

United States Animal Health Association - 2004

RESOLUTION NUMBER: 17 **APPROVED**

SOURCE: COMMITTEE ON PSEUDORABIES
COMMITTEE ON BRUCELLOSIS

SUBJECT MATTER: BRUCELLOSIS AND PSEUDORABIES IN FERAL SWINE

DATE: OCTOBER 27, 2004

BACKGROUND INFORMATION:

Feral swine continue to pose an increasing threat of acquiring, harboring and transmitting diseases with significant animal and human health importance and trade impact. There continues to be a crucial need for additional research and field studies that address threats related to feral swine.

RESOLUTION:

The United States Animal Health Association thanks the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) and Veterinary Services (VS), Agricultural Research Service (ARS) and Cooperative State Research, Extension and Education Service (CSREES) for recognizing the feral swine threat as a high priority and encourages them to continue to provide long-range funding for research, program support and field studies.

In particular, funding is necessary to:

1. Provide continuing support for conducting population studies that support the development of disease risk management strategies.
2. Pursue the goal of developing Brucella strain VTRS-1 for use as a dual vaccine and conduct field trials to demonstrate its efficacy.
3. Conduct further field trials and studies of swine brucellosis and pseudorabies infection in feral swine the methods of their transmission to domestic swine.

RESONSE:

AGRICULTURAL RESEARCH SERVICE (ARS)

1. Support for conducting population studies on feral swine.

Although beneficial for implementation of control programs by regulatory personnel, population studies usually do not follow hypothesis-based research and current funding is not sufficient at the present time to conduct additional population studies outside the ongoing brucellosis studies. At the present time, ARS scientists are conducting or planning brucellosis studies in feral swine in several States. As designed, these studies will provide only limited knowledge of feral swine population in very defined areas.

2. Pursue the goal of developing VTRS-1

Data presented at USAHA and other scientific meetings have suggested that VTRS-1 is only marginally more efficacious in swine than RB51. Current data suggest that more research will be needed before a brucellosis vaccine for feral swine is available that is efficacious and deliverable under field conditions. ARS scientists at the National Animal Disease Center are conducting studies to discover and develop a viable brucellosis vaccine for feral swine. By characterizing cell-mediated

immune responses after brucellosis vaccination, and developing a standardized challenge model for swine, ARS scientists are working to address the brucellosis issues in feral swine. Current data suggest that swine do not readily develop protective cell-mediated responses after brucellosis vaccination. In ongoing research trials, ARS scientists are evaluating potential vaccine strains, as available, for their ability to induce protective immunity.

3. Conduct field trials on swine brucellosis

ARS scientists are currently conducting, or implementing, field studies of feral swine brucellosis in two States. The feasibility of a study in a third State is being evaluated. In a field study in South Carolina, ARS scientists have demonstrated that RB51 vaccination did not provide significant long-term protection in feral swine, and documented that feral swine can be reservoirs of *B. abortus*. ARS will continue to devote significant resources toward ongoing studies that will characterize brucellosis infections in feral swine, and evaluate delivery methods and efficacy of new vaccines, as available, in wildlife populations.

COOPERATIVE STATE RESEARCH, EXTENSION AND EDUCATION SERVICE (CSREES):

CSREES agrees with this resolution that feral swine and the brucellosis and pseudorabies infections in these herds continue to pose an increasing threat. Over the past four years, CSREES has funded through competitive and formula funds 11 project in six states relating to this issue. By leveraging available dollars with other funding streams, partnering states have also added substantially to this effort. In total, \$1,167,846 has been invested by CSREES and partners in feral swine research and extension programs during this time period. Our agency will continue to support merit-reviewed, science-based investigations that promote a better understanding of this issue as well as offer promising solutions.

ANIMAL AND PLANT HEALTH INSPECTION SERVICE, VETERINARY SERVICES (APHIS-VS)

The Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services, has developed an algorithm for monitoring changes in feral swine population abundance and spatial distribution. We are using this algorithm to evaluate the estimates of population and management strategies. Having completed the mapping of the distribution of feral swine and the status of pseudorabies virus (PRV) and *Brucella suis* in 2003 and 2004, the Southeast Cooperative Wildlife Disease Study (SCWDS) at the University of Georgia is now increasing these activities to include the mapping and assessment of transitional swine. APHIS' Veterinary Services (VS) renewed the grant for financial assistance to the University of Georgia to continue updating the distribution of feral and transitional swine and determining the status of PRV and *B. suis* throughout the southeast part of the United States. These USDA-APHIS-VS funded studies conducted by SCWDS are documented in research papers which are peer-reviewed and published.

In 2004, VS awarded two grants for financial assistance to Louisiana State University: (1) to conduct trials necessary to determine the pathogenesis, safety and efficacy of the VTRS1-PRV vaccine, a vaccine with the potential to protect against both brucellosis and pseudorabies; and (2) to conduct the necessary trials to assess the viability of the VTRS1 vaccine to protect cattle against *Brucella suis* in areas where *Brucella suis* is endemic in the feral swine population and can therefore be transmitted to cattle. Funding is being continued in 2005.

In 2004, VS renewed the grant for financial assistance to the University of Illinois to continue the determination of molecular markers to differentiate between PRV isolates from domestic and feral swine and to establish a contemporary library of feral swine PRV isolates and associate genotypic markers with markers for pathogenesis and virulence. Illinois is also continuing to explore the significance of sero-negative feral swine that harbor PRV DNA. Funding is being continued in 2005.

In FY 2005, USDA-APHIS-VS entered into an interagency agreement with USDA-ARS National Animal Disease Center to conduct an assessment of feral swine *Brucella* isolates. This project involves a field sampling of feral swine to evaluate which species of *Brucella* are infecting feral swine and will provide information to assess the potential of feral swine to be a reservoir for multiple species of *Brucella*.

And finally, in 2004 and 2005, VS renewed the grant for financial assistance to the National Wildlife

Research Center (NWRC) for an ongoing project in the development of an immunocontraceptive vaccine as a tool for the management of PRV and brucellosis. NWRC, in collaboration with Pennsylvania State University, continues working to develop an orally administered preparation of the single injected dose of GnRH vaccine which demonstrated efficacy in feral swine.

WILDLIFE SERVICES (WS)

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Services (APHIS), Wildlife Services (WS), recognizes the threat feral/wild swine pose by acquiring, harboring, and transmitting diseases to humans and livestock. These threats are considered significant, and we have charged our personnel with addressing pseudorabies and brucellosis surveillance and monitoring in feral/wild swine and supporting this Resolution through the National Wildlife Disease Surveillance and Emergency Response System. In addition, WS' National Wildlife Research Center is currently conducting research to develop new virus strains for wildlife vaccination programs and conducting field studies of disease infection in feral/wild swine.