

# Investigation of the ability to determine final destinations of pigs exhibited at the 2002 Indiana State Fair

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## Summary

**Objectives:** To identify and contact exhibitors of 4-H swine that had competed in the 2002 Indiana State Fair and to determine the destinations of the pigs directly after the fair.

**Materials and methods:** Nine months after the 2002 Indiana State Fair, investigators attempted to contact by telephone each household that had exhibited 4-H swine. Percentages of pigs in each of the following categories were calculated: returned to home of exhibitor; sold to someone else; marketed to slaughter directly from the fair; died; returned to owner; unknown; or

refused, if the exhibitor refused to participate.

**Results:** Investigators contacted 556 of 753 households (73.8%), accounting for 1570 of the 2239 pigs exhibited (70.1%), and were able to determine destinations for 1364 of these pigs (60.9%). Approximately 731 pigs (53.5%) were marketed directly from the fair; 496 (36.4%) went home; 113 (8.3%) were sold; 19 (1.4%) were returned to their original owner in Indiana; and 5 (0.4%) died at the fair. Record-keeping systems for the 2002 Indiana State Fair were not adequate to track pigs in case of an exotic or enzootic disease outbreak.

Telephone inquiries were not an effective means to track animals.

**Implications:** Livestock exhibitions provide conditions that could allow an epizootic to occur. Using the Indiana State Fair as an example, we found that no system was in place to track animals in the event of an outbreak. Regulations for exhibition of animals should include a system to accurately track exhibited animals.

**Keywords:** swine, state fair, record keeping, traceback

**Received:** October 24, 2003

**Accepted:** February 12, 2004

Vigilance against exotic disease outbreaks or agro-terrorism marks the current agricultural environment in the United States. Livestock exhibitions may present a particular risk for disease dissemination, because livestock from multiple sources are brought to a central location and commingled. Animals then leave the exhibition and are transported to many different locations. These animals may or may not be placed in isolation before re-entering their herd of origin or exposure to livestock at other destinations. Thus, infected animals leaving the fair could potentially spread disease across a wide geographic range if the infection were not apparent at the fair.

Tracking of livestock movements is crucial, should any disease outbreak occur, to identify the pathogen source and to prevent further spread. Certificates of veterinary

inspection are required for interstate and some intrastate livestock movement; however, a mandatory national livestock identification system to facilitate tracking the movements of livestock does not exist at present. In practice, collection of information regarding animal movement usually begins only after an outbreak has been identified. Owners and exhibitors of livestock should be encouraged to maintain their own animal movement records to facilitate this process.

In this study, the 2002 Indiana State Fair was used as an example to determine our ability to track exposed animals should a hypothetical disease outbreak originate at the fair. The 4-H swine exhibition was selected for our study population. 4-H is a volunteer-led organization in which youths have the opportunity to feed and care for animals, which are then exhibited at

county or state fairs or both. In some cases, the 4-H exhibitors do not own the animals that they exhibit.

The objectives of this project were to determine the percentage of families exhibiting 4-H swine at the 2002 Indiana State Fair who could be identified and contacted, and to determine the percentage of pigs that could be tracked to known destinations after they left the fair, using the results of a telephone survey.

## Materials and methods

A database of contact information for exhibitors of 4-H swine at the 2002 Indiana State Fair was compiled from 4-H check-in sheets collected at the fair and stored at the Department of 4-H Youth in the Cooperative Extension Service at Purdue University. Entry papers contained contact information for pigs exhibited at the county fairs; pigs that were subsequently exhibited at the state fair were identified in these papers. Thus, entry papers were hand sorted and interpreted to determine which pigs from county fairs were taken to the state fair. Once state-fair pigs were identified, the database of contact information for exhibitors was compiled.

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This article is available online at <http://www.aasv.org/shap.html>.

Amass SF, Schneider JL, Kenyon SJ. Investigation of the ability to determine final destinations of pigs exhibited at the 2002 Indiana State Fair. *J Swine Health Prod.* 2004;12(6):282-284.

Compilation of the database began approximately 9 months after the 2002 fair and was completed in approximately 2.5 months. Included were the number of pigs shown by each exhibitor, pig gender, breed, and ear notch number (using the standard ear notching system). The telephone survey method<sup>1</sup> was used to attempt to contact each household that had exhibited 4-H swine at the 2002 Indiana State Fair. Up to three attempts, on three different days, during at least two different times of day (morning and afternoon or evening), were made to contact each household. The investigators let the phone ring four times on each attempt. If the phone was not answered on the first attempt, a message was left on the answering service, if available. Calls to these households were repeated according to protocol, but additional messages were not left. The household was designated unreachable if all three contact attempts were unsuccessful, the phone number had been disconnected, or the phone number was incorrect. The dates, times, and outcomes of phone calls were recorded.

When a family member was contacted, he or she was informed of the study, and asked whether the individual pig(s) exhibited had been returned to the home of the exhibitor, sold to someone else, or marketed to slaughter directly from the fair. If the pigs had been sold to another person, the state of destination was requested. All destinations of pigs were recorded. Other categories used as outcomes included the following: died, if the pig had died during the fair; returned to owner, if the owner was not the exhibitor (state of residence of the owner was requested); unknown, if the contact did not remember or know what had happened to the pig; and refused, if the owner refused to participate in the study. Percentages of pigs in each category were calculated.

## Results

Investigators attempted to contact all of the 753 households representing the 2239 4-H pigs that were known to have been exhibited at the fair. A total of 1362 phone calls were made. Investigators successfully contacted 556 of 753 households (73.8%), accounting for 1570 of the 2239 pigs (70.1%). Investigators were unable to contact 197 households after three attempts, accounting for 553 of 2239 pigs (24.7%).

Investigators were unable to determine destinations of 116 of the 2239 pigs (5.2%) due to nonworking or incorrect phone numbers for 39 households. After successful contact, 74 exhibitors, representing 189 of the 2239 pigs (8.4%), did not know or did not remember what had happened to their pigs, and seven exhibitors, representing 17 of 2239 pigs (0.76%), refused to participate.

Exhibitors reported a final destination for 1364 of the 2239 4-H pigs (60.9%) shown at the fair: 53.5% of these pigs were reported as marketed directly from the fair to an Indiana packing plant; 36.4% reportedly went home; 8.3% were reportedly sold; 1.4% were reportedly returned to their original owners in Indiana; and 0.4% reportedly died at the fair. Of the 113 pigs that were sold, exhibitors reported that 82 (73%) remained in Indiana, four (3%) went to Ohio, and 27 (24%) had unknown states of destination.

## Discussion

The overall goal of this project was to track all 4-H swine exhibited at the 2002 Indiana State Fair. The original objective of the study was to identify the destinations of 4-H swine exhibited at the fair after it ended, using fair and state records. However, after contacting fair officials and the Indiana Board of Animal Health, we found that such information had not been recorded. The Indiana Board of Animal Health requires certificates of veterinary inspection for all livestock shown at the state fair, but does not maintain a list of exhibitors and animals that were actually present. To the best of the authors' knowledge, there are no federal or Indiana state requirements for record keeping at the state fair (Indiana State Board of Animal Health, oral communication, 2003). 4-H entry papers, however, were collected and stored at the Department of 4-H Youth in the Cooperative Extension Service at Purdue University. Entry papers are routinely maintained for 1 year following the state fair and then discarded. A box of entry papers was provided to us approximately 9 months after the fair had ended, and these were the basis for contact information used in the study.

The majority of people contacted were cooperative and provided the requested information. However, the entire process of collecting contact information and attempting to contact exhibitors using 1362 phone

calls was time consuming and would be impractical during an actual investigation of an epizootic. Tracking the movement of swine at the end of the fair also proved difficult. Initially, it appeared that marketed pigs could be readily identified, because a database of pigs that went to market on the fair truck had been maintained. Unfortunately, this database used ear tag numbers as the only identifier. Pigs were checked in to the fair using ear notch as the sole identification. No record was maintained that included both the ear notch and ear tag number to cross-reference the identification and track an individual pig. Thus, the records could not be used to track pigs put on the market truck, and individual exhibitors had to be contacted to determine which pigs had been marketed directly from the fair.

Exhibitors reported the final destinations of only 60.9% of the 4-H pigs shown at the fair. Thus, the percentage of pigs in each category of destination might not reflect the actual percentage, had all contacts been successful and accurate destinations for all pigs been reported. Surprisingly, most reported pig movement was restricted to Indiana. Most pigs were reportedly taken home, returned to their original owner in Indiana, or sold to a farm in Indiana. As expected, just over half of identified pigs were reportedly marketed after the fair. Additionally, geographic location of pig destinations appeared to be limited. Of the pigs with known destinations, only four pigs were reportedly moved to Ohio and 27 pigs were sold to an unknown destination state. This was a positive finding, because limited movement of animals would facilitate outbreak containment. Unfortunately, we do not know if these numbers reflect the actual geographic distribution of the pigs with unknown destinations, and we do not know if this limited geographic spread is representative of destinations of exhibited pigs every year.

A major limitation of this study was that nearly a year had passed after the state fair before we contacted exhibitors, which would not be the case in an outbreak response. Presumably, exhibitors would have been more easily reached and might have remembered where their pigs went after the fair if they had been contacted immediately, thus enabling the complete tracking of many more animals. However, information regarding animal movements to and

from specific premises over a prolonged time period may be required, as in the case of bovine spongiform encephalopathy in Canada<sup>2</sup> and the United States.<sup>3</sup> Despite this limitation, the study demonstrated that the current record-keeping system at the Indiana State Fair is inadequate for tracking animals should the need occur. There is no reason to believe that this problem is limited to the state of Indiana.

The authors recommend that a record-keeping system be put in place as part of state regulations for exhibition of livestock. The system should allow for rapid and accurate tracking of exhibited animals using permanent animal identification methods. The system should be inexpensive and easily used by the exhibitor. This might be accomplished, for example, by requiring that contact information for exhibitors and all animal identification (ie, ear notches, tags, tattoos) be entered into a computer database at check-in to the exhibition. Animals that go directly to market on fair-sponsored trailers should be designated as such in the database at the time they are loaded onto the market-bound trailer. Thus, animal status will be known and the contact list will be readily available for investigators to track animals during epizootics. Implementing these recommendations might help to prevent a disease outbreak or, at minimum, facilitate containment of an outbreak.

This study demonstrated deficiencies in our ability to track affected animals in the event of an outbreak of infectious disease originating at our state fair. Although the regulatory veterinarians and governing bodies of the exhibition should have the primary responsibility for requiring and enforcing regulations concerning exhibited animals, all veterinarians and agricultural professionals are encouraged to participate in this process. Together, we can proactively address these deficiencies in our respective communities by assisting regulatory agencies and fair committees to develop accurate record-keeping systems for animal tracking.

## Implications

- Livestock exhibitions provide conditions that could allow an epizootic to occur.
- Using the Indiana State Fair as an example, we found that a system was not in place to track animals in the event of an infectious disease outbreak.
- A system to allow accurate tracking of exhibited animals should be included in national, state, and local regulations for the exhibition of animals.

## Acknowledgements

USDA APHIS (Grant #02-1001-0355-CA) provided funding for this study, which was initiated by the National Agricultural Biosecurity Center at Kansas State University in collaboration with Purdue University and Texas A&M. The authors thank Josh Morgan for his assistance in creating and maintaining our database. The authors also thank Drs Marianne Ash, John Johnston, and Cheryl Miller of the Indiana State Board of Animal Health, and Clint Rusk of the Department of 4-H Youth at Purdue University's Cooperative Extension Service, for their assistance in this project.

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