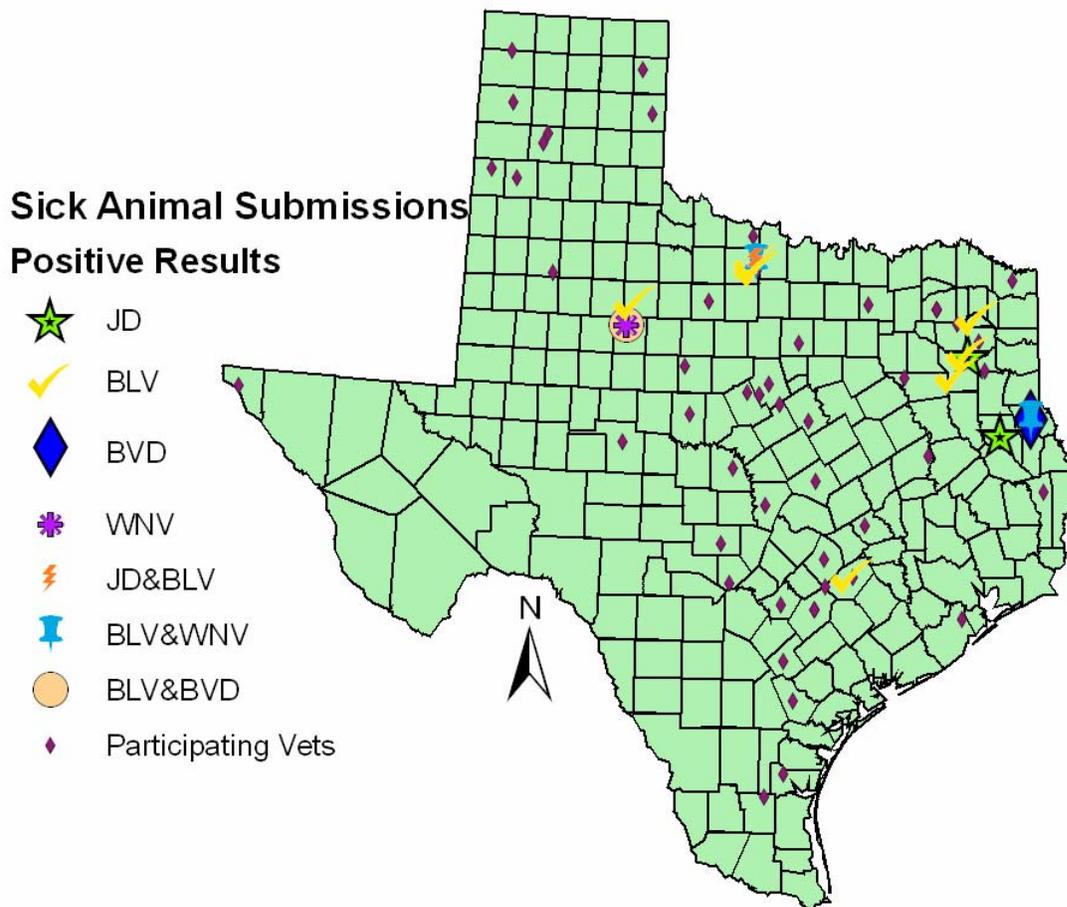


# Foreign Animal Disease Surveillance Newsletter

## Research Update

Welcome to the third installment of the Foreign Animal Disease Surveillance

Newsletter. At the time of this writing we have tested over 1000 samples collected from beef herds and 400 collected from markets throughout Texas. To date we have only received 41 samples from you and your colleagues. The figure below shows the distribution of the 41 cattle that were positive on one or more of the serological tests. For example, the large yellowish



**Figure.** Distribution of participating veterinarians and positive test results for sampled animals.



circle corresponds to cattle that were positive for both BLV and BVD. These animals are not included for the distribution of BLV (yellow check) and BVD (blue diamond) by themselves. Current results from all sample types are summarized in the table. Findings to date still support our hypothesis that different methods of sample collection affect the observed prevalence of disease. We have completed testing of the herd samples, and market cattle will continue to be sampled 100 per month until spring 2007. We will continue to collect samples from participating veterinarians throughout the duration of the research project. Distribution of submitted samples is clustered and we hope that you will be able help us collect samples from more locations throughout the state. These data will help determine the necessary

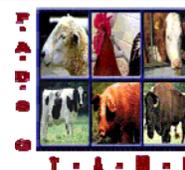
surveillance system guard against rapid spread of a foreign animal disease should one be introduced into the US.

In a separate note the three WNV positive samples have been sent to the National Veterinary Services Laboratory (NVSL) to confirm WNV infection. The samples will be tested with the plaque reduction neutralization test that is specific for WNV and eliminate the possibility of cross-reactions due to other flaviviruses such as St. Louis Encephalitis (SLE) Virus. It will not be able to document recent infection and an IgM ELISA is not currently available for cattle (only horses). Thank you for your continued efforts and please contact us if you have any questions or concerns.

**Geoff Fosgate**                      [gfosgate@cvm.tamu.edu](mailto:gfosgate@cvm.tamu.edu)  
**Michael Ward**                      [mward@cvm.tamu.edu](mailto:mward@cvm.tamu.edu)  
**Bo Norby**                              [bnorby@cvm.tamu.edu](mailto:bnorby@cvm.tamu.edu)

**Table.** Prevalence of the four study diseases based on sample source.

	Disease agent prevalence			
	BVD	BLV	JD	WNV
Herd tests	0.3% (3/1108)	2.1% (23/1108)	2.3% (26/1108)	0% (0/1108)
Market cattle	1.0% (4/400)	23.3% (93/400)	2.3% (9/400)	0% (0/400)
Veterinarian submitted	4.9% (2/41)	41.5% (17/41)	9.8% (4/41)	7.3% (3/41)
Overall	0.6% (9/1549)	8.6% (133/1549)	2.5% (39/1549)	0.2% (3/1549)



## Classical Swine Fever

### Etiology

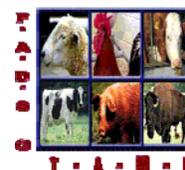
Classical swine fever (CSF), also known as hog cholera, is a highly contagious viral infection of pigs caused by the classical swine fever virus (CSFV). CSFV belongs to the family Flaviviridae and is in the genus *Pestivirus*. Only one serotype of this lipid-enveloped virus has been identified. It has close antigenic relationships to Bovine Viral Diarrhea Virus (BVDV) and Border Disease Virus (BDV).

### Transmission

Transmission of CSFV is primarily by the oral route, however, it can also be spread by direct contact with blood, tissues, secretions, excretions, and semen from infected pigs. Indirect contact with contaminated equipment, vehicles, and clothing can also spread CSFV to healthy pigs. Improperly cooked garbage fed to swine is a major risk for transmission of CSFV because of the virus's ability to survive in refrigerated and frozen meats for months to years. The stability of CSFV in the environment and food increases the potential for spread to countries that are free of the virus.

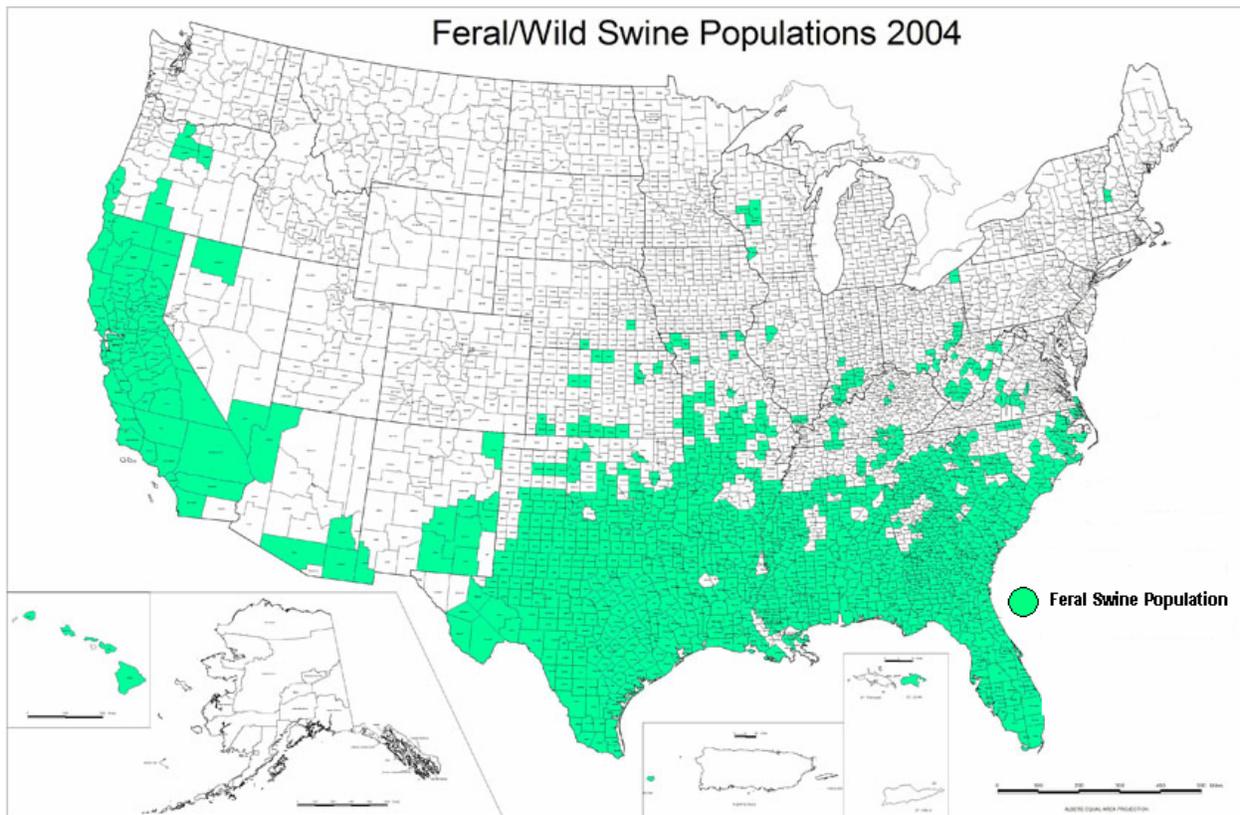
### Host and Distribution

CSF affects both domestic and feral swine and is currently present in east and southeast Asia, the Indian subcontinent, China, east and central Africa, and South and Central America, Germany, and eastern Europe. In 1978 the United States eradicated CSF from domestic swine and is considered free of the disease. CSF has not been recognized in the U.S. since that time but the risk for reintroduction remains high because of its presence in Mexico and the Caribbean countries of Haiti, Dominican Republic, and Cuba. Although CSF is not transmissible to people it poses a major threat to pork production in the US. Severe economic losses from CSF could result if it was introduced back into the United States. To ensure the US's safety against CSF, swine from countries with endemic CSF must be quarantined for 90 days in Key West, FL at a high-security import center. USDA's Animal and Plant Health Inspection Service (APHIS) coordinates an emergency task force comprised of Federal, State, and local officials whom are ready to respond to an outbreak of a foreign disease such as CSF. CSFV is endemic in wild and feral swine



populations of other countries and these are often implicated as sources for outbreaks in domestic populations. There is no evidence that CSFV is present in the feral swine of the United States. However, the large numbers and wide distribution of feral swine in the US would provide a reservoir for CSFV should it be reintroduced.

virulence and the susceptibility of exposed pigs determine the form of CSF and its clinical signs. In acute CSF, pigs exhibit a high fever, lethargy, anorexia, conjunctivitis, ataxia, convulsions, cyanosis of the skin, and constipation followed by diarrhea. Death usually occurs 5-15 days after the onset of illness. Clinical signs associated



**Figure. Distribution of feral swine in the US (2004)**

### Clinical Signs

The incubation period of CSF ranges from 2-14 days and three forms of the disease exist: acute, chronic, and congenital. Strain

with the chronic form include intermittent fever, anorexia, alternating periods of diarrhea and constipation, alopecia, stunted body growth, apparent recovery and then



relapse followed by death. The congenital form of CSF causes neonatal pigs to have weakness and an immunological deficiency associated with lack of antibody production. Affected piglets develop mild anorexia, depression, conjunctivitis, dermatitis, diarrhea, paresis, and eventually die. Pigs born with CSF are usually exposed in-utero and remain persistently infected until death.

### Post-Mortem Lesions

Pigs acutely affected exhibit hemorrhages of the skin, lymph nodes and visceral organs. A purplish discoloration of the skin is often the first observable sign. Lymph nodes become swollen and have hemorrhages along the periphery. Hemorrhages later become evident in other organs and petechial hemorrhaging is most noticeable on the serosal and mucosal surfaces of the kidney, epicardium, bladder, larynx, trachea, and intestines. Splenic infarcts develop and appear as raised, dark wedge-shaped areas on the spleen. The lungs become congested and hemorrhagic. In chronically affected pigs, the lesions appear less severe, but are often complicated by secondary bacterial infections. Necrotic foci of the tonsils, epiglottis, and larynx and button ulcers on

the intestines develop from the secondary bacterial infections. Congenitally infected pigs have cerebellar hypoplasia, thymus atrophy, ascites and deformities of the head and limbs. The morbidity and mortality rates of pigs infected with CSFV are extremely high.

### Diagnosis

The possibility of CSF should be considered in pigs exhibiting compatible clinical signs, especially septicemia and high fevers. Other diseases mimic the signs of CSF and laboratory tests are necessary for confirmation. If a foreign animal disease is suspected, the appropriate authorities should be notified. The USDA Area Veterinarian in Charge for Texas should be contacted at (512) 383-2400 or the Texas Animal Health Commission at (512) 719-0700. Regulatory veterinarians sent to investigate the potential outbreak of CSF will send diagnostic samples to the Foreign Animal Disease Diagnostic Laboratory on Plum Island, NY. Whole blood can be used for antibody testing and tonsillar tissue samples can be tested for antigen detection. Other samples that should be submitted include: submandibular and mesenteric lymph nodes,



spleen, kidney, distal ileum, and anticoagulated whole blood. The samples should be kept refrigerated and shipped as soon as possible. Laboratory tests available include the fluorescent antibody virus neutralization test (FAVN), the neutralizing peroxidase-linked assay (NPLA), enzyme-linked immunosorbent assay (ELISA), and reverse-transcriptase polymerase chain reaction (RT-PCR). Monoclonal antibody tests are available that can differentiate CSFV from other Pestiviruses including BVDV and BDV.

### Prevention and Control

Avirulent modified live vaccines are available in countries where infection with CSFV is endemic. Commonly used vaccines include the lapinized Chinese (C) strain, the Japanese guinea pig cell culture-adapted strain, and the French Thiveral strain. These strains are safe for pregnant sows and piglets over 2 weeks of age.

In endemic countries, a systematic vaccination program should be considered. Outbreaks of CSF can also be reduced through the implementation of appropriate biosecurity procedures and by eliminating garbage feeding in swine operations or

enforcing regulations requiring garbage cooking prior to feeding. An accurate identification system is necessary for animal trace-back and serological testing is important to detect subclinical infections. Once eradicated, surveillance is necessary to monitor the CSF-free status of the region.

### Public Health

CSF is not considered to pose a public health risk.

### References

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