

Bluetongue Surveillance Pilot Project

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Bluetongue is a vector-borne viral disease of wild and domestic ruminants that causes millions of dollars annually in losses to the U.S. agriculture industry through animal and production losses as well as international trade restrictions.

The Bluetongue virus is spread by the biting midge (*Culicoides sonorensis*), which can be found in most temperate areas of the U.S. but is not common in the upper midwestern and northeastern states. Certain states in these traditionally non-affected areas have been categorized as low risk areas through various testing methods and have been allowed increased international market access. The current method of testing involves the Cattle Market Identification system where traceable cattle are tested on a bi-annual basis at slaughter facilities as part of the brucellosis control program. States that can trace back a minimum of 600 cattle with a less than 2% positive rate for bluetongue have been granted low risk status. The major disadvantages of the CMI system are that it lacks specificity, tends not to involve representative samples and does not allow for accurate spatial definition of bluetongue distribution.

A sentinel surveillance system offers benefits that the current CMI system doesn't. It is more specific, provides a more representative population sample and allows for definition of spatial and temporal distribution as well as incidence. This surveillance system involves testing small sentinel populations in multiple regions on a regular basis to evaluate distribution and incidence of disease in the larger regions they lie in.

The bluetongue surveillance pilot project (BSPP) was designed to evaluate the feasibility and effectiveness of a sentinel surveillance program in monitoring and defining bluetongue in the U.S. The study objectives are: 1) to test disease freedom in demarcated populations, 2) to develop data on the epidemiology of bluetongue in seasonally endemic areas and to evaluate the spatial distribution of anaplasmosis.

Phase 1 of this study involved planning and study design in preparation for the testing in phase two. North and South Dakota and Nebraska were chosen for this study because they lie along a transition zone between disease and non-disease regions and offer an area where demarcation of disease freedom can be tested. NAHMS serum bank samples from the Beef 97 and Dairy 96 studies were tested to estimate bluetongue prevalence in these regions. It was determined that a sample size of 60 herds per state with up to 60 sentinels per herd was necessary. A detailed questionnaire was sent to each operation that volunteered for the study asking for various identification, management and environmental information.

Phase 2 is currently ongoing. Three types of sample are being collected and the data will be analyzed when completed. The sampling includes: 1) pre- and post vector season serum samples from sentinel animals, 2) adult vector trapping on approximately ½ of the operations and 3) soil samples for presence of larvae and soil chemistry analysis.

Another purpose for the study is to determine risk factors associated with the spread of bluetongue, particularly in transition areas to help better define areas of disease freedom. Analysis of the data collected in this study will help to identify any risk factors and correlations between vector, virus and environment in the spread of this disease.