies because of the unusual behavior, removed the brain, and submitted it for rabies testing at the DOH state laboratory in Tampa where it tested positive for rabies.

The horse had never received the rabies vaccine although it was pastured in a rural area where wildlife, including bats and raccoons, are common. No specific exposure to wildlife was recalled by the owner. Both veterinarians who had cared for the horse while it was ill, their staff, the horse's owners, and others who had been in close contact with the animal were interviewed by personnel from Hillsborough CHD, and the horse owners and stable manager were interviewed by FDACS regional staff. None of the veterinary personnel had ever completed pre-exposure rabies prophylaxis and also had not used gloves or other basic precautions to prevent direct contact with saliva from the horse. On the day the animal was euthanized, one friend of the owner had let the horse drink from a bottle he was drinking from. Five

persons with wounds or mucous membrane exposure to saliva from the horse received rabies post-exposure prophylaxis with human rabies immunoglobulin (HRIG) and rabies vaccine. FDACS regional personnel continued to monitor the horse that was attacked by the rabid animal for the 6-month quarantine period. Members of the public living in the area where the horse had likely been exposed were also alerted of the rabies activity and encouraged to vaccinate their animals and avoid direct contact with wildlife.

Rabies is reportable to both the Florida Department of Health (FDOH) and FDACS. Equine cases are often associated with increased rabies activity in wildlife, with horses kept at pasture being at greatest risk. Incubation period often ranges from 2 to 9 weeks but can be quite variable. Early clinical signs in infected horses can also be highly variable, and can include colic, behavioral changes, paraesthesia or lameness. In equine rabies, the paralytic stage predominates more commonly than the furious stage, and is often accompanied by drooling, pharyngeal paralysis, depression and anorexia. Overall, symptoms most commonly reported include ataxia, fever and hyperesthesia, evolving to recumbency and loss of anal sphincter tone. Rabies is now recommended as a core vaccine for horses by the American Association of Equine Practitioners. Their recommended vaccination schedule can be viewed at: [www.aaep.org/rabies.htm](http://www.aaep.org/rabies.htm).

Rabies pre-exposure vaccination is recommended for high-risk animal workers such as veterinary staff. Because we live in a rabies endemic state, veterinarians should always consider rabies as a possible differential diagnosis when caring for neurologic horses. Use of basic precautionary measures such as wearing gloves and other protective equipment, and limiting staff contact with suspect animals to those who have been pre-vaccinated against the rabies virus are strongly recommended. For more information about rabies prevention and control in Florida, please see the FDOH rabies guidebook at:

[www.doh.state.fl.us/Environment/medicine/rabies/rabies-index.html](http://www.doh.state.fl.us/Environment/medicine/rabies/rabies-index.html).

## A Prescription for Traceability

Take two tags and call me in the morning. If only animal traceability was that simple, but the truth is that animal traceability is a complex issue. While we would all rather deal with the pleasantries of abscesses, impacted intestines or dystocia, sometimes we have to stop and ponder the more difficult things like tracking down problems before they are so big that the track is immaterial. Traceability goes with words like surveillance, diagnostics, epidemiology, analysis, control and eradication in a puzzle to protect the livestock and food animal industry.

In its broadest definition, traceability is the ability to trace the current and historical location of an animal, group of animals or animal products from one point in the supply chain to another. A traceability system enables industry and officials to react quickly and effectively to address disease outbreaks, minimizing the economic impact and maintaining global market access.

Traceability is the key to protecting animal health and marketability. In order to quickly respond to an animal disease event, animal health officials need to know which animals are involved, where they are located, and what other animals might have been exposed. The sooner reliable data is available, the sooner

*By: Stephen Monroe  
Agriculture and Consumer Protection Administrator*  
affected animals can be located, appropriate response measures can be established, and the disease can be controlled.

The most critical factor in controlling and eradicating diseases like Foot and Mouth Disease, Classical Swine Fever, Equine Encephalitis, Avian Influenza or Bovine Spongiform Encephalopathy is our ability to identify infected and exposed animals before the disease is transmitted to others. Animals must be traced if we are to stop the spread of disease to healthy animals or people. Our ability to trace animals in the United States has declined as successful disease eradication programs have ended. Recognizing this, the USDA, state animal health officials, and industry organizations throughout the country have been working to develop an animal identification and trace-back program that can be used in an emergency. Tracking the movement of livestock is not new. However, the speed of modern commerce and the rapid and constant movement of livestock and potential disease vectors bring new challenges.

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## A Prescription for Traceability

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The three components of effective traceability are premises identification, animal identification and database management. Premises identification allows animal health officials to know the geographic location of livestock by species. Individual animal identification is different for each species. Some sectors use integrated systems and animals to remain together in group lots all the way through the production cycle. Others, like cattle, are more likely to require individual identification and record-keeping. Developing and maintaining a database system capable of tracking millions of animals across all industry sectors will be an ongoing effort.

A functional system will likely not be top down, bottom up or middle out, but rather a fully integrated system. Producers, practitioners, packers and purveyors will have to work with state and federal officials to develop a system which allows participation and cooperation by all. Much effort has been expended into talking about mandatory versus voluntary when "necessary" is a more accurate word. If mandatory, will it be state, federal or an industry mandate?

Animal identification and traceability are important management tools in animal health and food safety circles. Concerns regarding management of animal disease and related perceptions about food safety have escalated substantially in recent years. Everyone from the media to the United States Office of Homeland Security seems to be focused on our food supply. Traceability should also have the attention of producers, their advisors and their veterinarians lest we, through lack of action, yield full control to others in food industry or regulatory (FDA) channels.

The terrorist attacks of September 2001, discovery of Bovine

Spongiform Encephalopathy (BSE) in a dairy cow in December 2003 in Washington State and subsequent discoveries of BSE-infected animals in Texas in 2005 and Alabama in 2006, and recent worldwide outbreaks of highly contagious animal diseases (i.e., Foot and Mouth Disease and Avian Influenza A (H5N1)) have made apparent the need for animal traceability in U.S. livestock production and marketing. Economic analyses of hypothetical highly contagious animal disease outbreaks have been performed by leading experts. Scenarios which studied the effects of animal traceability on highly contagious animal diseases have demonstrated the need for a functional traceability system. The epidemiological models indicate that as the use of animal identification increases, the number of animals destroyed is reduced. The duration of the outbreak and the cost of response are also significantly reduced through more effective response.

In addition to herd health, there is the benefit of marketability of livestock products. Animal identification and trace-back systems are rapidly developing in other countries. International trade standards often include traceability measures. Countries which compete with the United States for global market share are moving traceability forward as a cost of doing business. As an example: On September 16, 2009, Canada announced new traceability regulations which require premises registration and age verification. "Traceability is important," said George Groeneveld, Alberta Minister of Agriculture and Rural Development. "We in Alberta are more than pleased to be innovators. We believe it is our role to do our best to support producers. It is simply good business."

Veterinarians and producers are encouraged to stay engaged as traceability and a system which will work for everyone is further developed in the United States. ■

## Contagious Equine Metritis Update

By: Michael Short, D.V.M.  
Equine Programs Manager

Contagious Equine Metritis (CEM) is considered a foreign animal disease and is a venereal bacterium of horses that causes reproductive losses due to decreased conception rates and abortions. The stallion is an asymptomatic carrier and many mares can become inapparent chronic carriers as well, harboring the bacteria in the external genitalia. CEM does not cause mortality in adult horses and is treatable once detected.

A CEM outbreak in the U.S. began in December of 2008 when a stallion, located in Kentucky, was tested for routine export of semen. The stallion was at a stallion station where numerous stallions were collected for shipment of cooled and frozen semen. All horses on the premises were quarantined and tested. Four additional stallions were determined to be infected with the CEM-causing bacteria, *Taylorella equigenitalis*.

The subsequent investigation has involved every state in the U.S. except Rhode Island and Hawaii. So far, 986 horses have been determined to be exposed to the bacteria with 22 stallions, and 5 mares testing positive. Of the positive and exposed horses, 272 are stallions and 714 are mares. The positive stallions have been detected in Georgia (1), Illinois (3), Indiana (3), Iowa (1), Kentucky (4), Texas (1), and Wisconsin (8) and the mares were detected in California (2), Illinois (2) and Wisconsin (1).

In Florida, the Division of Animal Industry has quarantined and tested all horses known to have been exposed to CEM, which has included 30 mares and 8 stallions. Testing has been completed on all 38 horses with the exception of one culture on a mare that must foal next

spring before the last culture can be taken. The remaining 37 horses have been tested using the USDA CEM Incident Protocol, found to be negative for CEM and released from quarantine.

Historically, CEM has been a disease that can affect a large number of mares due to the high rate of transmission from an infected stallion to a mare during live cover. The current outbreak has had a different pattern of infection due to the majority of exposed mares being bred via artificial insemination, which seems to be an inefficient method of transmission. The stallion infection rate, however, has been higher than expected due to the inherent management practices occurring at stallion collection facilities. The practices that are believed to have increased the occurrence of transmission between stallions include: shared artificial vaginas and instruments such as wash buckets, common jump dummies, and stallion handler practices.

While the number of possible trace animals is diminishing and the majority of positive horses have been treated and found to be negative on retest and released from quarantine, the investigation is continuing. There may never be a definitive source of introduction into the U.S. Consequently, in an effort to ensure the country is free of the disease, there will need to be surveillance testing on some level over the next several years. The American Association of Equine Practitioners is currently working on recommended guidelines for equine practitioners working in the area of equine reproduction. ■

# Trichomoniasis

Trichomoniasis is a venereal disease of cattle caused by *Trichomonas foetus*, a single-celled protozoan. Other trichomonads are found in the gastrointestinal tract of many species and one species causes venereal disease in humans.

The organism does not survive well outside of the host as it is extremely sensitive to drying and heat. The organism survives by residing in the reproductive tract and is transmitted during breeding.

Trichomoniasis is a disease of significant economic concern in the cattle industry. The economic losses are the result of open cows, repeat breeding, and longer calving intervals. This leads to smaller and less uniform calf crops, increased culling rates, additional costs for replacement females and increased veterinary expense.

Bulls that become infected are completely asymptomatic. The organism is found in the crypts on the penis and sheath. As bulls mature, the crypts become deeper and they are more likely to become infected. No treatment has been found to be effective and bulls with *T. foetus* infection are infected for life.

In cows, the organism spreads from vaginal epithelial cells to the uterus and oviducts. The infection results in an inflammatory response which usually terminates or prevents pregnancy. In a small percentage of cows, obvious pyometra or abortion may be observed. More commonly, repeat cycling due to early embryonic death is the primary evidence of infection. Generally, cows clear the infection within 60 days and will become pregnant later in the breeding season if bulls are available. Occasionally, late term abortions can result from infection with *T. foetus*. Cows can be re-infected in subsequent breeding seasons.

Herds become infected primarily by the introduction of non-virgin infected bulls, but can occur by the addition of an infected cow. Transmission occurs during breeding activity and transfer of a small number of organisms will result in infection. Frequently, herds are infected by commingling such as communal grazing or down fences.

A vaccine is available for use in cows. The vaccine will not clear or prevent infection, but will decrease the duration of infection and thereby increase the number of pregnancies in a herd that is at high risk.

Prevention by reducing the risk of introduction is the most important part of control of this disease. Herd additions should be selected carefully. Virgin heifers and bulls are preferable. Cows should be from herds that have low risk of infection and preferably pregnant cows only. Bulls should be tested on multiple occasions (at least 3 times) and should be from herds that have a known reputation for prevention of the disease.

Diagnosis of infection is by testing of bulls. Smegma samples are collected by scraping or washing the prepuce and culturing the sample in specialized media. Repeated testing is recommended as the sensitivity of single sample testing is reported to be 70%. PCR is available for differentiation of *T. foetus* and *T. fecalis*. The PCR also has some diagnostic limitations. Culture from the vaginal fornix or fetal tissues at abortion has also been used for diagnosis.

Regulations related to trichomoniasis have been increasing over the past 10 years with a marked increase in the past 3 years. Currently, 18 of the 50 U.S. states have some regulation of breeding cattle in regards to trichomoniasis. Four of these

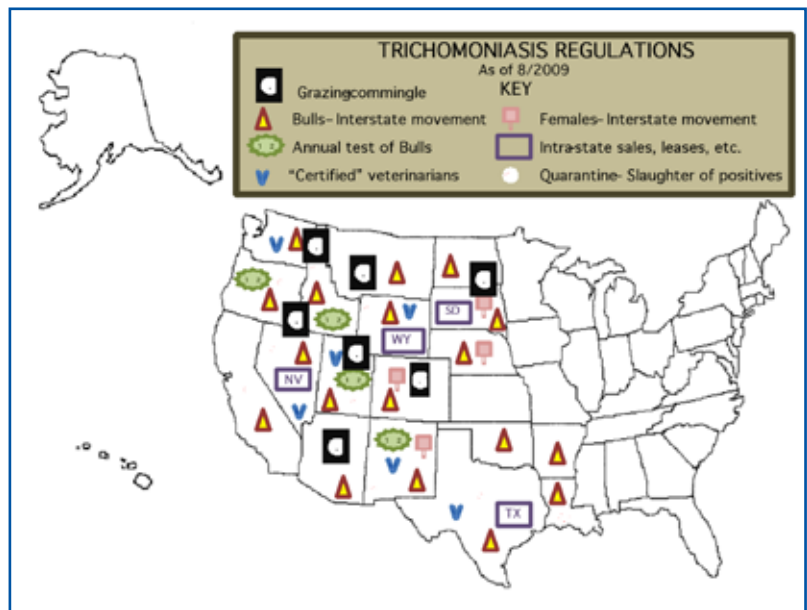
By: Diane L. Kitchen, D.V.M., Ph.D.  
Veterinarian Manager, Bovine Programs

states regulate female cattle in addition to bulls. A majority of the states with trichomoniasis regulation are western states and many are "brand" states that also have a large number of commuter herds or state/federal grazing herds. Four states require annual testing of all breeding bulls and four other states do (or soon will) require testing of bulls at transfer of ownership, leasing or movement to "grazing" lands.

Testing requirements vary from a single culture in a few states to 3 weekly cultures in most states. Most states will accept one PCR in the place of 3 cultures or as a confirmatory test of any suspect test. Timing of testing prior to entry is predominately less than 30 days, but some states allow up to 60 days. At least six states require that trichomoniasis testing be performed by veterinarians that have specific "certification" for testing and most states require cultures or PCR be performed by an AAVLD laboratory.

In each of these states, it appears that trichomoniasis is a reportable disease and at least 6 states require quarantine and testing of the herd (all bulls) and slaughter of the positive bull. Branding of positive bulls with either a "Lazy V" or "T" beside the tailhead is required in at least 3 states.

Exceptions are present in most states. Age at which bulls are test-eligible ranges from 8 months to 30 months. Most states will exempt "virgin" bulls with a producer or veterinary statement of the status. Direct to slaughter or feed to slaughter are exempt in most states. Exhibition and rodeo bulls are exempt in many states though some specify a time period or strictly require confinement with no pasture access.



The risk of trichomoniasis infection can be minimized by herd owners with voluntary management practices; however, this is difficult in herds that utilize communal grazing pastures. Careful selection of replacement breeding animals, annual testing of breeding bulls, culling of late calving cows and maintenance of good perimeter fencing are vital practices. Vaccination can be included in management of high risk or known infected herds.



# Florida State Archives

*By: Leigh Humphreys, Assistant Director  
Division of Animal Industry*

While researching the history of one of the Division of Animal Industry (DAI) rules, staff made an interesting discovery. Information on the Florida Department of State (DOS), State Library and Archives of Florida (SLAF) Web site indicated that no records of the State Livestock Sanitary Board (1917-1923) existed. The board, created in 1917, consisted of the Commissioner of Agriculture, Superintendent of Public Instruction, State Treasurer, and two other Governor-appointed members. This board was replaced with the Florida Livestock and Sanitary Board in 1923 and was changed again in 1953 to the Florida Livestock Board. In 1959, the Florida Livestock Board was stripped of its regulatory powers when the DAI was created under the Department of Agriculture and given the regulatory powers heretofore assigned to the Livestock Board. The Livestock Board, being composed of citizens, was retained as the technical committee (later called council) which would advise the Department on animal industry matters. However, full records

of all the minutes of the various livestock boards and councils from 1917-1963 had been preserved by DAI for all these years!

The State Archives of Florida is the central repository for the archives of Florida's state government. It is mandated by law to collect, preserve, and make available for research, the historically significant records of the state, as well as private manuscripts, local government records, photographs, and other materials that complement the official state records.

The SLAF was contacted and representatives were dispatched to view the documents and determine their authenticity. Now, all of the volumes have been carefully relocated to the archives section of the state library where they are available for all the public to view. The records contain a rich history of the animal industry in the state and document the many animal diseases that have been battled over time. They are well worth a visit to the library.



## Emergency Contact Information

The Florida Department of Agriculture and Consumer Services, Division of Animal Industry, works hard to ensure the safety of all Floridians through its vital animal disease programs. If you know or suspect a case of contagious infectious disease in pets or livestock, please contact the office of the State Veterinarian.

If you have any questions, input or reports, please contact us at:

<b>Animal Industry/State Veterinarian, M-F, 8-5</b>	<b>850-410-0900</b>
<b>After-Hours</b>	
<b>Reportable Diseases (rad@doacs.state.fl.us)</b>	<b>877-815-0034</b>
<b>Animal Industry's Kissimmee Laboratory, M-F, 8-5</b>	<b>321-697-1400</b>
<b>Animal Industry's Live Oak Laboratory, M-F, 8-5</b>	<b>386-330-5700</b>
<b>Agricultural Law Enforcement, M-F, 8-5</b>	<b>850-245-1300</b>
<b>Agricultural Law Enforcement After-hours</b>	<b>800-342-5869</b>
<b>Department of Health, M-F, 8-5</b>	<b>850-245-4250</b>
<b>USDA/APHIS, M-F, 8-5</b>	<b>352-313-3060</b>

**Prevention, Control, Eradication**

**[www.doacs.state.fl.us/ai](http://www.doacs.state.fl.us/ai)**

For information on articles in this newsletter or to be added to our mailing list, please contact:  
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Florida Department  
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Consumer Services

Charles H. Bronson,  
Commissioner