Farm-level Risk Factor Assessment for Infection with *Salmonella* spp.

Peter B. Bahnsen¹, DVM, PhD, and Paula J. Fedorka-Cray², PhD

¹University of Minnesota, St Paul, MN 55108 and ²National Animal Disease Center, Ames, IA 50010

Current Research

We are focusing on the factors that predispose to *Salmonella* spp. infection in commercial pig production systems. Our current project aims to accomplish two primary goals. First, we will define the herd-level and pig-level prevalence for *Salmonella* infection. Second, we will quantify the farm-level risk factors for *Salmonella* herd- and pig-level prevalence. The determination of *Salmonella* infection is species and serotype specific. Twenty-five pigs will be sampled on the farm and 15 at slaughter from each of 70 herds that participate in an ongoing slaughter monitoring project (PigMON). Risks will be assessed by a survey of farms at the time of the slaughter inspection.

Information is being collected regarding farm management, facilities, equipment, and feed, among others. Multivariate categorical analysis will be used to quantify the relative odds of infection with the presence of potential risk factors. We expect to accurately define herd- and pig-level prevalence of *Salmonella* spp. among commercial farms that use the PigMON system, and to provide a comprehensive assessment of farm-level risk factors. This project is expected to provide the important information on hazards to allow for the development of farm-level HACCP protocols.

Preliminary Results

As of March 1, 1996, we have collected samples from 32 farms; serotype data is available from 21 farms. A total of 14 serotypes have been isolated. The five most common isolates overall have been *S. derby*, *S. agona*, *S. typhimurium (copenhagen)*, *S. anatum*, and *S. schwarzengrund*. Both the farm- and pig-level prevalence of *Salmonella* spp. has been higher in cecal contents collected at the slaughter plant than in feces collected at the farm. Among all 1591 samples for which culture results are known, 127 (8%) are positive. The farm level survey shows diversity in production systems, facilities, and management characteristics. Sample size is as yet inadequate to test for farm-level risk factors.

Future Priorities

Development of systems to reduce or eliminate human health hazards will require sound scientific research. We plan to focus efforts on the development of commercially applicable, science based strategies to reduce food safety hazards in production agriculture.