Pork Producers Attitudes, Knowledge and Production Practices that Relate to on Farm HACCP Development.

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Introduction

For the HACCP approach to be the basis of pathogen reduction on farms, pork producers will need knowledge about the pathogens and the methods for their control. In the United States, there are no recent broadly based reports in the scientific literature on the knowledge, attitude and opinions of pork producers regarding pork food safety. Several major U.S. production systems have adopted on-farm production practices uniquely designed for their company operations and which are standardized farm-to-farm.(1) However, much of swine production within the U.S. involves independent pork producers interfacing with independent packers. With the introduction of packing plant HACCP plans, the expectation of the packer/processor has of the producer’s role in food safety and quality assurance is changing. Producers have a need to understand the HACCP system and the role they have in the pork production chain.

Thus, the we designed this study to assess the knowledge, attitudes and practices of Illinois pork producers regarding pork food safety to help identify educational gaps and attitudes which might limit introduction of production food safety control measures.

Materials and Methods

We developed a written questionnaire was patterned after Dillman’s design method for mail surveys(2) to assess knowledge, attitudes and practices related to food safety. The initial survey was mailed in March of 1999. Reminder postcards were mailed 10 days later. A duplicate survey was mailed to all non-respondents four weeks after the first survey was sent.

The list of subjects was compiled from state pork producers' association membership lists and participants of U.S. National Pork Producers Council (NPPC) programs, provided to us by NPPC. The criteria for inclusion in the study were that the swine operation was located in the state of Illinois and that the farm marketed more than 1000 hogs per year. The producers for this study were then selected by random sampling from the sampling frame.

Each participant was asked forty-four questions covering the topics of attitudes and knowledge of foodborne diseases, HACCP and production practices that might be relative to on-farm HACCP practices, and demographics. Survey data was entered into a computerized database and analyzed with a commercially available software package. (3)

The database received from NPPC included 1000 persons. We refined the database by removing duplicate names; persons moved outside Illinois, and incorrect mailing addresses. After these deletions, we mailed 946 surveys. All subjects were mailed a reminder card, and all non-respondents to the first mailing (774) were mailed a second questionnaire.

Surveys were included for analysis if the respondents indicated that they actually met the criteria specified above in the development of the sampling list, intended to produce pigs for slaughter in the year 2000.

Results and Discussion

The survey response rate was 31% (297/946). A total of 502 surveys returned. However, 122 of the returned surveys (24%) indicated the individual would not be producing hogs in 2000. Twenty-four of 502 (5%) surveys returned did not market more than 1000 animals in 1998. Eight of 502 (1.6%) did not market any hogs in 1998. Responses to 314 surveys met the criteria for further analyses. Because only a small number of respondents were not certified as NPPC Pork Quality Assurance Level III(3), (17 of 314 or 6%), we deleted these from further analysis.

The age range for persons answering this questionnaire was from under 25 years old to 68 years old or older. Pork production was the major farming enterprise for the majority of those surveyed with over 60% of respondents receiving greater than 50% of gross farm receipts from pork production. Contract finishing, defined as the respondent owns and manages the buildings but does not own the hogs accounted for 7% of the respondents.

The majority of producers could distinguish between infections of swine that do not result in foodborne illness. Greater than 85% of the producers responded that Pseudorabies, TGE and PRRS were diseases of swine that did not pose a threat of illness in humans. Additionally, the majority of producers correctly identified those infections of swine that can result in foodborne illness. Trichinosis (80%) and
Salmonella (90%) were identified as swine diseases that could result in infections of humans. In contrast, many did not know if Campylobacter (72%) and Toxoplasmosis (67%) could cause human illnesses. Several factors may have contributed to the strong knowledge regarding Salmonella and Trichinella. Both have been at the forefront of educational efforts and have been the recent focus of media coverage. In addition, Salmonella is also the focus of recent changes in USDA plant monitoring regulations. Less educational efforts have been directed toward Campylobacter or toxoplasmosis for U.S. swine producers, and the survey results suggest that producers had limited knowledge of these subjects. Campylobacter is the most common cause of foodborne illness in humans (4), but receives little media attention possibly because this infection results in fewer fatalities and relatively milder symptoms. Educational efforts may be justified to increase the knowledge of these agents and the mechanisms that cause foodborne illnesses involving pork.

Specific producer knowledge about Salmonella suggests a need for enhanced educational programs. Twenty-eight percent did not know how Salmonella was transmitted between animals. Contamination during the slaughter process with gastro-intestinal contents was correctly identified by 67% as the primary way that carcasses become positive with Salmonella; 26% were unsure about the method of contamination. Fifty-three percent indicated that pigs shedding Salmonella at the time of slaughter generally did not have any signs of illness, but 30% did not know if pigs exhibited clinical signs when shedding Salmonella. Sixty-one percent of producers did not know Salmonella choleraesuis caused disease in pigs but rarely caused disease in people. These responses confirm the need to educate producers about Salmonella.

We asked a series of questions on general food safety issues. Ninety-five percent strongly agreed that a positive image for pork in the news media as a safe product is important. Ninety-nine percent also held that consumer education on proper handling and preparation was essential to reduce foodborne illnesses and increase the safety of pork. Most (92%) thought the development of on-farm strategies are essential to reduce the organisms that cause foodborne illnesses. Opinions on the need for independent on-farm verification of procedures were more diverse. Forty-two percent suggested this was important, 25% were undecided and 22% disagreed with the need for on-farm verification. Producers' views also differed when asked if forming alliances with packers would improve the safety of pork. Fifty-seven percent agreed, 25% responded neither agrees nor disagrees and 17% disagreed.

Respondents were in agreement that on-farm food safety strategies are essential to the pork industry, yet when questioned about on-farm verification, there was not a consensus. Independent verification by a third party may be perceived as an intrusion on the traditional independence of U.S. pork producers. Thus, one explanation of this reluctance to support third party verification may be that producers may be concerned that verification would result in a loss of privacy and/or independence. Another consideration is that respondents may not have understood what "verification of procedures" meant. Responses about alliances with the packing industry improving pork safety were similar to those regarding on-farm verification. Again to participate in this activity, there is a loss of independence and privacy. Also, the current model for these types of practices in the United States has been done within a corporate structure with little information regarding the success of these programs available at this time. (1)

Producers need additional information and education about basic modes of transmission, incubation periods and control measures for producers to adopt on-farm policies to address foodborne infections. Alternatively, they will need to work with veterinarians and others on their management team who can bring this knowledge to the production system. The ability to adopt production practices and make management adjustments will be essential.

References


2. Dillman, D. 1978 Mail and Telephone Surveys the total design method, John Wiley & Sons
