

REPORT OF THE COMMITTEE ON PSEUDORABIES

Chair: Dr. Paul L. Anderson, St Paul, MN
Vice Chair: Mr. James W. Leafstedt, Alcester, SD

Dr. John K. Atwell, NC; Dr. C. Carter Black, GA; Mr. Philip E. Bradshaw, IL; Dr. William L. Brown, KS; Dr. Max E. Coats, Jr., TX; Dr. Paul R. DuBois, KS; Dr. Gene A. Erickson, NC; Dr. Thomas W. Freas, IN; Dr. Michael J. Gilsdorf, MD; Dr. Larry M. Granger, MD; Dr. Thomas J. Hagerty, MN; Dr. Edwin C. Hahn, IL; Dr. Robert M. Harbison, AR; Dr. Howard T. Hill, IA; Dr. Sam D. Holland, SD; Dr. Richard D. Hull, IL; Dr. John A. Johnston, IN; Dr. Charles F. Kirkland, NC; Dr. John P. Kluge, IA; Dr. John A. Korslund, MD; Mr. John H. Lang, WI; Dr. Bret D. Marsh, IN; Dr. David T. Marshall, NC; Dr. Charles E. Massengill, MO; Dr. James D. Mckean, IA; Dr. John J. Schiltz, IA; Mr. Jeff Schnell, IA; Mr. James E. Stocker, NC; Dr. Paul L. Sundberg, IA; Dr. Paul O. Ugstad, CA; Dr. Larry L. Williams, NE.

The Committee met on Tuesday, October 26, 2004, from 8:00 am-12:00 pm. There were 29 in attendance. Chair Paul Anderson presided assisted by Vice Chair Jim Leafstedt. The Chair welcomed those in attendance and all were given the opportunity to introduce themselves.

Dr. Max Coats, Chair of the Feral Swine Subcommittee, delivered his subcommittee report, which was approved by the full Committee. His report was:

The Subcommittee met on October 24, 2004, from 1:00 pm until 4:30 pm. There were 36 in attendance. Dr. Phil Elzer reported on his work with vaccines for *Brucella abortus* strain RB51 and *B. suis* strain VTRS1. The VTRS1 vaccine is a rough strain of *B. suis* and like *B. abortus* strain RB51, there is no O-chain polysaccharide. VTRS1 adequately colonizes pigs and protects sows better than RB 51 when challenged. VTRS1 vaccine appears to be superior to RB51 vaccine in swine.

Dr. Lowell Miller presented information on his work, sponsored by the United States Department of Agriculture (USDA), that deals with Immuno-contraception in Domestic and Feral Swine. The USDA, Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS), Wildlife Research Center (WRC) is working on a vaccine to stimulate antibodies to Gonadotrophic Releasing Hormone (GnRH). GnRH is a small peptide hormone which, when injected into females, will stop estrus. The WRC is investigating an oral vaccine application.

Ned Hahn provided an update on his ongoing effort to Finger Print Feral Pig pseudorabies virus (PRV) isolates. The goal is to: fingerprint

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PRV DNA from recent out breaks, to improve the database and to develop a method to determine the source of infection. The main work is with glycoprotein C. There appears to be several strains of PRV virus circulating between and among feral and domestic populations.

Joe Corn, Southeastern Cooperative Wildlife Disease Study (SCWDS), presented an outstanding paper on their work in describing the distribution of feral swine in the U.S. and the distribution of PRV and brucellosis in feral swine. SCWDS has developed a map of feral swine populations and domestic swine populations in the U.S. By overlaying the two maps the area of risk for feral and domestic swine interface may be assessed and may facilitate the development of strategies for preventing commingling developed. These areas may be considered as rational targets for disease surveillance.

Seth Swafford spoke on the mission of USDA-APHIS-WS and their feral swine activities. Feral swine damage includes preventing negative impact on endangered species, property damage, damage to livestock, crop damage and negative effects on domestic swine. From WS contacts, most of the public concerns relate to disease transmission. A new focus for WS is cooperative regulatory disease management.

Dr. John Korslund, USDA-APHIS-Veterinary Services (VS) gave the report for VS. Dr. Korslund reported that all states are at Stage III for swine brucellosis except for Texas. There were two infected transitional herds last year, one in California and one in Hawaii. Dr. Korslund suggested that it may be time to update the swine brucellosis Uniform Methods and Rules (UM&R). Further, only three states had yet to achieve stage 5 in the PRV eradication program.

Dr. Carter Black spoke to the issue of changes to the swine brucellosis UM&R necessary to harmonize it with the PRV Eradication Program Standards. After some discussion, the approved changes were included in a Committee recommendation. In addition, there was consensus that the appointed Harmonization Working Group should continue their assessment of the need to make additional changes to both UM&R's, if necessary, to complete the harmonization of the two swine program documents and provide their recommendations at the next meeting of the Committee.

Dr. Phil Bradshaw delivered the Report of the National Pseudorabies Control Board. The Board met on October 25, 2004, from 1:30 pm-6:00 pm There were 26 in attendance. Mr. Bradshaw made the announcement that all 50 states have now been granted Stage V (Free) status. He talked about the history of the eradication program and about the many people that have been an important part of the program's success. He also voiced his concerns about the feral/transitional swine issues that face us now that all states have achieved free status. The following state reports were considered and approved:

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State	Advance/Renew	Stage
Alabama	renewal	Stage V
California	renewal	Stage V
Connecticut	renewal	Stage V
Delaware	renewal	Stage V
Florida	Advancement	Stage V
Georgia	renewal	Stage V
Hawaii	renewal	Stage V
Idaho	renewal	Stage V
Indiana	renewal	Stage V
Kentucky	renewal	Stage V
Maine	renewal	Stage V
Massachusetts	renewal	Stage V
Michigan	renewal	Stage V
Minnesota	renewal	Stage V
Mississippi	renewal	Stage V
Missouri	renewal	Stage V
Nebraska	renewal	Stage V
Nevada	renewal	Stage V
New Jersey	renewal	Stage V
North Dakota	renewal	Stage V
Ohio	renewal	Stage V
Oregon	renewal	Stage V
Pennsylvania	Advancement	Stage V
Puerto Rico	renewal	Stage V
Rhode Island	renewal	Stage V
South Carolina	renewal	Stage V
South Dakota	renewal	Stage V
Texas	Advancement	Stage V
Virgin Islands	renewal	Stage V
West Virginia	renewal	Stage V
Wisconsin	renewal	Stage V

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Stage V	Year Achieved	Stage V	Year Achieved	Stage V	Year Achieved
Maine	1991	Maryland	1996	New Hampshire	2000
Utah	1992	Mississippi	1996	New York	2000
Alaska	1993	New Hampshire	1996	Virginia	2000
Connecticut	1993	New York	1996	West Virginia	2000
Wyoming	1993	Virginia	1996	Alabama	2000
Montana	1994	West Virginia	1996	Rhode Island	2000
New Mexico	1994	Alabama	1997	Wisconsin	2000
North Dakota	1994	Arizona	1997	California	2001
Washington	1994	Kentucky	1997	Illinois	2002
Delaware	1995	Puerto Rico	1997	Indiana	2002
Nevada	1995	US Virgin IS	1997	Tennessee	2002
Oregon	1995	Hawaii	1998	Louisiana	2003
South Carolina	1995	Massachusetts	1998	Minnesota	2003
Vermont	1995	Georgia	1999	Nebraska	2003
Colorado	1996	Kansas	1999	New Jersey	2003
Idaho	1996	Arkansas	2000	South Dakota	2003
				Iowa	2004



Safeguarding Animal Health

5 Years- no surveillance index, IF documented no feral swine

Dr. John Korslund delivered the **USDA-APHIS report** to the Committee. He talked about the rapid progress made in the eradication program over the last seven years. The following chart lists the year in which each state reached Stage V status. In addition to those states listed, Florida, Texas and Pennsylvania were granted Stage V status on October 25, 2004.

Dr. Korslund then talked about the states that no longer have to meet a surveillance requirement to maintain Stage V status. Program Standards state that: "Once all States have achieved Stage IV or V status, surveillance will no longer be required to maintain Stage V status in states that have maintained Stage V status for five consecutive years, have had no confirmed cases of pseudorabies during the same period and have demonstrated that no feral swine exist in the state." The following states currently meet these criteria: Connecticut, Delaware, Idaho, Maine, Maryland, Massachusetts, Montana, New Mexico, North Dakota, Vermont, and Wyoming.

Korslund then discussed the issues surrounding feral and transitional swine. Over the last twelve months, there have been seven cases of pseudorabies in feral or transitional swine. The cases occurred in Arkansas (2), South Carolina, Texas (2), Ohio, and Illinois. No cases occurred in commercial swine operations.

In addition, he discussed the first feral swine program site review conducted by USDA-APHIS-VS. The review was in North Carolina in early October, 2004. The review team reported that North Carolina is

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doing a good job. Their swine industry is proactive and extremely vigilant. Feral populations in North Carolina are not widespread or highly infected at this point. Better mapping and reporting is planned. Transitional pigs are well monitored both publicly and privately. Finally, the team recommended that future reviews should include field visits.

Finally, Korslund gave the Committee an update on how he thought the definition for “transitional swine” was working after a year of practical experience. He voiced concern that there are insufficient state/federal regulations to prevent the interstate movement of non-slaughter transitional swine. The term “transitional swine” is not addressed anywhere except in the Pseudorabies Program Standards. Testing protocols have not been defined. The question of whether to use Accelerated Pseudorabies Elimination Plan (APEP) funding to depopulate transitional swine has not been fully resolved. Separation of transitional swine in all class markets may also occur and create higher than acceptable risk of pseudorabies spread. He used cases in Texas, Hawaii, West Virginia and Ohio to illustrate some of the challenges that have been presented in the last twelve months.

The Committee discussed two very important questions regarding transitional swine; (1) Whose job is it to identify and classify swine herds as commercial or transitional?; and (2) How should the movement of these pigs be regulated? The Committee then decided to evaluate language in the Pseudorabies Program Standards to see if a solution could be found.

Dr. Korslund reminded the Committee that feral/transitional swine represent a small percentage of the total U.S. swine inventory and that spread from feral/transitional swine to commercial swine has been rare. However, he stated that these types of pigs are not going to go away and we must maintain good biosecurity and control measures to ensure the safety of our commercial swine industry.

Dr. Korslund talked about funding for pseudorabies. Currently, there is \$8,000,000 left in the APEP fund. There is \$4,000,000 in the annual pseudorabies program budget and another \$4,000,000 in the annual animal health monitoring system budget.

In closing, he talked about a possibility of USDA-APHIS declaring the U.S. free of pseudorabies by October 2006.

Drs. John Korslund and Brian McCluskey reported on current surveillance programs for pseudorabies. Dr. Korslund reviewed the recommendations on pseudorabies surveillance that were presented by Neal Black in 1998. The following recommendations were extracted from the minutes of the 1998 USAHA Committee on Pseudorabies, National Swine Disease Surveillance Task Force.

Section I - Long Range Surveillance:

1. When all states are at least in PRV Stage IV or validated swine brucellosis free, surveillance will be concentrated in high-risk

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areas.

2. These surveillance efforts will use methods based on conditions in each of these classes of areas, considering the following:
 - a. The PRV program standards and swine brucellosis subcommittees of USAHA consider reductions of surveillance levels in PRV Stage V and validated swine brucellosis free states;
 - b. When confidence is high that all infection for both pseudorabies and swine brucellosis has been eliminated in domestic swine, post-eradication surveillance will be limited to high-risk areas (Mexican border, Florida and other feral pig areas) and in the rest of the country at levels sufficient to demonstrate absence of disease consistent with international trade requirements;
 - c. Surveillance mechanisms such as those identified by the Swine Futures Project shall remain in place or be developed to respond to future disease problems.

In regards to Market Swine Testing (MST), the testing cull sows and boars for pseudorabies at major slaughter facilities, Dr. Korslund reported that USDA-APHIS-VS plans to continue this program for at least three years after the last case of pseudorabies is found in commercial production swine. At this time, the last case on record was in Pennsylvania in early 2003. Although no definite plan to end this slaughter surveillance system have been announced, it is possible that it could be discontinued as early as 2006. He commented that cases of pseudorabies in transitional swine have not been detected in the past few years using slaughter surveillance of sows and boars at major slaughter facilities. Further, tracing false positive samples is expensive and over the last two years has not led to identification of infected commercial herds.

Dr. Korslund commented that reactor rates in tested cull sows and boars are extremely low in programs for pseudorabies and swine brucellosis. In recent years, traces from reactor samples have not led to disclosure of infected herds.

Dr. Korslund then talked about the following challenges that need to be addressed in regard to pseudorabies surveillance:

1. Lack of sow identification
2. Over-sampling known negative populations - lack of targeting surveillance
3. Data management (Generic Database) - Error handling/data transmission problems, cryptic reports and timeliness
4. Need for New Risk Assessments for Re-infection - Pathways analysis and Feral-Transitional Swine Management Plans

Dr. McCluskey discussed comprehensive disease surveillance from

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MST Reactor Rates Are Extremely Low

YTD	244326	59 0.024%	4	244262	230451	162 0.070%	1392	228897	
Port King/Marengo IL	8/4/2004	886	0	0	886	961	0	12	949
Johnsonville/Momence IL	8/4/2004	929	1	0	928	929	2	11	916
Bob Evans/Galva IL	8/4/2004	345	0	0	345	345	2	2	341
Johnsonville/Momence IL	8/11/2004	918	0	0	918	1016	5	11	1000
Port King/Marengo IL	8/11/2004	1007	0	0	1007	1007	14	22	971
Bob Evans/Galva IL	8/11/2004	374	0	0	374	379	2	3	374
Johnsonville/Momence IL	8/18/2004	1030	0	0	1030	1030	4	14	1012
Port King/Marengo IL	8/18/2004	1017	0	0	1017	1017	11	8	998
Bob Evans/Galva IL	8/18/2004	359	0	0	359	359	1	0	358
Johnsonville/Momence IL	8/26/2004	1409	0	0	1409	1484	3	19	1462
Port King/Marengo IL	8/26/2004	1526	0	0	1526	1526	0	8	1518
Bob Evans/Galva IL	8/26/2004	200	0	0	200	200	0	1	199
AVCO-AL	8/31/2004	501	0	0	501	501	0	0	501
Dean's Sausage - AL	8/31/2004	302	0	0	302	302	0	0	302
Tims Country Sausage	8/32/2004	461	0	0	461	461	0	0	461
Iowa Pack - 1775	8/31/2004	8765	2	0	8763	8765	0	0	8765
Sara Lee - Tennessee	8/31/2004	8417	2	0	8415	8417	0	0	8417
Williams Sausage - TN	8/31/2004	802	1	0	801	802	0	0	802
Wampers - TN	8/31/2004	122	0	0	122	122	0	0	122
Swaggerty - TN	8/31/2004	1216	0	0	1216	1216	0	1	1215
Kansas	8/31/2004	3397	0	0	3397	3397	0	0	3397
Kentucky	8/31/2004	1991	0	0	1991	1991	0	0	1991
		35974	6 0.017%	0	35968	36227	44 0.121%	112	36071
YTD		280300	65 0.023%	4	280230	266678	206 0.077%	1504	264968
		PRV						SW BR	

the perspective of the National Surveillance Unit. He then talked specifically about targeted surveillance for pseudorabies. He said that understanding the probabilities of disease introduction, whether into the country or into an individual herd, facilitates targeted surveillance, targeting geographically and targeting specific populations. He explained that modeling, pathways analysis and risk analysis are key to this effort.

He suggested to the committee that USDA-APHIS-VS needs to conduct a robust, comprehensive evaluation of pseudorabies and swine brucellosis surveillance programs using standardized evaluation criteria. Quality attributes and effectiveness for these programs should include: simplicity, acceptability, flexibility, sensitivity, predictive value positive, representativeness, timeliness and usefulness. The evaluation should include investigating surveillance points for integration, cost-benefit analysis, and valuing information collected over previous time periods.

In closing, he agreed with Dr. Korslund that there are no immediate plans to discontinue slaughter surveillance for pseudorabies and swine brucellosis as currently applied. He emphasized that we depend on these systems to meet international requirements for establishing then maintaining disease freedom and to leverage existing surveillance infrastructure and systems.

The Committee approved three recommendations. They were:

Recommendation 1 - Proposed changes to Pseudorabies Program Standards. The Committee recommends that the following changes to the Pseudorabies Program Standards be forwarded

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to USDA-APHIS-VS: (changes indicated by underline and strikethrough)

Stage IV - Surveillance

E. Swine import requirements shall be as follows:

1. Slaughter swine
 - a. Infected, exposed or feral/transitional swine may be shipped through or into a Stage IV State/Area with prior written approval from the State Veterinarian and must move directly to a recognized slaughter establishment. Such swine must be accompanied by a shipping permit (VS Form 1-27), be conveyed in sealed vehicles, and be unloaded under the supervision of State or Federal officials to ensure that biosecurity measures are observed.
 - b. Imports of slaughter swine from States or Areas with a Program status up to and including Stage III are permitted to a recognized slaughter establishment or an approved slaughter market only.
2. Commercial breeding swine
 - a. Direct shipment from a Stage IV or V State/Area, or
 - b. Direct shipment from a qualified pseudorabies-negative herd in any State/Area, or
 - c. Negative official pseudorabies serologic test within 30 days prior to shipment with quarantine, isolation, and retest at destination in 30-60 days following importation.
3. Commercial feeder pigs
 - a. Direct shipment from a farm of origin or a market in a Stage IV or V State/Area, or
 - b. Direct shipment from a farm of origin in a Stage III State/Area, or
 - c. Direct shipment from a qualified pseudorabies-negative herd or qualified negative gene-altered vaccinated herd, or
 - d. Entry is allowed into Stage IV States/Areas from feeder-pig-monitored herds in Stage II States or from approved feeder-pig markets under the following conditions:
 - (1) That the swine enter on permit directly to a designated feedlot;
 - (2) That the swine be restricted to the designated feedlot until they are sent to slaughter.
4. Feral/transitional swine

Negative official pseudorabies serologic test within 30 days prior to shipment. Pigs that move other than directly to slaughter must be quarantined, isolated and retested at the destination in 30 to 60 days following importation.

Recommendation 2 - Proposed changes to Swine Brucellosis Uni-

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form Methods and Rules (UM&R). The Committee recommends that the following changes to the Swine Brucellosis UM&R and that they be forwarded to USDA-APHIS-VS:

Background - There are differences in the definitions between the Pseudorabies Program Standards and the Swine Brucellosis UM&R. There are also differences in the testing schedules for Pseudorabies Qualified Herds and Swine Brucellosis Validated Free Herds. Advancement of state status in the Swine Brucellosis Program should be based on the commercial production operations and not be affected by feral and/or transitional herds. The definitions of feral, transitional and commercial swine herds, as used in the Pseudorabies Program Standards needs to be included in the Swine Brucellosis UM&R.

Part I Definitions

Feral or wild swine - ~~Swine that have lived all (wild) or any part (feral) of their lives as free-roaming animals. Those swine that are free-roaming.~~

Commercial production swine - Those swine that are continuously managed and have adequate facilities and practices to prevent exposure to either transitional or feral swine.

Transitional production swine - Those feral swine that are captive or swine that have reasonable opportunities to be exposed to feral swine.

Part V Validated Swine Brucellosis – Free Herds

- A. Initial Validation or Revalidation
 4. Swine growout premises on which no adult breeding swine are maintained may be validated or revalidated as Swine Brucellosis free if all samples are tested by the same schedule described for establishing a pseudorabies Qualified Negative growout premises on which no adult breeding swine are maintained.

Part VII Program Stages

Stage II

2. During the 2-year period prior to the request for Stage II status, the State's commercial breeding swine population
3. States must develop and adopt a management plan that adequately separates and addresses control of the interface of feral and transitional production swine with commercial swine. The plan is to be reviewed by the National Center for Animal Health Programs staff.

Stage III (Free)

- A. Establishment of status

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2. During the 2-year qualification period, no more than one SB-infected commercial breeding swine herd was identified;
4. States must develop and adopt a management plan that adequately separates and addresses control of the interface of feral and transitional production swine with commercial swine. The plan is to be reviewed by the National Center for Animal Health Programs staff.

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4. Infection is disclosed in a commercial swine herd with evidence of spread to other commercial swine herds.

Recommendation 3 - Surveillance for Pseudorabies and Swine Brucellosis. The Committee recommends that USDA-APHIS-VS immediately take the following actions concerning surveillance for pseudorabies and swine brucellosis:

- (1) Evaluate and redesign surveillance programs for pseudorabies and swine brucellosis, including current slaughter surveillance programs.
- (2) Assign a staff position to be responsible for program analysis and implementation.
- (3) Coordinate work between the National Surveillance Unit and Animal Health Programs staff.
- (4) Consider randomized on-farm testing in high risk areas.
- (5) Provide funding to implement these ongoing surveillance efforts.

The Committee approved a resolution and forwarded it to the Committee on Nominations and Resolutions. The resolution encouraged federal agencies to continue long-range funding for research, program support and field studies in feral swine, in particular, to support research for: (1) Conducting population studies that support the development of disease risk management strategies; (2) development of Brucella strain VTRS-1 for use as a dual vaccine; and (3) conducting further field trials and studies in relation to swine brucellosis and pseudorabies infection in feral swine and the methods of their transmission to domestic swine.

Recommended changes to USAHA Pseudorabies Committee mission statement - The Committee on Pseudorabies agreed to change its mission statement as follows:

“The purpose of the Committee on Pseudorabies is to provide information to assist in the control and eradication of PRV from the commercial swine herds in the United States. The program is designed to effect changes to make progress toward our goal of the eradication of PRV.”