PRV surveillance plan moves toward implementation

By John Korslund, National Surveillance Unit

Early this year, the Veterinary Services Management Team approved a revised pseudorabies virus (PRV) surveillance plan for implementation.

The revised surveillance plan is aimed at targeted sampling of high-risk herds and animals of interest. The plan is geared toward two main objectives: 1) to rapidly detect PRV in commercial herds; and 2) to demonstrate freedom from PRV in U.S. commercial herds. The plan also contains a minor objective, which is to monitor the risk of introduction of PRV into U.S. commercial swine via the feral swine reservoir.

The feral swine population now reaches into States not previously envisioned as areas of concern for feral swine. These swine are a significant risk to commercial swine producers. Enhanced surveillance will monitor (test) herds considered high risk for feral swine incursion more frequently than herds considered low risk.

PRV surveillance history

The swine industry has a long history of foresight and advance planning regarding PRV and other swine surveillance issues. Eleven years ago, when PRV was endemic, the industry began planning for revised surveillance needs. A 1997 United States Animal Health Association (USAHA) resolution called for development of a long-range surveillance plan for PRV (and swine brucellosis) after all States and the Nation reached pseudorabies-free status. At the 2004 USAHA meeting, the PRV committee recommended that VS commit resources to developing a revised PRV surveillance plan. This was because all States had reached Stage V (Free) status in the PRV Eradication Program. Industry and government officials recognized that surveillance for a disease that has been eradicated called for a different set of standards than those for an active disease eradication program. The Centers for Epidemiology and Animal Health (CEAH) National Surveillance Unit (NSU) was tasked with developing the plan. A team composed of VS swine experts from NSU, the National Center for Animal Health Programs, and the VS Regional offices was assembled to develop the proposed plan for consideration. The team met periodically over the next 3 1/2 years to shape and refine the proposed surveillance plan to meet evolving pork industry PRV risks and needs.

Implementing targeted surveillance

PRV surveillance is currently based on annually sampling 5 percent of each State's sow-boar population. This plan worked well for eradication. However, this non-targeted surveillance oversampled low-risk free populations. Targeted sampling outlined in the revised plan has the potential to save resources and improve effectiveness.

Successful plan implementation depends upon integration of premises identification into the PRV program and development of a robust database to allow targeted sampling based on associated risks. Several other points about the plan's implementation include:

- Transfer of laboratory work to the National Animal Health Laboratory Network (NAHLN) system for assay and data collection standardization;
- Reduction of cull slaughter samples, as the plan is implemented, from approximately 700,000 to 6,000 samples;
- Animal Health and Surveillance Management (AHSM) database development for effective surveillance data management and analysis;
- Ability to identify animals through either individual ID (cull sow-boar) or through premises-based identification (market swine); and,
- Successful regulatory changes.

Five streams will be used for rapid detection of new PRV cases: 1) investigation/diagnosis of suspicious PRV cases; 2) antigen testing of sick pig tissues submitted to diagnostic laboratories; 3) serological testing of swine cases submitted to diagnostic laboratories; 4) serological testing of herds classified as high-risk (those herds near feral swine populations); and 5) voluntary reporting of herds with exposure to feral swine. These streams are designed to detect a prevalence of 1 PRV case out of 1 million in a 1 month time frame at a 95 percent confidence level.

The two already-implemented surveillance streams (cull sow-boar and market swine) will be used for demonstrating freedom of disease to international trade partners. Sample numbers collected at selected federally inspected slaughter plants will be reduced to the recommended sampling frequency of 6,000-10,000 samples. These streams are currently used exclusively for PRV surveillance.

The plan will also monitor feral swine populations and areas located around feral swine hunt clubs considered high risk. When requested, Wildlife Services will analyze feral swine throughout the United States for the presence of PRV antibodies. Additionally, CEAH will provide routine summary reports of the number and distribution of swine hunting preserves and monitor international PRV status.

Proposed timeline

The following timeline for implementation of the PRV surveillance plan has been proposed:

- 2008: Preparation
    - Dialogue with field and lab staffs on proposed changes
    - Begin dialogue pertaining to IT structural design
- 2009: Early implementation
    - Phased reduction in sow-boar sampling- (50 percent cut)
    - Ramp-up of selected new streams- D-labs to NAHLN, etc.
    - Continue IT planning and begin development of the AHSM PRV module
- 2010- Mid-implementation
    - Premises-based sample and lab data collection integrated into AHSM module
    - Sow surveillance samples halved again as sow premises ID is initiated
    - Continue development of all streams
    - Implementation of premises ID-based sampling system
- 2011-Completion of stream implementation