Enhanced Passive Surveillance for African swine fever and Classical swine fever

Daniella Schettino[1,2], Gustavo Lopez[1], Oriana Beemer[3], Marta Remmenga[3], Karyn Havas[4,5], Jonathan Arzt[6], Jose Manuel Sanchez Vizcaino[7], Andres Perez[1]

[1] Department of Veterinary Population Medicine, Center for Animal Health and Food Safety, College of Veterinary Medicine, University of Minnesota, St. Paul, MN, United States
[2] Instituto de Defesa Agropecuaria de Mato Grosso (INDEA/MT), Official Veterinary Service of Mato Grosso, Brazil
[3] Center for Epidemiology and Animal Health (CEAH), USDA/APHIS, Fort Collins, CO, United States
[4] Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY, United States
[5] Pipestone Veterinary Services, Pipestone, MN, United States
[6] Foreign Animal Disease Research Unit, USDA/ARS, Plum Island Animal Disease Center, Greenport, NY, United States
[7] Viral Immunology and Preventive Medicine Unit VISAVET, Health Surveillance Centre Universidad Complutense, Madrid, Spain

The recent emergence of African Swine Fever (ASF) in the Dominican Republic highlights the need for remaining alert to prevent the introduction of ASF and Classical swine fever (CSF), two hemorrhagic fevers of swine that are foreign to the United States and prevalent in many regions worldwide, and that would cause significant losses to the country.

The University of Minnesota Center for Animal Health and Food Safety (CAHFS) has been working with the USDA/APHIS Center for Epidemiology and Animal Health in Fort Collins to design an enhanced passive surveillance (EPS) protocol, which would serve as a tool to aid in the early detection of a hypothetical ASF or CSF outbreak. The protocol consists of three basic components namely as, (1) pig farm-level risk factors (biosecurity background), (2) syndromic surveillance data, and (3) necropsy findings. Risk is dynamically estimated by assessing the presence or absence of certain factors, weighted by their relative contribution to final risk, which has been estimated in collaboration with a panel of experts with long standing experience with ASF and CSF. For example, (1) for two farrow-to-finishing farms (or farrow-to-wean), located in an area with feral pigs, showing an increase in abortion and mortality rates associated with a drop in feed consumption, and one of them with a weaker biosecurity background (as indicated by the absence of double fencing to protect the farm perimeter), will result in a 43% increase in the risk that the signs were associated to ASF/CSF compared to the other farm; (2) for two commercial pig farms with increased mortality rate, and showing signs of splenomegaly, if one of them did not implement biosecurity and surveillance protocols, the risk for an ASF/CSF would almost double when compared to the risk of the farm with biosecurity in place and performing daily syndromic surveillance.

The proposed protocol may be implemented as part of a dynamic process with frequent updates performed by pig producers and private veterinarians with an active collection of information that will feed a passive surveillance model, and these adjustments will work as an indicative of improvement or maintenance of actions at the farm-level. Our next step is testing this protocol and positive (cases) and negative (controls) farms in an area that is experiencing ASF or CSF to measure the sensitivity of this system.

For those interested and attending the Leman Conference, a poster will be presented showing our preliminary results.