

Animal Health Sensing and Surveillance

Protecting the Livestock Industry

The U.S. livestock industry has an annual value estimated at \$100 billion. Disruption of this industry would create adverse economic effects throughout related industries, resulting in potentially severe impacts. Protecting the livestock will secure the stability of the herd, contribute to human health, and support the safety of the food supply chain and the national economy.

The potential risk for disruptions of the U.S. markets was evidenced in 2001 when a suspected foot-and-mouth disease case in Kansas resulted in widespread panic and an estimated \$50 million loss in the cattle futures market. Feed lots are the source for most of the beef produced in the United States, therefore deserving of security attention.



Monitoring the Beef Supply

The University of Kentucky is focusing on the development of coordinated surveillance, monitoring, and response systems for tracking and early detection of disease outbreaks in the U.S. livestock population to help prevent disruptions of the beef supply. Researchers have developed an ear tag sensor that monitors the health of individual animals. The system is designed to wirelessly communicate with a personal computer

to provide livestock producers with continuous information about the health status of their animals. The body temperature, along with other health status information, is transferred into a sophisticated computer model that is capable of providing early warning of animal disease outbreaks.



Moving Forward

Researchers have begun to assess the feasibility of the use of RFID (Radio frequency identification) ear tags to provide a source of data that can be used for early detection of disease in food producing animals. The study will review the current state-of-the-art in RFID tags, propose and evaluate the feasibility of new system deployment concepts and associated algorithms that can detect animal disease using binary data, and perform field testing of the proposed concepts as needed to develop and confirm the benefit of said algorithms. The deliverables from this effort are intended to be used as a resource for the agricultural community (federal, state, academia, industries) to enable more informed development of the technologies needed to improve the nation's ability to detect animal disease outbreaks early and enhance resiliency within the livestock community.



To learn more about this project, contact: Mike Matthews, Program Manager, at mike.matthews@dhs.gov or Ewell Balltrip, NIHS, CEO at eballtrip@thenihs.org 2014-07-23. 1 pager

