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Entitled Evaluation of Identification Systems for Exhibition Animals and the Ability of Those Exhibitions to Comply with the National Animal Identification System

For the degree of Master of Science

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EVALUATION OF IDENTIFICATION SYSTEMS FOR EXHIBITION ANIMALS AND THE
ABILITY OF THOSE EXHIBITIONS TO COMPLY WITH THE NATIONAL ANIMAL
IDENTIFICATION SYSTEM

A Thesis

Submitted to the Faculty

of

Purdue University

by

Kelli L. Reiff

In Partial Fulfillment of the
Requirements for the Degree

of

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To my parents, Bill and Amy, I could not have reached this point without you. I have been blessed with parents who have pushed me to reach for the stars and who have stood behind me, understanding, loving, and encouraging me every step of the way. Thank you for all you have done and will continue to do for me, I love you.

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ABSTRACT

Reiff, Kelli L. M.S., Purdue University, August, 2009. Evaluation of Identification Systems for Exhibition Animals and the Ability of those Exhibitions to Comply with the National Animal Identification System. Major Professor: Dr. Clinton P. Rusk.

The purpose of this study was to observe select livestock exhibitions in order to determine if the exhibitions would be able to comply with the National Animal Identification System (NAIS), should it become a mandatory program. The specific objectives of this study were to 1) evaluate the livestock identification systems that were in place at the exhibitions to check-in and release the following livestock species: beef cattle, dairy cattle, dairy goats, meat goats, sheep, and swine and 2) to identify additions and/or changes that needed to be made to make the systems NAIS compliant.

During a time period spanning from January-November 2008, the researcher travelled to six different livestock exhibitions. The following exhibitions were evaluated: the National Western Stock Show (NWSS) in Denver, Colorado, the North American International Livestock Exposition (NAILE) in Louisville, Kentucky, the Indiana State Fair (ISF) in Indianapolis, Indiana, and Indiana county fairs in Monroe, Putnam, and White counties. Data was collected as the researcher both participated in and observed the check-in and release procedures at the different exhibitions. In order to maintain consistency from exhibition to exhibition, the researcher maintained a standard set of questions and observed similar species of livestock at all exhibitions. In addition, observations were based on a HACCP plan and utilized the same seven objectives.

Overall, results from the study indicated that livestock exhibitions, regardless of size, needed to implement several changes in order to become NAIS compliant. The study found that the biggest barrier to NAIS compliance was the differences between the exhibitions. Thus, results would also indicate that the implementation of an online, uniform computer system that can be linked between the exhibitions would be extremely beneficial. The study also found that exhibitions that require a PIN from exhibitors are

more ready to become NAIS compliant than those exhibitions that do not require a PIN. Results of the study also indicate that a uniform animal identification system, such as RFID tags, would also increase the readiness of these exhibitions to become NAIS compliant by increasing the ability of the exhibitions to forward certain information to a tracking database within a certain timeframe.

It was concluded that in order for livestock exhibitions to become NAIS compliant, similar entry forms, animal identification methods, health requirements, entry and exit points, and the implementation of a release form would be needed. Additional research needs to be done that focuses on different types of livestock exhibitions, such as those in the southern parts of the United States, outside of Indiana, or within organizations such as the National Junior Swine Association. This additional research would ensure a complete evaluation, as this study was confined to the National Western Stock Show, North American International Livestock Exposition, the Indiana State Fair, and county fairs within Indiana.

CHAPTER 1. INTRODUCTION

Animal identification is not a new concept, particularly in the livestock industry. To livestock producers, the idea of identifying animals by specific characteristics applying only to that animal or group of animals has been a useful practice for many years. Within the United States, particularly within large animal production systems, animal identification can be traced back to the late 1800's. Hot iron branding was used by cattle ranchers as a way to not only identify ownership, but also to deter theft. Ear notching in swine was used to identify animals for registration and record keeping (Richey, 2005). Gradually, these individual efforts became concentrated on a federal level.

One of the first federal identification programs focused on tuberculosis (TB) eradication in cattle. Tuberculosis was the leading cause of death in the United States at the beginning of the twentieth century, taking roughly 148,000 human lives in 1900 (Olmstead, 2004). Estimates indicate that over ten percent of the people with the disease contracted the bovine form of tuberculosis. The federal government worked closely with state and local governments to systematically test and retest cattle. Animals that tested positive for TB were destroyed. During a twenty-three year period, from 1917-1923, about 232 million tuberculin tests were performed, resulting in the destruction of roughly 3.8 million cattle (Olmstead, 2004). Producer participation in the program began on a voluntary basis, but later evolved into a required program. As soon as 1940, every county in the United States had an infection rate below .5 percent, making them officially accredited free of bovine tuberculosis.

The Animal and Plant Health Inspection Service (APHIS), a division of the United States Department of Agriculture (USDA), began using forms of identification such as ear tags, tattoos, and face branding, during the 1960's. Both federal and state governments had regulations regarding the movement of diseased animals during periods of disease outbreaks and during times when eradication programs were in place. In addition to tuberculosis, eradication programs were also established for brucellosis

and hog cholera. It was the development of these programs that laid the ground work for the animal identification programs of today.

In 2002, discussion of an animal identification plan began between APHIS, the National Institute for Animal Agriculture, and the U.S. Animal Health Association. These organizations developed the United States Animal Identification Plan (USAIP) in 2003, the same year that a case of bovine spongiform encephalopathy (BSE) was documented in Washington state. With the discovery of BSE, the USDA announced efforts to hasten the implementation of the National Animal Identification System (NAIS), which featured concepts from the USAIP. The NAIS Draft Strategic Plan was published in 2005.

The NAIS is best described as a “modern, streamlined information system that helps producers and animal health officials respond quickly and effectively to animal disease events in the United States” (USDA, December 2007). There are three key points to the NAIS program; voluntary participation, protection of private information, and partnership. Currently, participation is voluntary, but still highly desirable. Federal law exists to protect the private individual information and confidential business information contained within the NAIS from disclosure. The NAIS is a partnership between State, Federal, and Industry segments and it works best if all three levels continue to work together.

The main goal of the NAIS is to be able to retrieve traceback data on all animals and premises that have come in contact with a foreign or domestic animal disease within 48 hours after the initial contact (USDA, August 2007). The 48 hour timeframe is considered optimal for disease containment to be effective.

In August 2005, premises registration systems were operational in all 50 states. In December 2006, the Tribal Premises Registration System was implemented, with 10 Tribes becoming trained and operational. By January 2007, the benchmark of 25 percent of national premises being registered had been reached. In April 2008, APHIS announced the implementation of another key strategy from its Business Plan to Advance Animal Disease Traceability, the provision of NAIS compliant “840” radio frequency (RF) ear tags to animal health officials (USDA, April 2008).

Three key components make-up the NAIS: premises registration, animal identification, and animal tracing. Since participation in the NAIS is voluntary, so is participation in each component. Producers may choose to participate in one, two, or all three components. However, it is important to note that participation in one segment

does not automatically enroll the producer into the next. Premises registration is currently operational in all 50 states, while animal identification devices are currently available for most species. Animal tracing is also available. Lists of approved animal identification devices, as well as compliant Animal Tracking Databases (ATDs) are available through the NAIS Web site.

Premises registration, the first component of NAIS, is considered to be the foundation of NAIS. Premises registration is an essential part of tracking animals during a disease outbreak. Examples of a premises include farms and ranches, stables, markets, harvest and rendering facilities, ports of entry, veterinary clinics, and livestock exhibitions (USDA, December 2007). Due to the broad definition of the term, producers should contact state and local animal health officials in their individual area (State, Tribal, or Territory) to determine the type and kind of their premises.

The USDA has set national standards for premises registration that are followed by each state or tribe; however the method in which the data is collected can vary by state or tribe. In addition, each state or tribe may have additional data elements they require. The following data elements constitute the minimum collection requirements when registering a premises: premises identification number (PIN), name of entity, contact person(s) for premises, street address, city, state, and zip/postal code of the premises, contact phone number, operation type, date activated, date retired, the reason retired, and alternative phone numbers (USDA, December 2007). The PIN is a 7-digit alphanumeric code that is permanently assigned to the physical location. Therefore, if that physical location is sold, the new owners can use the original premises identification number. The collected information is then forwarded by the state or tribe to the USDA's National Premises Information Repository.

Currently, premises registration is free. Many states and tribes offer the option of registering on-line. Forms are also available on each state's Department of Agriculture website. Requests for the appropriate paperwork can also be made by mail or phone. Several Extension offices also have the necessary paperwork on hand. There are several benefits of premises registration, both to the producer and to animal health officials. Not only does premises registration ensure quick notification should an animal health crisis occur, but premises registration also allows for quick definition of affected regions during an animal health crisis, allowing unaffected areas to operate normally (USDA, December 2007).

Animal identification is the second component of NAIS. This component provides producers with a uniform numbering system for identifying their animals. In addition, it also links the animal to a specific premises. Animals may be identified individually, as a group, or not at all. Specific methods of identification have not been identified by the USDA, outside of what has been identified in the *Code of Federal Regulations* (CFR) for certain diseases or interstate commerce of certain classes or ages of animals. For example, a visual ear tag may be used in cattle, while an injectable transponder may be used for llamas or alpacas (USDA, December 2007). As long as the AIN device is NAIS compliant, it can be used.

Individual animal identification is appropriate when the movement of the animal presents potential disease risk. If this is the case, the animal will be identified with an Animal Identification Number (AIN). As part of the 15-digit number, each country has a unique 3-digit code that will always appear at the beginning of the AIN, ensuring compliance with the International Standards Organization (ISO). For example, tags in the United States will always begin with 840 and tags in Canada will always begin with 124. The producer should attach the identification device on the animal before it moves from one premises to another premises, market, etc. Purchased animals that are brought into an operation will need to maintain the official identification already in place, just as imported animals are required to keep the official identifier from the country of origin.

In some cases, animals of the same species move as a group. In this case, the group of animals will be identified by a Group/Lot Identification Number (GIN), which are most common in the poultry and pork industries and are not assigned by the USDA. Instead, producers assign the GIN and records are maintained at the premises. In other cases, there are certain animals that do not need identification under NAIS parameters. These cases include animals that do not leave their premises of birth and animals that never leave the facility or are only moved directly to custom slaughter for personal consumption (USDA, December 2007). These movements typically have little to no impact on potential disease spread and traceability will be easy to facilitate.

A list of approved AIN device manufacturers can be found on the NAIS website. The cost of the devices varies based on the type of AIN device chosen by the producer. Each manufacturer of AIN devices offers a variety of services. Thus, producers should consider the different options before purchasing. Administration of the AIN device is

typically done by a veterinarian or other animal health official. In this case, there may be a service charge to consider as well. Specific cost information can be obtained from the AIN device managers. The USDA plays an important role in authorizing the manufacturing of AIN devices by allocating AINs to authorized manufacturers to produce official identification devices or technologies (USDA, December 2007). The manufacturer will then report the imprinted or embedded AIN, the product code, and the distribution record of the AIN device to the AIN Management System (AINMS).

In order for a producer to obtain an AIN device, there are three basic steps to follow. First, the producer should make sure the premises where the animals are located is registered and has a PIN. Second, the producer should contact an AIN device manager who provides the AIN device of choice. Third, the producer should give their PIN to the AIN device manager, who will then validate the PIN and ship or deliver the AIN device. Intentional removal of, or tampering with, an AIN device is prohibited. An exception to this statement is if the AIN device becomes illegible or malfunctions. If a loss or malfunction of the AIN device occurs, new devices should re-identify the animal as soon as possible, and the producer should also maintain a record of the incident and report the new AIN device.

Animal tracing, the final NAIS component, focuses on reporting certain animal movements. This important component will provide animal health officials with records showing where animals have been and the potential contact they have had with other animals. Animal movement records make it easier for the USDA and associated agencies to determine the scale and location of an animal disease outbreak.

The Animal Trace Processing System (ATPS) is a portal that allows animal health officials to submit a request for information to the administrators of the animal tracking databases (ATDs) when the investigation of an animal disease is underway. The ATPS will only be used in the following situations: indication or confirmed positive test of a foreign animal disease, an animal disease emergency as determined by the Secretary of Agriculture and/or State Departments of Agriculture, or a need to conduct a traceback/traceforward to determine the origin of infection for a program disease, such as brucellosis (USDA, December 2007). Development of the ATPS and the technical requirements for integration of ATDs was completed in early 2007.

Animal tracking databases (ATDs) are a means of protecting animal health since they contain the location of animals and their movement records. In order to become a compliant ATD, certain specifications must be met through a cooperative agreement between ATD operators and the USDA. This agreement outlines stipulations for data elements, access privileges, operating procedures, and archive and transfer regulations. Once a producer chooses an ATD, he or she will work directly with the private company or with their state. Since the USDA does not maintain the information contained within the ATD, it cannot distribute the information. If a need for the information arises, a request must be made to the administrator of the database only for the animals involved in the issue. Cost of the ATD will vary depending on the type of services offered and the details of operation. Animal Tracking Databases that meet complete USDA specifications for operation are required to be up and online 98% of the time. As an additional precaution, the ATD must send an electronic "system online" notification to the ATPS at regular time intervals (USDA, December 2007).

In the late 1800's, questions began to arise regarding the safety of American beef being imported to European countries. The USDA had the responsibility of making sure that exports were up to European standards and also for conducting inspection of livestock harvested and intended for distribution in the United States. In 1906, Congress responded to the public image of unsanitary conditions in the meatpacking industry with the passage of the Federal Meat Inspection Act (FMIA). The FMIA also allowed continuous USDA inspection of processing facilities, covering all meat and meat products involved in interstate commerce. In 1958, Congress passed the Food Additives Amendment to the Federal Food, Drug, and Cosmetic Act, which allowed for pre-market approval of new food additives, their conditions, and levels of use. Finally, in the early 1990's, an E. coli O157:H7 outbreak in the northwest United States forced the development of the Pathogen Reduction/Hazard Analysis and Critical Control Point (HACCP) Rule, which was finalized in 1996.

The idea behind the HACCP Rule was to stimulate improvement in food safety practices by setting standards that all meat and poultry establishments must meet, and also to hold these establishments accountable for reaching defined, acceptable levels of performance. A HACCP plan is defined as a "systematic approach to the identification and control of hazards associated with food production" (Hulebak, 2002). It was the conclusion of the Food Safety and Inspection Service (FSIS) that requiring the

implementation of a HACCP system in meat and poultry establishments was the best way to improve food safety.

A HACCP plan follows seven established principles: conduct a hazard analysis, determine the critical control points (CCPs), establish critical limits, establish monitoring procedures, establish corrective actions, establish verification procedures, and establish record-keeping and documentation procedures. These seven principles work together to establish a step-by-step guide designed to reduce the risk of food-borne pathogens.

1.1. Statement of the Problem

Previous research has focused almost exclusively on animal production. Thus, the resulting information is well-suited for animal processing facilities and other related areas, but is not necessarily applicable to animal exhibitions. There have been instances at major livestock shows where animals have been stolen, shown multiple times under different exhibitor names, or switched with a different animal prior to the exhibition. In 2007, four head of Shorthorn cattle were stolen from tie-outs during the North American International Livestock Exposition (NAILE). Other livestock exhibitions have had to disqualify animals because the animal was exhibited at a terminal show but shown again at a later date under a different owner. If livestock exhibitions are to be NAIS compliant in the future, there is a need to determine possible changes in the current livestock identification systems.

Animal identification has become an important issue within the food industry, particularly with recent disease outbreaks. In December 2007, a cow in Washington State was identified as the first animal in the United States to have bovine spongiform encephalopathy (BSE). In January 2009, peanut butter and peanut paste produced in the state of Georgia were subjected to a massive recall due to an outbreak of salmonella typhimurimum. What has not been addressed is the potential role that animal exhibitions could play, should an animal disease outbreak occur.

1.2. Purpose of Study and Research Objective

The purpose of this study was to observe different livestock exhibitions in order to evaluate the livestock identification systems currently in place at the NAILE, National Western Stock Show (NWSS), Indiana State Fair (ISF), and three Indiana county fairs (ICFs).

This study utilized a HACCP approach to identify potential opportunities for intervention to enhance compliance with the NAIS in order to achieve an ultimate goal of 48-hour traceback/traceforward in case of an animal disease occurrence during or immediately following a national livestock exhibition. Initial observation focused on the following areas:

1. Assessment of completeness and accuracy of certificates of veterinary inspection upon arrival at the exhibition.
2. Efficiency of recording last premises of record upon arrival.
3. Efficiency of methods available to forward the four data elements to a tracking database within 24-hours of arrival (premises number, animal ID number, date, event code).
4. Daily inventories on the exhibition premises.
5. Documentation of infectious and/or contagious animal disease diagnosed on the premises during the livestock exhibition.
6. Efficiency of methods available to record the same four data elements when leaving the exhibition (for forwarding to a tracking database).
7. Efficiency of recording premises of destination when leaving the exhibition.

The specific objective of the study was to evaluate the livestock identification systems currently used at the various livestock exhibitions to check-in and release beef cattle, dairy cattle, dairy goats, meat goats, sheep, and swine. Results from this USDA-funded study will assist APHIS in developing guidelines for national and international livestock expositions as they seek NAIS compliance.

1.3. Assumptions

The researcher did make assumptions in regards to this study. First, it was assumed by the researcher that the participating exhibitions did so willingly and would provide the researcher with accurate, reliable information during the evaluation period.

The second assumption made by the researcher was that the NAIS would eventually become a mandatory program. It was assumed that the exhibitions and other related parties (such as the USDA and Purdue University) were going to use the results of the study to formulate plans for livestock exhibitions within the United States to become NAIS compliant.

The final assumption made by the researcher was that not all of the staff at the exhibitions would be aware of the purpose of the evaluations. For that reason, the researcher made every effort to completely explain the information the USDA hoped to gather as well as provide details regarding the activities the researcher undertook at each exhibition.

1.4. Limitations

There were several limitations recognized in this study. First, study participants were confined to the National Western Stock Show, North American International Livestock Exposition, Indiana State Fair, and Indiana county fairs. Within each of these exhibitions, different types of livestock were entered and exhibited in a variety of ways, allowing for different types of data to be collected during each evaluation period. Each exhibition also operated over a period of several days, sometimes weeks. This caused a problem for the researcher in that it was not possible to attend every day of each exhibition. Thus, observation was confined to the schedule for the day the researcher was able to attend, as well as what the researcher was told regarding the other days. Another limitation was that the NAIS was, is, and looks to remain a voluntary program. This study was conducted with the idea that the NAIS would, at some point, become mandatory.

1.5. Definition of Terms

Animal Identification Number (AIN): The sole national numbering system for the official identification of individual animals within the United States, consisting of 15 digits: a three digit country code followed by a 12 digit national number (USDA-APHIS, 2007).

AIN Device: Official animal identification devices that have an AIN printed and/or encoded on them (USDA-APHIS, 2007).

AIN Device Manager: An entity that represents an AIN device manufacturer for the distribution of AIN devices (USDA-APHIS, 2007).

Animal Trace Processing System: Provides the information technology platform for security, electronic data transfer, and auditing processes to interact with multiple Animal Tracking Databases (ATDs) (USDA-APHIS, 2007).

Bio-Security: The rules and procedures that prevent entry of new disease agents into a herd (Nold, 2004).

Commingle: Refers to events where animals are mixed or brought together with animals from other farms, ranches, or other production systems (USDA-APHIS, 2007).

Corrective Action: Procedures followed when a deviation occurs (FDA, 1997).

Country Code: A 3-digit numeric code representing the name of a country in accordance with ISO 3166 (USDA-APHIS, 2007).

Country of Origin Labeling (COOL): Retailers must notify customers of the country of origin of muscle cut and ground meats, wild and farm-raised fish and shellfish, perishable agricultural commodities, some nuts, and ginseng (Umberger, 2004).

Critical Control Point (CCP): A step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level (FDA, 1997).

Critical Limit: A maximum and/or minimum value to which a biological, chemical, or physical parameter must be controlled at a CCP to prevent, eliminate, or reduce to an acceptable level the occurrence of a food safety hazard (FDA, 1997).

Epidemiologic: Of or related to the study of the causes, distribution, and control of disease, as well as the factors controlling the presence or absence of a disease or pathogen (USDA-APHIS, 2007).

Group/Lot Identification Number (GIN): The number used to identify a unit of animals of the same species that is managed together throughout the pre-harvest production chain. The GIN consists of a 7-character Premises Identification Number, a 6-digit representation of the date that the group or lot of animals was assembled, and 2-digits (1-99) to reflect the count of groups assembled at the same premises on the same day (USDA-APHIS, 2007).

Hazard Analysis: The process of collecting and evaluating information on hazards associated with the food under consideration to decide which are significant and must be addressed in the HACCP plan (FDA, 1997).

The "Hill": Area at the National Western Stock Show that houses cattle shown on the halter, goats, sheep, and swine.

Interstate Movement: Movement that crosses State lines, regardless of ownership, at either shipping or receiving premises (USDA-APHIS, 2007).

Intrastate Movement: Movement within a State that does not meet criteria for being interstate commerce (USDA-APHIS, 2007).

National Animal Identification System (NAIS): A voluntary program designed to help producers protect the health of their animals and their investment in the case of an animal disease event (USDA-APHIS, 2007).

National Premises Information Repository: The database maintained by APHIS that stores information from each premises Registration System (USDA-APHIS, 2007).

Non-Producer Participant: A person or entity who engages in NAIS activity in a designated role(s) where that role(s) is not associated with a specific premises. Examples: USAIN Manager, AIN Distributor, Animal Health Official, Brand Inspector Entity, and Diagnostic Laboratory (USDA-APHIS, 2007).

Official Identification Devices and Methods: Means of APHIS Administrator approved identification of an animal, or group of animals, including, but not limited to official tags, tattoos, and registered brands when accompanied by a certificate of inspection from a recognized brand authority (USDA-APHIS, 2007).

Premises: A physical location that represents a unique and describable geographic entity where activity affecting the health and/or traceability of animals may occur (USDA-APHIS, 2007).

Premises Identification Number (PIN): A permanent, unique, 7-character identification code number assigned by a State or Federal animal health authority to a premises that is, in the judgment of the State or Federal animal health authority, a geographically distinct location from other livestock production units (USDA-APHIS, 2007).

Radio Frequency Identification (RFID): An identification device that utilizes radio frequency technology: ear tags, bolus implants, and Tag attachments (transponders that work in concert with ear tags) (USDA-APHIS, 2007).

Standardized Premises Registration System: The Premises Registration System that APHIS makes available to all States and Tribes (USDA-APHIS, 2007).

Tagging Services: Authorized tagging service providers are individuals who come to the producers' premises to apply the AIN tags to the animals on behalf of the owners or persons having possession, care, or control of the animals (USDA-APHIS, 2007).

Tie-out: An outdoor area, separate from the barn that houses the animals during the day, where cattle are stalled over-night while at a livestock exposition.

Verification: Those activities, other than monitoring, that determine the validity of the HACCP plan and that the system is operating according to the plan (FDA, 1997).

The "Yards": Area at the National Western Stock Show where cattle are exhibited in groups.

CHAPTER 2. REVIEW OF LITERATURE

The purpose of the literature review was to find articles relevant to the NAIS study, specifically those utilizing a HACCP approach to livestock exhibition. Research in a university setting has been minimal in this approach, so alternative areas were also utilized in order to develop a well-rounded understanding of the literature. Research articles and reports, professional journals, magazines, electronic media, and government reports were used to complete the literature review. The review of literature focuses on the opinions of livestock producers and exhibitors in regards to awareness and intended compliance of the NAIS or similar programs, information delivery, economic implications, animal disease outbreaks and eradication programs, methods of animal identification, HACCP programs, the NAIS, and previous pilot projects and field trials.

2.1. Producer/Exhibitor/Industry Studies

Previous research has focused on producer awareness and intended compliance with the NAIS or programs like it. Researchers and Extension Educators from Pennsylvania State University completed an assessment of producer implementation of Pork Quality Assurance (PQA) good production practices (Kephart, 2008). Researchers focused on a voluntary program issued by the National Pork Producers Council (NPPC) in 1989 that outlined ten Good Production Practices (GPPs) for producers to implement on the farm. The NPPC program also became an educational method of teaching producers the important elements behind producing safe pork. Consumer and food service industry pressure led to the study, whose purpose was to measure the degree of implementation of the ten GPPs outlined in the PQA program. A survey was administered to United States swine producers in four states in order to determine the extent to which they had implemented each of the GPPs in their normal, daily operations.

Results of the Pennsylvania State study indicated that the level of compliance for physical activities required by the PQA program was about 88%. These activities include: identification systems for the animals, storage conditions for medications, maintaining a positive working relationship with the herd veterinarian, techniques for administering medication, animal care, and on-farm feed manufacturing procedures. This study strongly suggests that swine producers are aware of and are currently implementing the essential steps to producing safe pork. The study also found that only about 48% of the surveyed producers maintained adequate continuing education and documentation of production practices, with room for improvement in areas of record-keeping, production practice documentation, and continuing education.

Exhibitor compliance has also been evaluated. Researchers at Ohio State University recently published a study designed to better understand the awareness of and the likely compliance with the NAIS by beef cattle exhibitors. In 2005, youth beef cattle exhibitors were surveyed at the annual Scarlet and Gray Alpha Gamma Sigma Midwest Showdown in Ohio and at the Kentucky Beef Expo in Louisville. The two livestock exhibitions were selected because of the typically high youth exhibitor participation. The survey included an awareness question, "How aware are you of the National Animal Identification System that is being developed by the U.S. Department of Agriculture?" as well as the following hypothetical question, "Suppose the government requires you to keep records on location changes and medical history of your show cattle. How likely are you to comply with the National Animal ID System?" (Patent, Row, and Fluharty, 2006). There were five possible participant responses, ranging from 1 "very unlikely" to 5 "very likely".

Results of the Ohio State study could be interpreted as positive. Specifically, sixty percent of participants responded as "somewhat familiar" to the awareness question and the responses to the compliance question were skewed upwards, with '4' and '5' receiving 26% and 28% of the responses, for an average response of 3.4. The average response of 3.4 reflects a moderately high intended compliance rate with the NAIS. The study also noted two characteristics that predict an exhibitor's awareness level of the NAIS: size of the exhibitor's total cattle herd and the exhibitor's record-keeping behavior. Those exhibitors who have larger herds tend to exhibit a higher awareness of the NAIS, as do those who record birth weight of their cattle.

The study identified four variables that held significant predictive power: the number of states to which the participant traveled within the last year exhibiting cattle, the additional record-keeping time the participants expected from complying with the NAIS, a variable indicating the participant kept records of each animal's birth date, and the participant's NAIS awareness level (Patent et al., 2006). The first three variables had negative coefficients in the model, meaning that those survey participants who exhibited cattle in multiple states, expected more record keeping with the NAIS, and kept records on the birth dates of their cattle; would have a lower rate of expected compliance. The awareness variable had a positive coefficient, meaning that participants familiar with the NAIS were more likely to comply with the program.

The recommendation of the study was to propose that 4-H, FFA, and beef cattle associations who sponsor cattle shows integrate NAIS information into the promotional materials that were distributed for the exhibitions, as well as require NAIS compliant records as part of the record-keeping requirements to maximize the safety of the cattle herds and the food supply within the United States. Since results from the study suggest that increased awareness of the NAIS may be a way to increase intended compliance, materials that explain and break down the motivations and parts of the NAIS should be available for those Extension professionals who work with youth livestock exhibitors and their advisors, teachers, and parents. This study provided insight into the beef cattle side of livestock exhibition, but could be considered limiting in that it only reached youth exhibitors and not adults.

A 2007 Kansas State study by Breiner focused on the perceptions and attitudes of cow-calf producers when confronting emerging technologies and policy issues in the beef cattle industry. Specifically, the study looked at the opinions of these producers relative to the NAIS, its components, and NAIS implementation. Additionally, the study also looked to improve understanding of cow-calf production in its current state as it related to the NAIS and the implementation of electronic identification of cattle. Four research questions were presented in the study:

- 1) Are United States cow-calf producers willing and prepared to implement the NAIS?
- 2) What are producers concerns regarding the program?
- 3) Are producers currently using this technology, and how do these adaptation patterns relate to Rogers' Diffusion of Innovation Theory?

4) Where are producers obtaining their information? From whom and in what forms do producers receive information they apply in their operations?
(Breiner, 2007).

The survey in the study focused on large-scale cow-calf producers, defined as those with more than 100 head of cows. Participants were randomly selected from the mailing list of Beef® Magazine. Self-administered, the survey was composed of three mailings sent to participants over a 45-day period. Those who did not respond were sent a fourth mailing. The mailings included a pre-notice letter, a survey packet and cover letter, a postcard thank-you/reminder, and a replacement questionnaire with a monetary incentive. The total mailing of 972 returned 522 completed surveys. The survey focused on four key areas: sources and channels of information, technology usage, radio frequency identification (RFID), and the NAIS.

Results of the Kansas State study showed that the primary source of information for producers was veterinarians, followed by other cattle producers and farm and feed dealers. The most popular information channel was found to be cattle magazines and other cattle producers. Over 90% of participants utilized some form of animal identification system and one-third of those surveyed had obtained a premises ID number (Breiner, 2007). The study concluded that nearly half of the producers surveyed would be willing to implement the NAIS, but personal bias held them back. Producer concerns generally focused on national issues; such as protecting food safety and aiding in disease control but personal issues were also noted; including producer cost and violation of confidentiality of information. However, producers were found to be positive about their ability to adapt and reported being knowledgeable about the NAIS system. The biggest limitation to the study was that it did not focus equally on all cow-calf producers. The average beef cow herd is 40 head, so focusing on those with more than 100 head was not an accurate representation of the industry. This study provided insight into the beef cow-calf sector and also gave a fairly representative idea of how many in the industry would be willing to consider implementation of the NAIS.

2.2. Information Delivery

In 2000, researchers at the University of Illinois published a study focusing on information transfer in the Illinois swine industry, specifically how producers are informed of new technologies. For the Illinois study, a questionnaire was developed to identify the following: where swine producers obtained their information about new technologies and how aggressively they implemented those advances. Swine producers from Illinois and neighboring states were issued the questionnaire. In addition, swine veterinarians, sales managers, and sales representatives were also surveyed. In total, 300 surveys were mailed and 127 useable surveys were returned.

The first half of the survey focused on allowing the participant to categorize themselves in regards to their specific operation (small, medium, large, corporate, or other) and how many and what type of hogs were sold or housed on the farm (sows, slaughter hogs, feeder pigs; farrow to finish, finish only, seedstock, farrow only). The second half of the survey focused on determining how the producer was informed of new technologies and how they use those technologies. Questions from the second half of the survey included “how are you informed of new technologies within the pork industry”, “before implementing a new technology in your enterprise, what aspects do you consider and evaluate the most”, and “once you are aware of a new technology which could impact your operation, how do you pursue information about it” (Brashear, Hollis, and Wheeler, 2000).

Findings from the Illinois study showed that 89.7% of the study participants owned or used a computer. The majority of respondents indicated that the major source that they utilized to gather information about new technologies was a popular publication, such as National Hog Farmer. The second most popular source was feed company representatives, breed associations, etc. Finally, Cooperative Extension publications were used by 60% of those producers who identified themselves as “small, medium, or large” (Brashear et al., 2000). In terms of what communication forms were used the least, e-mail and the Internet were only utilized by 30% or less of participants. In regards to how they choose to pursue new information, the majority of individuals indicated that they first talked about the new technology with a person currently using the technology. When considering the implementation of new technology, study participants looked at profitability before any other factor. Other important considerations were labor, marketing, and waste or odor.

The results of the Illinois swine industry study demonstrated that swine producers were primarily utilizing private sector based programs as a means of gaining information over technology. In addition, it was also thought that producers were relying less and less on university specialists as an information source. This was a point of concern, as it raised the questions of whether the specialists were using an effective method of information transfer to producers. This study showed that it is absolutely necessary to make every effort to reach the people who will be using the new technologies. If producers are not reached, then the new technology cannot be taken full advantage of. This study was useful in that it demonstrated a driving force behind what may or may not end up convincing producers to utilize technologically advanced programs, such as the NAIS: profitability. Particularly in today's economic situation, profitability cannot be ignored when reaching out to producers about new ideas or implementations. This study could be considered limiting in that it only addressed one of the species that would be included in the NAIS and only those swine producers in the state of Illinois.

In 2007, Ohio State University Extension developed a program designed to assist beef cattle producers in using handheld computers for their animal record keeping. In Ohio, questions have continued to arise that focus on how the NAIS would affect not only producers operations but also what additional costs would be incurred by the producer. Beef producers have been discussing this issue in Ohio since 2001, when Country of Origin Labeling (COOL) became an issue. The program, "Handheld Data Management for Beef Cattle", was held over a 2-day period with the goal of improving cattle producers' record-keeping ability and eventually to assist with animal-tracking tasks (McCutcheon, 2007). A Palm Pilot was included in the program. There were a total of 51 participants, including 34 beef producers, nine employees of beef operations, and eight individuals from supporting businesses. Between them, these participants represented almost 8,500 cattle. The first part of the program focused on familiarizing the participants with the different aspects of the Palm Pilot device. Participants were taught how to turn the device on, how to run the different programs and enter information into them, and how to synchronize the device to a computer after information had been entered. After they became familiar with the Palm Pilot device, participants were taught how the device could be a useful tool to their operations. Finally, sessions were also presented to the participants that focused on the current proposals for the NAIS at that

time and on a vertically coordinated, Ohio-based program for raising and marketing cattle.

At the conclusion of the program, end-of-program evaluations were administered, which indicated that 99% of the participants would be willing to use a handheld computer for record-keeping and/or data management on their operation. A follow-up survey was mailed to participants approximately one year after the program. The follow-up survey had a response rate of 70%. At the time of the follow-up survey, 83% of the respondents still found the training to be either valuable or very valuable. The Palm Pilot or handheld device was found to be useful or very useful by 63% of participants. Equally, the same percentage found the handheld device to be easy or very easy to use. The handheld device was found to be used daily or weekly by 68% of participants. Only 57% of the participants indicated that the handheld device had made their record keeping/data management tasks easier, compared with the 99% from the end-of-program evaluations (McCutcheon, 2007). A consistent response between the two time periods was participants' indications that more time should be spent on actual record keeping programs.

The Ohio State Extension program and related evaluation/survey was useful in that that it identified a very important part of the technology aspect of the NAIS. The NAIS is considered to be "technology neutral", but the NAIS also has an identified goal of 48-hour traceback. McCutcheon points out that this would imply that livestock producers will have to move toward an electronic record keeping system, thus the importance of a computer or other device for producers. This study effectively demonstrated that helping producers adapt to existing technology should be a very real part of producer education about the NAIS.

A 2009 University of Tennessee study focused on identifying the use of animal/herd health information sources used by livestock producers and the effects of farm and farmer demographic characteristics on the use of these sources. The Tennessee study recognized that animal/herd health is an important issue, not just from a business sense but also from an animal welfare and public health standpoint. It was the thought of the researchers that understanding how farm and farmer demographic characteristics influenced the use of information sources would provide insights into the client base for animal/herd health information. The hypothesis behind the Tennessee study was that the "probability of a farmer using a given type of animal/herd health

information source is influenced by farm and farmer demographic characteristics” (Jensen, English, and Menard, 2009). The characteristics noted in the study included farm income, full time farming vs. non full-time, type of livestock operations on the farm, number of livestock enterprises, age and education level of the farmer, and rurality of the location as measured by county population.

In order to collect the necessary information, a survey was mailed to Tennessee farmers with livestock in late 2006. The survey was mailed out to a random sample of 10,000 farms with cattle, horses, and other livestock by the Tennessee Agricultural Statistics Service. In total, 1,737 farmers responded to all questions needed for the analysis. Results of the study indicated that the most commonly used source of animal/herd health information was the local veterinarian. Media sources (i.e. magazines) and the Extension Service followed as the next most common. In addition one in four farmers used information from animal health companies and one in 14 used the College of Veterinary Medicine. Nineteen percent used the Internet as an information source and over 60% of the farmers surveyed used more than one information source (Jensen et al., 2009).

The Tennessee study concluded that farm and farm characteristics do have an influence on the use of information sources. It was also concluded that the characteristics influencing information sources varied across the information source used. Additional results of the study indicated that farmers with lower farm incomes are less likely to utilize media sources and animal health products companies as information sources. The lower income farmers are also less likely to utilize multiple sources of information. It was also shown that those in a more rural location were more likely to utilize the Extension Service. In relation to older farmers, it was concluded that these individuals are less likely to use most of the information sources included in the study. It was the thought of the researchers that this may be a reflection of the many years of expertise the farmer has went through. Younger farmers were found to be more likely to use a variety of information sources as well as those who were more highly educated. These two factors together suggested that the more highly educated and younger individuals were going to be those who utilized multiple information sources. Finally, it was also found that diversification of the farm into multiple enterprises appeared to have a positive influence on the use of information from multiple sources, indicating that as

farmers managed more types of livestock they would be more willing to turn to multiple information sources.

In order to be effective and reach its target audience(s), it would be beneficial for the NAIS to utilize a variety of informational sources, as demonstrated through the Tennessee study. From the implication of the Tennessee study, one could surmise that convincing older producers to utilize NAIS would be the most difficult segment to reach, because they are more likely to only utilize one information source. This makes it not only harder to reach them but also harder to secure participation. On the other hand, younger and more educated producers will likely pick up information about the NAIS from a variety of sources and participate accordingly. A limitation of Jensen's study was that it only addressed farmers in Tennessee. Therefore, it cannot be said that producers of similar age demographics in different parts of the country would react in a similar way.

Extension personnel in the Northwest Florida Extension District conducted a study in 2002 that examined beef cattle producers' preferences for sources and channels of information. The findings were used to guide educational programming efforts in order to better serve the Extension clientele. A survey was administered, the purpose of which was to develop a description of the adoption rate of recommended management practices by Extension clientele and the perceived research and educational needs of these beef cattle producers in the panhandle of Northwest Florida. The survey administered in the Florida Extension study reached a stratified random sample of beef cattle producers in 12 Northwest Florida counties as selected from the mailing lists of the Extension offices. With an expectation of obtaining at least 400 survey responses, 842 producers were selected for the self-administered mail survey. As predicted, 411 surveys were returned. However, the mailing lists were not coded to identify between producers and non-producers. Thus, only 264 of the returned surveys were from individuals who identified themselves as the owner or manager of a beef cattle operation in the year 2002.

The study found that the preferred source of information by beef cattle producers was other cattle producers, followed by County Extension Agent, veterinarians, local farm and feed supply dealers, university specialists, close relative who also produced cattle, regional company sales representatives, NRCS agents, agriculture teachers, and private consultants (Vergot, Israel, and Mayo, 2005). The preferred channel of information by cattle producers was a County Extension newsletter, followed by cattle or

farm magazines, Extension bulletins, observations of other ranchers, newspapers, one on one consultations with county agents, beef cattle field days, farm demonstrations, research center demos, television, cattlemen's tours, radio shows, the Northwest Florida Beef Conference, university Internet websites, County Extension Internet websites, and commercial Internet websites.

In the Florida study, County Extension Agents were found to be a fairly high source of information with individual one on one consultations being the best method of channeling information to the top users of Extension Agent information. Results were also found to be reflective of the "typical" Extension client, one who relied on a variety of information channels to learn about, test, and confirm information about operating a cattle ranch (Vergot et al., 2005). Based on these and related findings of the study, it was recommended that Northwest Florida livestock Extension agents should consider the following: information delivery to producers in the form of individual consultations (i.e. farm visits, telephone, office visits), providing of training in cooperation with other sources of information considered important by producers, use of multiple channels to approach the same topic, updating of information on all of those channels at the same time, use of technologies/practices that yield highly visible results, and use of mass media to target relevant topics in order to create awareness for Extension clientele who do not utilize the County Extension agent.

Relating the Florida study to the NAIS program is simple. Just as the choice of delivery methods could have an important influence on the impact of Extension programs, the same could be said for the NAIS. It would again be beneficial to match the information sources and channels used by the USDA to promote or encourage participation in the NAIS to those preferred segments of the target audience. A limitation of the Florida study was that it only looked at beef cattle producers. Particularly in relation to the NAIS, further research could be conducted to examine if those producers with different species would have similar uses of channels and information sources.

2.3. Economic Implications

The economic implications of the NAIS and other forms of animal identification have been previously examined by several researchers and organizations. A Texas

A&M University paper presented at the joint American agricultural Economics, Western Agricultural Economics, and Canadian Agricultural Economics Associations Annual Meeting examined the benefits of implementing an animal tracking system to cattle producers with a simulated scenario of an infectious animal disease outbreak, foot-and-mouth disease (FMD). One scenario featured animal tracking and one scenario did not. Elbakidze discussed potential factors that would influence the economic efficiency of a program such as the NAIS. He utilized and incorporated the Reed-Frost functional form for infectious animal disease spread to reach his conclusions of some of the economic losses that could possibly be avoided by having an animal tracking system in place.

Elbakidze's equations were designed to minimize expected losses that cattle producers would incur from a potential animal disease outbreak. These expected costs would include lost production, suppressed demand in the cattle industry, lost export markets, indirect losses in related industries, and the costs of preventing and responding to an outbreak. One equation demonstrated expected losses in the cattle production sector associated with an outbreak of a highly infectious disease, in this case FMD. The second equation was the Reed-Frost formula for infectious disease spread, which gave a projection of daily infections, given the total population number and contact rates between subjects. The third equation looked at herd proportion loss under a certain response level, which implied that as the number of response actions (i.e. slaughtering) increased, then damages from an FMD outbreak would decrease (Elbakidze, 2007). It was noted that these response actions should be moderate, as excessive response could actually increase costs, such as with the slaughter of herds not exposed to FMD. Excessive response could potentially result in increased overall damage in terms of the actual outbreak and disease mitigation.

After empirical analyses, Elbakidze was able to demonstrate that the speed of animal tracking will have a great effect on the impact of the outbreak. This confirms the need for a 48-hour traceback, as desired with the NAIS. Timely information access means timely response in the fight to stop the spread of an infectious animal disease. However, Elbakidze's paper noted that the impact of losses avoided due to the implementation of the NAIS (or similar program) would be dependent on factors such as contact rates and response action effectiveness. Elbakidze's paper could be considered limiting in that it operated from two main assumptions. First, in developing the equations it was assumed that the cattle herds representing the population were homogenous in

the following ways: geographic location, composition, size, and operation type. No data was found for spatial disease spread across heterogeneous herds. Second, contact rate was modeled after similar studies and did not consider actual, appropriate rates for the region and alternative modes of disease spread (air, wildlife, etc.). Instead, sensitivity analysis was performed on the benefits of investing in an animal tracking system in regards to changes in inter-herd contact rates, effectiveness of animal tracking and response actions, and the likelihood of an infectious animal disease outbreak. This determined that the higher the contact rates, the less effective the tracking system. It was also determined that the more likely the disease outbreak, the more economically sound it would be to implement the NAIS.

Another Elbakidze paper examined the benefits and costs of a NAIS from both producer and industry perspectives. The objective of the article was to hypothetically identify factors that influence the incentive of a cattle producer to participate and cooperate in an animal tracing system and also to look at the regional industry-wide benefits of participation. Elbakidze noted that current strategy in response to an infectious animal disease outbreak included timely detection, isolation, and destruction of infected and high risk herds and animals and relied on quarantine and depopulation of infected herds and contact premises that had been identified based on epidemiological evidence (recognition and reporting of clinical signs by producer, animal care taker, veterinarian, meat inspector). According to Elbakidze, there were two major problems to this approach. One, disease detection that is based on observation of visual indicators implied that the disease may have been present and spreading prior to the presence of visual indicators. Two, clinical signs of certain infectious animal diseases, such as FMD, are hard to differentiate from some other animal diseases.

Livestock producers were identified as having four main motives for utilizing animal identification and tracking systems. The first identified motive was that animal tracing could prevent theft or animal loss. It was noted that this would be more relevant on operations where the cattle of several different parties was co-mingled. The second motive was identified as allowing for identification tracking of both healthy and unhealthy animals. It was thought that this would enhance efficiency of control and eradication of livestock diseases, in which the information would be vital in order to implement animal disease response strategies and in setting up quarantine zones. The third motive was that traceability systems could make it possible to observe different credibility attributes,

such as selling an animal for a higher price if it could be proven that it had received proper vaccinations, medical care, feeding procedures, etc. The fourth identified motive was that enhanced record keeping would make it easier to identify animals with superior production genetics. Elbakidze also noted two previously identified major detractors to an animal tracking system from a producer standpoint: incurring additional costs and potential liability resulting from the type of information available through the NAIS. It was assumed that for a producer, the goal was to maximize net returns minus expected losses associated with animal disease introduction and mitigation costs (Elbakidze, 2007).

From an industry perspective, Elbakidze found that the decision to invest in an animal tracking system would depend on various factors, such as likelihood of disease introduction, disease spread rate, effectiveness of the program, and alternative mitigation options and corresponding costs. In the case of the cattle industry, benefits of investing in the NAIS were looked at from a standpoint of minimizing potential losses to the industry as a whole. Total costs that would be associated with an animal disease outbreak were identified as direct financial losses due to lost production and suppressed demand in the cattle industry, lost export markets, indirect losses in related industries, and the costs of not only preventing but also responding to an outbreak. Thus, Elbakidze addressed the issue by comparing the benefits of a mitigation program like the NAIS to the implementation costs, but with a different approach and use of additional equations compared to the previous paper. Sensitivity analyses were again used on the model and equations in regards to the effects of herd contact rates, effectiveness of response actions, and likelihood of disease introduction on expected losses caused by the introduction of an infectious animal disease and on the benefits of investing in an animal tracking system.

The Elbakidze article indicated that the following factors are likely to have a positive influence on producers considering adaptation of the NAIS: likelihood of disease outbreaks, value of assets including capital and income, likelihood of being infected under no program participation, and magnitude of losses brought by possible disease outbreak. In contrast, the following factors are likely to have negative connotations: magnitude of losses brought by disease outbreak even under adoption of the NAIS, costs of adopting NAIS, likelihood and magnitude of losses due to liability issue made possible by adoption of the NAIS, and likelihood of being infected even under adoption

of NAIS (Elbakidze , 2007). It was suggested in the article that it would be beneficial to use these factors as educational tools to convince producers to invest in the NAIS. It was cautioned in the article that the results of the analysis performed by Elbakidze should be used carefully, as they were meant to be more of an illustrative tool instead of a predicting tool for actual events. This was a limitation of the article, as well as again not having data for spatial disease spread across heterogeneous herds, consideration of actual contact rates, as well as not giving consideration to the effects of lost consumer demand and lost trade.

In 2004, Curtis, a member of the faculty at the University of Nevada at Reno, published a fact sheet stating that a potential economic benefit of the NAIS was the verification of quality characteristics that could result in possible price premiums for beef producers. Curtis began by focusing on the fact that traceability systems have mostly been used to help the food industry. A program such as the NAIS would facilitate traceback in the event of an infectious animal disease outbreak, in turn reducing recalls that could be costly to the industry by minimizing liability and negative publicity.

Curtis reviewed examples of recent problematic issues in the food industry, beginning with StarLink. StarLink was identified as a genetically-modified corn product but it had not been approved for human consumption. The United States government denied approval because StarLink was found to contain Cry9C, a possible human allergen. However, an environmental activist group proved that StarLink had still been introduced in the human food supply despite the government inspections designed to prevent it. As a result of the StarLink introduction, a recall was initiated that cost Aventis, inventor of StarLink, close to \$500 million (Curtis, 2004). Curtis also discussed the first case of BSE in the United States, announced by the USDA in December of 2003. The BSE case resulted in an investigation that spanned two months but only resulted in the traceback of 28 of the 80 cows that entered the country from Canada with the infected cow. This incident closes several export markets for the United States that had previously been roughly 10% of U.S. beef production (Curtis, 2004). When BSE was discovered in Europe, prior to the U.S. outbreak, it caused a virtual collapse of the European beef market and also completely destroyed consumer confidence in government assurances that beef products were safe to eat, despite evidence that emerged tying the consumption of BSE-tainted beef to the human disease new Variant Creutzfeldt-Jakob Disease.

The Curtis article also examined the impact a program, such as the NAIS, might have on producers' bottom line. The significant costs of implementing any animal tracing program have made producers and other industry members wonder if any of those costs could be recouped. At the same time, consumers still want assurances from the industry about any implemented programs. According to Curtis, an "efficient food marketing system produces food products with the characteristics consumers want at a price consumers are willing to pay" (Curtis, 2004). It would then follow that when consumers are satisfied with the characteristics of the food they consume, can not only afford the food but are also willing to pay for it, then the produce is perceived as having a value or quality characteristic that the consumer is willing to pay for.

In the beef industry, some of these quality characteristics were shown to be process-oriented, such as the use of antibiotics, certain feeds, and environmental responsibility. Others, such as the fat content of the animal and amount of marbling, were shown to be content-oriented. The issue that consumers were found to have regarding these different characteristics was that they cannot necessarily be found by physical inspection, yet could still be present in the product. This created uncertainty in the mind of the consumer. According to Curtis, previous research by Grunert and McCarthy has shown that consumers found it hard to form an opinion on meat quality through physical inspection and that the attitude of the consumer toward beef products was influenced significantly by health and safety evaluations (Curtis, 2004). Consumers are justly concerned about meat quality, origin, and the path the product takes from pasture to plate. According to the Curtis article, traceability systems like the NAIS and the subsequent programs that may evolve from it would provide consumers with lower levels of concern in regards to those quality characteristics, resulting in an increased level of utility and possibly resulting in a consumer that is willing to pay a higher premium at the supermarket. Coming full circle, this would have the potential to improve market prices and market access. Curtis cited a 2003 study by Roosen et al. that found that the most important quality characteristic for consumers was the origin of their beef as it related to the safety and/or freshness of the product (Roosen et al, 2003). Curtis also noted that according to a 2003 study by Bernues et al., price was not considered by the consumer to be a good quality indicator, thus the reason for finding and utilizing alternative quality measures.

In addition to the quality characteristics that are perused by consumers, restaurants, particularly those in the fast food industry, have also been found to desire meat that comes from processors who take steps to ensure higher safety standards. These steps included guaranteed sales through marketing contracts and premium pricing. Processors also were found to want cattle producers who could provide evident of safety procedures in production through animal identification and record-keeping (Curtis, 2004). In addition, the NAIS or programs like it would also be used for verification of natural or organic methods, which are another rising consumer quality issue. Curtis then identified three companies that already market these products and the verification process they follow.

The first company identified in the Curtis article was Maverick Ranch, which marketed both organic and natural beef products. Maverick Ranch utilized Guaranteed Analytical Labs to test all of their carcasses for antibiotics, growth hormone, and pesticide residue. The carcasses were also all subject to a Sanova food safety rinse. Sanova was explained as a USDA-certified organic citrus rinse that eliminates 99% of the pathogenic bacteria on the carcass. The second company, Coleman Natural Meats, used a USDA-approved “natural beef” label. As a result of using the label, the USDA adhered to very strict label controls and also conducted audits that verified the accuracy and completeness of all Coleman records. The third program, Farmland Industries, Inc. was the first farmer-owned pork company approved to implement the USDA-processed verified logo. According to Curtis, Farmland provided guidelines to producers about genetics, animal nutrition, animal health and welfare, on-farm food safety measures, and environmental resource protection (Curtis, 2004). In cooperation with Farmland, producers had to agree to restrict antibiotic and sulfa drugs, submit to environmental audits, and utilize good animal welfare practices. The verification system used at Farmland allowed for 100% traceability of all pork products in the Farmland system.

In addition to the previous three companies, Curtis also provided details about Ranchers Renaissance, a cooperative of ranchers, stockers, feeders, processors, and retailers that markets its beef products under a variety of names. The cooperative had been using electronic animal identification since 1997 and a company representative stated that the use of electronic animal identification to track animal performance had increased revenues by \$2-\$3 per hundred weight on each calf (Curtis, 2004). The insights provided by the Curtis factsheet are valuable in that they demonstrated both a

consumer and producer viewpoint, as well as illustrating why implementing a program like the NAIS would be valuable to the producer in order to make the product more appealing to the consumer, which would then increase profit, which would somewhat subsidize the implementation costs.

In 2004, a faculty member at Utah State University published a factsheet, similar to Curtis' that identified three categories in which beef producers could obtain the potential benefits of the NAIS. Food safety, bioterrorism, and the potential benefits from increased production information that could be facilitated by animal identification were the three identified categories (Ward, 2004). Ward briefly reviewed the basic characteristics of an animal tracing program, such as 48-hour traceback of infected animals and an allowance for both targeting and isolation of products produced from an infected animal. The article also covered the implied benefits to producers, such as seeing an increase in consumer confidence and smaller losses that would result from a decrease in the loss of exports. According to the Ward factsheet, if a system, such as the NAIS, was not only in place but could also quickly identify infected animals, other countries would be slower to close their border to U.S. products and quicker to open them. Exports were noted as being a relatively small portion of total beef production, at 8-10%, but a loss in export demand was noted as still having a significant impact on domestic prices. According to figures suggested in the article, if exports were to be shut down, the immediate effect would be a 15% drop in the price of beef, thus lowering wholesale and retail prices for beef (Ward, 2004).

The third benefit identified by Ward was increased production information flowing along the marketing channel. The marketing channel was defined as consisting of "all stages (owners) that a product passes through getting from the earliest producer (cow-calf operator) to the final consumer" (Ward, 2004). The factsheet noted that the less a consumer knows about a product, the higher the chance that one product will become as good as another, thus making low price the main factor that influences consumer buying decisions. If the implementation of the NAIS or other animal tracing systems would allow for additional information to reach the consumer via a label or other identifying factor, then those products could be priced above other similar products.

The Ward factsheet provided valuable economic insights to both producers and industry workers. For example, according to Ward, with the use of the NAIS, there would be potential for productivity information, such as carcass data, to flow from the packer to

the feedlot to the rancher and vice-versa (Ward, 2004). In addition, the article also identified the potential for price premiums for the herds with cattle that are shown to perform above average. An animal identification or tracing system that could perform these tasks successfully would then have the potential to provide not only valuable information to those involved in the production chain, but also to serve as a key part of the market access process. An additional economic benefit of implementing a system like the NAIS was the ability to increase the ease in which products requiring verified information could be verified via third party audits. Information could either follow the animal electronically through the production chain or could also be available from the producer. Ward concluded that each individual producer needed to evaluate the potential benefits that the NAIS would give, such as receiving the information and being able to provide it to others, against the cost of implementing the system. According to Ward, not only would the NAIS assist in decreasing the market risk to the beef industry from threats like bioterrorism and food safety, the resulting increased availability of production information would, in the long run, work to increase overall herd quality and generate premium prices for the producer (Ward, 2004).

In a 2007 study, researchers at Kansas State University looked at the value animal traceability systems would have in the management of a food-and-mouth disease outbreak in southwest Kansas. The goal of the study was to quantify and evaluate the economic impact different levels of an animal traceability system would have, given the occurrence of a hypothetical disease outbreak that posed a threat to the competitiveness of U.S. livestock systems. Using an epidemiological disease spread model, researchers evaluated the impact of the disease then used the information obtained from the model with an economic model in order to determine the welfare changes to both producers and consumers.

Schroeder and Pendell included three scenarios, the introduction of FMD at a cow-calf operation, a medium-sized feedlot, and at five large feedlots simultaneously. The study used the stochastic simulation North American Animal Disease Spread Model (NAADSM) as the epidemiological disease spread model. The NAADSM was used to simulate temporal and spatial spread of FMD at the herd level, and incorporated both epidemiologic and economic models. The model output was then linked to an economic model that tracked various costs. The NAADSM allowed for three FMD contact simulations: direct, indirect, and airborne spread. The NAADSM model also allowed for

three ways to control the outbreak: vaccination, movement restriction, and destruction and also calculated direct costs that would be associated with an outbreak of FMD. In this case, destruction and vaccination costs were formulated by the model.

Schroeder and Pendell noted that the NAADSM was not without limitations. There were two key assumptions made that could lead to underestimated epidemiological results. First, the model assumed all animal traceback would occur within 24 hours of detections. The 24-hour time period was much shorter than the proposed 48-hour traceback that was outlined by the NAIS. Over a 48-hour period, it was assumed that herd movements could increase and potentially spread to more herds. In contrast, it was thought that the tracking of an infected animal with the NAIS in place could theoretically fit into the assumed 24-hour time period. Second, herd tracing in the model only went forward one level. What this meant to the study was that herds that were recipients of direct or indirect contact from an infected or detected herd would be identified. However, identified contacts that lead to the infection of herds that were already infected or detected were not traced. This limitation could result in conservative epidemiological results (Schroeder, 2007). Additional limitations were also identified. First, herd information outside of the 14 studied counties was not included, which limited the spread of FMD and potentially lowered the number of infected animals and as a result, also lowered the welfare changes that would have been made. Second, although it had been shown that certain wildlife could contribute to the spread of FMD, wildlife movement was not included in the study.

Schroeder and Pendell also performed an economic analysis. The study used an equilibrium displacement model (EDM) to calculate changes in consumer and producer surplus measures for alternate marketing levels. The EDM provided a linear approximation to unknown supply and demand functions (Schroeder, 2007). The structural model developed supply and demand equations that were then used to provide horizontal and vertical linkages between the marketing levels of retail, wholesale, and slaughter. Four marketing levels were included for beef, three for swine, and two for poultry. According to Schroeder & Pendell, it was necessary to acknowledge the possible existence of market power and how that power could affect cash prices. The structural model used in the study assumed price-taking behavior. An additional limitation was the assumption that the law of one price (LOP) concept was present for market hogs, fed and feeder cattle, and to allow for the analysis of the regional

supply/demand relationships to be conducted as if there was a single-market. The LOP concept allowed that if regional prices were to be adjusted for transfer costs, then they should be identical. With the passage of time then, prices should increase and decrease together (Schroeder, 2007).

The data used by Schroeder was obtained from various sources. The Kansas Department of Health and Environment provided facilities and the capacity for the facilities for cattle feedlots, dairies, and swine operations. The data was obtained through permits and certificates, such as active certificates of compliance and water pollution control permits for confined animal feeding operations through April of 2006 (Schroeder, 2007). Annual data was used to estimate the elasticities of the Kansas slaughter and feeder cattle supply from 1970-2005. Price data was deflated by the Consumer Price Index and included the following: slaughter and feeder cattle, by-product, utility cows, retail beef price, marketing costs, corn, hay, and prime interest rate. The Livestock Marketings Information Center, the USDA's *Red Meat Yearbook* also served as information sources, and various other USDA reports also served as information sources.

Results of the Schroeder study were presented in two parts. The first results section contained the epidemiological disease spread model results and the second presented findings from the economic analysis. According to the results of the study, as the level of tracing and surveillance increased from having no animal identification to having a back tag, paper trail, and brucellosis calf-hood vaccination ear tag, the number of animals destroyed in response to a FMD outbreak decreased (Schroeder, 2007). Further analysis demonstrated that most of the immediate impact would be focused in the southwest region of Kansas. However, there would be implications for the rest of the state because of movements into and out of feedlots. In addition, Schroder also found that when demand for beef remained at a constant level, producers experienced a decrease in welfare ranging anywhere from \$226 million for low-level identification to \$96 million for high-level animal identification. An outbreak of FMD would mean increased costs at the different marketing segments as well as a supply decrease of wholesale beef, fed cattle, feeder cattle, wholesale pork, and market hogs. The overall results of the study pointed to a trend where as the level of animal identification increased, welfare loss for producers and consumers decreased.

The Kansas State study was valuable because of demonstrated the ability to quantify the impact alternative levels of animal traceability would have in the event of a regional FMD outbreak. In addition, Schroeder presented valuable insights for the different groups that might hold a stake in the NAIS, such as policy makers, government programs, producer, and other researchers. The evidence contained in the study demonstrated the importance of having alternate animal surveillance systems. According to Schroeder, other researchers could use the methodology presented in the study that linked an epidemiological disease spread model with an EDM for future research projects focusing on alternative scenarios (Schroder, 2007).

A 2007 study by Bolte examined the benefits, costs, and perceptions of the use of electronic animal identification systems at livestock auction markets. These characteristics were then analyzed in order to determine how they related to a livestock market operator's opinions and knowledge of the NAIS as well as the adoption of RFID reading equipment. Data was collected from a national survey of livestock auctions, interviews, and auction market transaction data. In addition, Bolte estimated the investment in RFID tagging services and reading equipment by livestock markets as well as potential price premiums associated with RFID tagged and preconditioned cattle. Data for the estimates was collected from a national survey of livestock auction markets and cattle transaction data from three livestock markets in Kansas.

The survey used in the Bolte study was developed by researchers at Kansas State University, in cooperation with the Livestock Marketing Association (LMA). The LMA and the National Livestock Producers Association (NLPA) mailed the survey instrument to their livestock auction market member and non-member lists, totaling 1,096 and 60 surveys respectively. In addition to the mailing lists, 10 livestock auction markets that were participating in a separate Kansas pilot study also completed the survey directly via the University. During the time period that the surveys were in the mail, the USDA announced that the NAIS would continue to remain voluntary. Bolte noted that this announcement may have had negative effects on the survey response rate and could have also influenced how different questions were interpreted and answered by participants. Overall, 189 surveys were completed, for a 16% response rate (Bolte, 2007).

The first part of the Bolte survey focused on participants' knowledge, concerns, and views concerning the NAIS. The following statements were included:

- a) knowledge of the NAIS program standards
- b) understanding of what an auction market facility needed to do to comply with the NAIS
- c) understanding of costs necessary to adopt the NAIS within a facility
- d) views of the NAIS
- e) concerns of sale speed being adversely impacted by the NAIS

Statements (a), (b), and (c) were ranked from 1 to 9. A response of 1 indicated no knowledge or understanding and a response of 9 indicated complete knowledge or understanding. Statement (d) was ranked from 1 to 3, where 1 indicated a threat, 2 indicated neither threat nor opportunity, and 3 indicated opportunity. Finally, statement (e) was ranked from 1 to 5, where 1 indicated least concern and 5 indicated the most concern (Bolte, 2007).

The perception section of the Bolte study returned the following numbers. Fifty-eight percent of the livestock market respondents valued their knowledge of the NAIS program standards at 6 or higher, which indicated a moderate level of understanding. However, 42% also indicated an intermediate or less understanding of the NAIS. In addition, livestock market operators were found to have moderate levels of understanding of what needed to be done to adopt the NAIS at their own facilities as well as what costs they would incur. A moderate level of understanding indicated that overall, most livestock market operators did not have a full understanding of that they would need to do to adopt the NAIS or the costs they would incur. The Bolte study also found that approximately half of the respondents viewed the NAIS as a threat to their business. Twenty percent viewed it as an opportunity to their business, and 30% did not have an opinion either way. Further results of the Bolte study indicated that the livestock markets that sold more livestock annually than some of the smaller markets were found to have a greater level of understanding of how to adopt the NAIS practices.

Results of the perceptions section of the Bolte study indicated that those livestock market operators who were currently using or planning to implement RFID systems at their facility were likely to have higher knowledge about the NAIS program standards, how to adopt NAIS practices, and the potential costs associated with NAIS adoption. It was also found that the facilities who sold a higher annual volume of livestock would exhibit the same tendencies when compared to smaller markets. Regarding those market managers who were concerned about sale speed being

negatively affected, it was found that the impact on speed of sale in the markets that had already adopted RFID systems was generally less than the perceived impact on sale speed of those that had not adopted RFID systems.

The costs of investing in RFID and tagging services were also analyzed. Respondents who indicated tagging services would be provided by the market, should the NAIS be fully implemented, were then asked to provide an estimate of the required investment, annual expenses, and expected use of the service. The average annual amount that livestock markets expected to spend on operating expenses was \$28,138. The average amount of investment was \$43,651. Many of the livestock markets reported expecting that investment in the tagging system to be under \$10 per head. Eighty-nine percent of market respondents were found to have installed an RFID system for research purposes. Forty-one percent installed the system to provide an added service for customers and 44% installed the system in anticipation of future NAIS regulations. Additional reasons for installation were identified as participation in a grant where portions of the system were paid for by an outside source, to increase the value of cattle, or because of mandatory animal identification programs in the state of origin.

Economic analysis in the Bolte study annualized the average total costs of offering RFID tagging services and installing RFID systems at livestock markets. For the markets that had previously adopted RFID systems, the average cost of total RFID investments was found to be \$12,965. The average cost of modifying a system in preparation for an RFID system was found to be \$2,353.46. Computer upgrades were noted to include new computers, new software, and software upgrades, for an average cost of \$5,505.46. The average cost of running RFID systems was identified as \$3,263.40 annually. For each 1,000 head increase in cattle sold annually, the total investment for the livestock market increased by approximately \$137.00. It then follows that the larger markets would have a lower RFID system investment per head when compared to smaller markets (Bolte, 2007). However, it was found that the smaller markets could still compete in terms of cost with the larger markets if the RFID system was used intensively.

The benefits section of the Bolte study was evaluated based on a hedonic price model. The model was used to estimate the price differential associated with RFID tagged and preconditioned calves. The calves came from markets that had different preconditioning programs. Market 1 followed the Livestock Marketing Association's

vaccinated and certified program. Market 2 followed the USDA Quality Systems Assessment. Market 3 followed the BoviTrax program. The results of the benefits section showed that statistically and economic significant premiums could be associated with RFID-tagged, preconditioned feeder cattle at one out of three Kansas livestock markets. These price premiums, along with the prospect of a potentially larger customer bases were identified as benefits that livestock markets may receive if RFID systems were provided to customers.

The Bolte study was useful for a variety of reasons. First, results from the study effectively demonstrated that if the livestock market operators fail to understand the NAIS or other animal identification systems, then the information about those programs could be misconstrued. Therefore, it is important to design programs that address these issues as well as other concerns operators may have. The study also demonstrated that more information about the NAIS is needed by livestock market operators in order to increase their knowledge level about the program's standards, costs, and adoption needs. The study also demonstrated several benefits that could be associated with the offering of RFID systems and services, such as increasing the number of buyers and sellers due to the increased offer of services or premiums associated with RFID cattle. Some limitations were also present in the study. Bolte noted that the data set was limited. It was also noted that a higher response rate to the national survey could have been beneficial. Finally, future research was needed that focused on a benefit-cost analysis of electronic animal identification in livestock auction markets. A follow-up study to Bolte was also noted as being possibly useful to identify changes in knowledge, concerns, perceptions, and adoption rates as more educational information became available and policy changes were implemented.

2.4. Animal Disease Outbreaks and Eradication Programs

A 2004 University of Nebraska-Lincoln (UNL) Extension publication focused on preventing the spread of animal diseases at youth livestock shows through bio-security. The publication identified several key ways bio-security could impact or affect youth livestock exhibitions. Reason number one identified the potential economic impact. Exhibitors may come from premises that house animals in addition to their show

animals, they may live near farms with livestock, or they may come from a family that depends on income from livestock. Thus, animals comingling at a show and then returning to the farm have the potential to be a source of disease and resulting economic loss, not just for exhibitors, but also for neighboring families. The second reason bio-security could affect youth livestock exhibitions is through zoonotic diseases, defined in the article as diseases that “can affect both animals and people” (Nold, Smith, and Brumm, 2004). These diseases can have potentially harmful effects on human health. The final reason bio-security was identified as being important is because youth exhibitors have an obligation to be “good citizens” of the livestock industry. For example, the article pointed out that bringing diseased animals to a livestock exhibition is not “good citizenship” and could result in a disease outbreak that should have been prevented (Nold et al., 2004).

The UNL publication also outlined three steps exhibitors could take to apply bio-security practices. Step one was to not introduce new pathogens, step two was to not allow the transmission of pathogens, and step three was to utilize vaccinations (Nold et al., 2004). These steps also include quarantining animals that have been to an exhibition; cleaning, disinfecting, and drying items that have been exposed to different animal sources, and working with a veterinarian to develop a vaccination program. The article also noted specific diseases exhibitors and producers should be aware of: Porcine Reproductive and Respiratory Syndrome (PRRS), transmissible gastroenteritis (TGE), mycoplasma pneumonia, pseudorabies (PRV), erysipelas, avian influenza, exotic Newcastle disease, shipping fever, Salmonella, ringworm, club lamb fungus, contagious ecthyma (sore mouth), and scrapie.

The most beneficial part of the UNL publication was the outline of how to begin a bio-security plan. Exhibitors and their families should have a basic understanding of how to prevent the spread of disease. The outline provided guidelines for families to follow before, during, and after bringing animals home from a show. These steps included: not exhibiting animals with clinical signs of contagious diseases, selling market animals prior to leaving an exhibition, supporting and enforcing all animal health regulations, and identifying a planned procedure for cleaning and disinfecting transport vehicles and the livestock equipment taken to animal exhibitions (Nold et al., 2004).

The 2003 Agriculture Outlook Forum featured a presentation by John F. Wiemers, the National Animal Identification Coordinator of Veterinary Services, entitled

“Animal Identification and Traceability: Protecting the National Herd”. According to Wiemers, national animal identification requires industry and government cooperation, an emphasis on information flow and traceability instead of just animal numbering, data that is transparent to producers and other stakeholders, and the ability to keep private production data private and separate from information that would be required for regulatory animal health programs (Wiemers, 2003). Wiemers went on to identify reasons for national animal identification, the immediate needs of a national identification program, the challenges behind a national identification program, and the government’s approach to such a program.

Wiemers identified the following reasons for why we need a national animal identification strategy: 1) a swift response to national bio-security threats, 2) a swift response to a foreign animal disease outbreak, 3) continuation of trade, 4) eradication of diseases, 5) control of diseases, and 6) the continued avoidance of an animal identification crisis (Wiemers, 2003). Wiemers also identified immediate needs of such a strategy, including: a uniform premises identification system, a nationally recognized numbering system for individual animals and groups of animals, and the use of standard identification methods and devices for official use. Next, Wiemers covered the challenges behind a successful national animal identification plan. These challenges include: tradition, cost, data issues, and producer acceptance. According to Wiemers, State and Federal Departments of Agriculture have become comfortable with and reliant on traditional disease eradication programs, making the push to change difficult. The cost of the program was also identified as a challenge, since participants frequently ask how much, who will pay, who will receive the benefits, etc. As for data concerns, reliability and accuracy were identified as key components of a quality information system. Privacy was also identified as a concern. The system must not be complicated for producers to use. Finally, Wiemers presented four guiding principles the government and industry partners need to focus on: 1) build on the rapport established through years of cooperative working relationships, 2) building on common ground and start with the things already agreed upon, 3) build it together, not just as a government program or strictly an industry system, and 4) build it in phases, not all at once (Wiemers, 2003). The Wiemers article presented solutions for some of the key concerns about the NAIS, noting that any government effort needs to display sensitivity to the valid concerns of private producers.

Bovine Spongiform Encephalopathy (BSE) in Cattle

A 2004 USDA publication outlined the case of bovine spongiform encephalopathy (BSE) that was found in the United States on December 23, 2003. This outline illustrated the response time from start to finish. Most importantly, the publication demonstrated that a traceback of 48-hours did not occur. The initial event occurred on December 9, 2003 when a non-ambulatory dairy cow arrived at Verns Moses Lake Meats in Moses Lake, Washington. The animal was considered to be non-ambulatory due to calving complications, but consistent with the USDA's testing protocols for BSE, samples were taken from the animal and all high-risk tissue was diverted from the human food supply and into rendering. Traceback of the index animal continued through January 2, 2004. Traceback on the other related animals continued through January 9, with the USDA eventually identifying less than half of the 81 cows from Canada. The complete timeline spans almost a full month, from December 9, 2003 until January 9, 2004.

The BSE timeline also summarized the USDA announcements, recalls, and decisions as they occurred throughout the traceback process. On December 23, 2003 USDA Secretary of Agriculture Veneman announced a "presumptive positive" case of BSE. On December 23, the USDA Food Safety and Inspection Service initiated a Class II recall of the meat from the cow harvested on December 9 in Washington. On December 30, 2003, Secretary Veneman announced safeguards designed to further the protection system against BSE and to ensure public health. On January 2, 2004, the USDA quarantined three facilities pending epidemiological investigation: the index herd, a herd with the index cow's recently born bull calf, and a dairy operation in Mattawa, Washington where an animal from the original herd was located. The decision to depopulate the bull calf operation in Sunnyside, Washington was made on January 5, 2004. The Sunnyside operation had the calf born to the index cow, as well as approximately 450 other cattle on the premises. Finally, it was announced on January 9, 2004 that the USDA would begin removal of a limited number of cows from the index herd in Mabton, Washington. By the end of the investigation it was determined that 80 cows had been imported into the U.S. with the BSE positive cow. Eighteen of the cows were identified and the remaining cows were believed to be part of the index premises (USDA, 2004).

Brucellosis Disease in Cattle

Brucellosis in cattle has been the focus of eradication programs in the United States since the formation of a cooperative state-federal eradication program in 1934. Defined as a bacterial disease that causes a decrease in milk production, infertility, weight loss, loss of young, and lameness (USDA, Feb. 2008), brucellosis mainly affects cattle, bison, and swine, although humans can also be affected. In the USDA publication, "Facts About Brucellosis", it was noted that the disease is most commonly spread by direct contact with infected animals or with an environment that has been contaminated with discharges from infected animals. The cost of the disease to the livestock industry, due to lowered milk production, aborted calves and pigs, and reduced breeding efficiency was estimated to have decreased from over \$400 million in 1952 to less than \$1 million today (USDA-APHIS, n.d.). The basic approach to brucellosis eradication has been to test cattle for infection and to send infected animals to be harvested.

Market cattle identification (MCI) was an important program where backtags were placed on the shoulders of adult breeding animals that were being marketed from beef, dairy, and bison herds. Blood samples were collected from the animals at market and tested for brucellosis. If a sample reacted to the test, the animal was traced by the backtag number to the herd of origin. The owner of the herd was then contacted by a state or federal official to arrange for testing of the herd, done at no cost to the owner. This program (and the identification of market animals) was important because proper identification enabled the traceback to the herd of origin via backtags, ear tags, and other identification devices (USDA-APHIS, n.d.). Once an infected animal or herd was located, all infected and exposed animals were quarantined and movement was limited only to harvest until the disease was eliminated. Market cattle identification provided a method of determining the brucellosis status of animals marketed from a large area and eliminated the need to routinely collect and test cattle and bison herds (USDA-APHIS, n.d.).

The USDA announced on February 1, 2008 that all 50 states, Puerto Rico, and the Virgin Islands had achieved Class Free status for brucellosis. The Class Free status was based on a state finding no known brucellosis in cattle for the 12 months prior to the Class Free designation (USDA, February 2008). However, the status is not final. If the

disease is found in more than one herd of cattle in a brucellosis free state within a two year period, the state would be downgraded to Class A status.

Pseudorabies Disease in Swine

In 1970, pseudorabies was identified in the United States. In 1989, the USDA began its State-Federal-Industry pseudorabies eradication program. Pseudorabies (PRV) is defined as an infectious disease of swine caused by porcine herpesvirus-1 (SCWDS, 2004). Domestic swine usually contract the disease by oronasal (mouth and nose) or aerial transmission, but feral swine are infected via venereal transmission. Once infected, the animal will carry the disease for life and sporadically shed the virus in saliva and/or reproductive mucosa (SCWDS, 2004). Pseudorabies rarely causes mortality in adult swine, but frequently causes abortion in pregnant sows and the death of neonatal piglets. Thus, the concerns for producers are the economic losses associated with reduced productivity and piglet fatalities.

When pseudorabies was found in the U.S. in 1989, over 10,000 commercial herds were believed to be affected. Today, all of the United States herds maintain Stage V or pseudorabies free status. "The successful eradication of pseudorabies (PRV) from the U.S. commercial swine herd ranks among the pork industry's biggest achievements in terms of swine health in the past 20 years," stated Paul Sundberg, vice-president of science and technology for the Pork Checkoff (Pork Checkoff, n.d.). Sundberg also stated that "Producers understood the importance of eradicating the disease from the national herd. They took action by registering for premises identification, another invaluable tool in this program. Today's National Animal Identification System is founded on premises identification, in part, because this was so successful in the past," (Pork Checkoff, n.d.).

Scrapie Disease in Sheep

Scrapie disease is defined as: "a fatal, degenerative disease affecting the central nervous system of sheep and goats," (USDA, May 2009). Scrapie was eradicated in Australia in 1952 and New Zealand in 1954 (Hartwig, 2000). The disease is most likely to enter the body orally, and will remain in the lymph nodes of the animal at low levels during the first one or two years of life. After that time, the disease will begin to affect the central nervous system, resulting in behavioral changes, tremors, and coordination loss

that will eventually result in recumbency and death (Hartwig, 2000). Scrapie was first discovered in Michigan in 1947.

The National Scrapie Eradication Program was implemented to allow for “disease and exposed animals to be traced back to their flock/herd of origin so the spread of Scrapie could be prevented” (Greiner, 2002). Official animal identification in the Scrapie Program consisted of an ear tag acquired from the USDA. Individual producers could contact the USDA to request a producer identification number unique to their premises. The USDA would then issue metal or plastic ear tags to the producer for use in the flock. The producer would then keep records of which tags were applied to which animals, as well as the movement or sale of these animals from the flock. If an animal tested positive for Scrapie, it could then be traced back to its place of origin.

2.5. Animal Identification Methods

Previous research has focused on the various methods of animal identification. A paper prepared by the National Institute for Animal Agriculture for the U.S. veterinarian provided a detailed history of the establishment of a national animal identification system in the United States. The article covered historical identification, the beginnings of a coordinated animal identification movement, achieved results, and present day work.

Due to statutory regulations, APHIS began using ear tags, back tags, tattoos, and face brands to trace diseased animal movements during outbreaks and eradication programs in the 1960's. In 1969, Livestock Conservation, Inc. (LCI) became the first documented group of industry leaders working on animal identification. Beginning efforts of the LCI focused on swine identification, particularly the need to trace feeder pigs to a producer or a farm of origin. In the 1970's, eight standards were adopted by the United States Animal Health Association (USAHA) that worked towards the establishment of identification systems for cattle and swine. In 1977, the National Livestock Identification Board was established. The chairman of the board, Richard Nelson, stated that the purpose was “to give guidance and direction to the development and use of electronic identification and management devices in such a way that this system can succeed in providing the greatest benefit to the producer and serve the best interests of the

livestock industry nationally,” (Richey, Slack, and Vise-Brown, 2005). In 1986, the Livestock Identification Committee of the USAHA passed three statements of position that focused on the lack of uniformity of identification standards, the pursuit of compatibility with a Canadian national system, and the evaluation and modification of numbering and/or coding systems.

In 1988, the first International Livestock Identification Symposium provided a forum for discussion focused on establishing a national animal identification system. At this inaugural event, a former president of LCI discussed seven lessons that animal agriculture had learned from the swine industry’s process of finalizing a rule for mandatory identification of sows and boars. The seven lessons were considered a guide for the future development of the NAIS. In 1994, the symposium was held again, this time with the frustrations of a national animal ID system laid on the table. The former Livestock Marketing Association’s Associate Manager of Government and Industry Affairs, Nancy Robinson, stated, “We can allow our old fears, doubts, and nay-saying to stand in the way of real progress in responding to the varied and numerous demands for national livestock ID systems, or we can begin to build a framework for action,” (Richey et al., 2005). Her words summed up the frustrations and concerns of those who supported a national plan.

In 1995, USAHA called for USDA-APHIS to develop guidelines for a national premises identification system that would take effect by April of 1996. In 1998, the National Farm Animal Identification Symposium held a forum for the species groups to work together on issues facing their particular industries and also to provide an in-depth examination of working animal identification systems in Canada and Australia. In 2002, the ID/INFO Expo was held by the National Institute for Animal Agriculture. At this event, the National Identification Development Team presented a preliminary draft of what would eventually become known as the U.S. Animal Identification Plan (USAIP). The paper eventually transitioned to the concerns of 2005, which focused on data housing, confidentiality, funding and industry cost burdens, producer participation, voluntary vs. mandatory, and technology/information system standards (Richey et al., 2005). This article provided a clear, detailed picture of where animal identification had been, what it had achieved, and where it should go in the future.

A fact sheet by Tonsor and Schroeder examined lessons the U.S. beef industry could take away from the Australian National Livestock Identification System. The goal of

the authors was to gain an understanding of the motivations, evolution, development, advantages, and challenges associated with the Australian animal traceback system. A mandatory system in Australia, the National Livestock ID System (NLIS), was designed to improve traceability, enhance food safety, ensure the integrity of beef products, allow and sustain international market access, and to provide progressive livestock producers with enhanced management opportunities (Tonsor and Schroeder, 2006). Tonsor and Schroeder identified key differences between the Australian and U.S. beef industries and also provided recommendations for the U.S. animal identification system.

The key differences between the U.S. and Australian beef industries included: differences in the size of the industry, the number of operations, the number of cattle transactions, and the percentage of beef sold through export markets. According to the fact sheet, the total cattle herd in the United States was roughly 96 million head, compared to 26.5 million head in Australia. Additionally, feedlots in the United States marketed roughly 23 million head per year, compared to a capacity of less than 1 million head in Australian feedlots. The fact sheet also noted that the cattle industry in the United States involves more operations than in Australia, with a smaller average farm size and the farm not typically being the primary source of family income. Additionally, it was noted that Australian producers had almost 30 more years of experience with a national animal identification plan than U.S. producers. The number of cattle fed in feedlots was noted to be much higher in the United States, as well as the number of instances where co-mingling of cattle would occur. Finally, Tonsor and Schroeder identified the biggest difference between the U.S. and Australia as the higher percentage of Australian beef designated for export markets. The smaller export market of the United States would, argue Tonsor and Schroeder, result in producers being less aware of changes in world beef markets and possibly result in less motivation to adopt a national animal identification system (Tonsor and Schroeder 2006).

The most useful parts of Tonsor and Schroeder's work were the five recommendations developed for the U.S. livestock industry to consider. These recommendations were based off of their exposure to and knowledge of the Australian NLIS. The following ideas were recommended in the fact sheet: creating a mandatory, rather than voluntary, animal identification program, exerting caution to avoid regional differences in the implemented program, providing significant education and technological support during developmental and implementation stages, encouraging

substantial public and private financial investment, and using compliant and flexible technology to accommodate meat traceability and other advancements as needs and opportunities arise over time (Tonsor and Schroeder, 2006). The Tonsor and Schroeder fact sheet provided insights from an established, working program that could serve as a guide to further NAIS development.

A 2002 Purdue University Extension publication focused on methods of livestock identification, which are the basis for keeping accurate production records of the herd/flock (Neary and Yager, 2002). According to the article, producers should select the identification system that best suits the needs of their operation. Considerations when selecting forms of identification include: the application methods, visibility, needed equipment, and cost. The identification methods covered in the article were ear notching, ear tags, freeze branding, electronic identification, neck chains, nose printing, paint branding, and tattooing.

Neary and Yager summarized that accurate animal identification systems are the basis for data collection and other necessary management practices (Neary and Yager, 2002). The article is beneficial to producers as it provides a detailed explanation of each identification method, as well as illustrates the methods when possible. As long as the identification method is used in the correct manner, all methods can be useful. To ensure maximum accuracy, it was noted that producers should utilize more than one method of animal identification.

A 2005 fact sheet provided by the University of California Cooperative Extension Service focused on emerging management systems in animal identification. The goal of the fact sheet was to provide an overview of new technologies in animal identification that may not have been detailed previously. These emerging technologies included retinal imaging and DNA Identification Analysis. Retinal images can be compared to a fingerprint since they are fixed at birth and do not change throughout the life of the animal. According to the article, digital camera technology is used to capture an image of the retinal vascular pattern. The image is then combined with an encrypted position, date, and time through the use of a Global Positioning System (GPS). Although retinal imaging is “promoted as a tamperproof system that addresses requirements for both unique ID and traceability,” it is no longer valid after the animal’s head is removed from the carcass (Evans and Eenennaam, 2005).

The use of DNA Identification Analysis was discussed as a way to address the identification challenges presented by the harvesting process. A method that could possibly meet these challenges is DNA analysis for ID by single nucleotide polymorphism (SNP) fingerprinting. The article stated that genotyping 30 SNP loci that show variability between all common beef breeds would uniquely identify 900,000 cattle (Evans and Eenennaam, 2005). Recent advances in the technology and the associated costs of this type of identification have worked to improve the commercial acceptance of DNA Identification Analysis.

In 2005, Evans and Eenennaam presented valuable information about animal identification methods. Most notably, their fact sheet provided a clear picture of current research that is being done and also highlighted important factors for producers to consider, such as management, marketing, and profitability. The most beneficial part of the article was that it identified potential applications of animal identification that would meet the proposed requirements of the NAIS. The article highlighted states (South Dakota and Montana) that were developing systems that would comply with the proposed requirements and also work to enhance the value of cattle.

A 2006 Journal of Extension article highlighted the retinal imaging work of researchers at Purdue University. Rusk, Blomeke, Balschweid, Elliott, and Baker (2006) conducted an evaluation of retinal imaging technology for 4-H beef and sheep identification. In the study, retinal imaging technology was compared to nose printing as a permanent identification method for the enrollment of 4-H beef and sheep projects. There were two objectives of the study: to compare the time required to obtain a retinal image with the time required to obtain a nose print and to determine the false match and false non-match rates of visual verification of retinal images and nose prints. The study also had two hypotheses: that retinal imaging and nose prints were equally viable forms of permanent animal identification and that the false match and false non-match rates of retinal images and nose prints were equal. Using an Optireader device, the researchers captured 491 digital beef images and 220 digital sheep images. Visual verification exercises were then conducted to determine the false match and false non-match rates. The on-site visual verification rate for beef was 96.2% and 100% for sheep. A separate verification exercise showed that individuals were able to correctly identify a pair of retinal images from beef 98.6% of the time.

Rusk et al. (2005) concluded that it took slightly longer to take retinal images than to take nose prints. Results of the study showed that untrained individuals correctly identified pairs of retinal images more often than nose prints. The study also found that the false match and false non-match rates of visual verification of retinal images was lower than the rates for nose prints, causing the second hypothesis to be rejected. This study was beneficial because it illustrated that retinal imaging could serve as an effective form of real-time verification and also that retinal imaging did not present many of the challenges associated with other identification methods, such as smearing, requiring trained readers, and a given length of time to get results.

2.6. Hazard Analysis and Critical Control Point Programs

Research on Hazard Analysis and Critical Control Point (HACCP) programs has previously focused on the food industry. A 2001 publication by the Food and Drug Administration (FDA) identified HACCP as a state of the art approach to food safety that focuses on preventing hazards that could cause food-borne illness. Hazard Analysis and Critical Control Point systems went into effect in the seafood industry in 1995, the meat and poultry processing industry in 1999, and the juice industry in 2001. When considering whether or not to implement HACCP systems in other areas of the food industry, the FDA conducted pilot HACCP programs with volunteer food companies involved with cheese, frozen dough, breakfast cereals, salad dressing, bread, and flour (FDA, 2001). The HACCP system was endorsed by the National Academy of Sciences, the Codex Alimentarius Commission, and the National Advisory Committee on Microbiological Criteria for Foods. The FDA publication went on to review the seven HACCP principles, as well as the need for and advantages of HACCP.

The food supply in the United States had seen many challenges that illustrate the need for HACCP systems. These challenges included: an increasing number of new food pathogens, increasing public health concern about the chemical contamination of food, the large size of the food industry and its product diversity, and a growing trend in international trade for worldwide equality of food products and the Codex Alimentarius Commission's adoption of HACCP as an international food safety standard (FDA, 2001). The following advantages of the HACCP system were detailed in the article: a focus on

identifying and preventing hazards from contaminated foods, a basis on sound science, the provision for more efficient and effective government oversight, the placement of responsibility for ensuring food safety on the food manufacturer, helping food companies better compete in a world market, and reducing barriers to international trade (FDA, 2001). The FDA HACCP article provided a history of previous HACCP regulations in the United States, as well as explained the advantages and needs for such a system.

In a 1996 article in the *American Journal of Agricultural Economics*, Unnevehr and Jensen discussed the economics of HACCP as a regulatory innovation to improve food safety in the meat industry. The authors also discussed the origins of HACCP as an engineering concept based on their contention that previous economics literature had not fully explored prevention benefits. When considering how to evaluate a HACCP system, Unnevehr and Jensen identified two features of importance. First, HACCP application would be tied to a performance standard. Thus, consideration for what performance standard is being set will facilitate identification of HACCP costs and benefits (Unnevehr and Jensen, 1996). Second, an examination of the costs and benefits of different contamination control levels would be useful for policy making decisions. Finally, Unnevehr and Jensen suggested that additional cost-benefit analysis needed to be conducted to determine the critical limits that should be met at each critical control point for microbial contamination. The authors identified additional areas of research that would be helpful in furthering HACCP regulations from an economic standpoint.

A 2006 fact sheet from the Western Extension Marketing Committee focused on animal identification issues related to beef traceability. Robb, Lawrence, and Rosa (2006) provided a description of the steps in the beef packing process and the difficulty of maintaining animal identification throughout the fabrication process. The current beef packing process was described in four stages: harvest, cooler, fabrication floor, and holding cooler/shipping. Robb, et al. identified the fabrication stage as the biggest challenge for traceability. The authors noted that within the four stages of the packing process were additional requirements, such as recording a production date and batch number before releasing trimmings into commerce, along with traceability for boxed beef cuts. These requirements fit into the packer's HACCP system.

During the fabrication stage, carcasses are broken down into primal, sub-primals, and retail cuts. Products are also boxed during this stage. The problem with traceability

arises when the trimmings become a combination of numerous carcasses, making it hard to identify which animal the trimmings came from. Boxed beef cuts also have traceability issues. Record keeping for boxed cuts focuses on product codes, production dates, and shipping destinations. However, according to the fact sheet, these processes do not address concerns related to live animal diseases (Robb, et al., 2006). The Robb, et al. fact sheet clearly identifies and presents solutions for issues faced in the packing plant once the carcass has been broken down and forms of identification, such as RFID, are no longer relevant.

A 2005 paper by Alberini, Lichtenberg, Mancini, and Galinato used the seafood inspection records of the FDA to examine how the FDA targets inspections under HACCP regulation, the effects of FDA inspections on compliance with HACCP and individual plant sanitation standards, and the relationship between HACCP regulations and pre-existing sanitation conditions. Alberini, et al. developed hypotheses regarding the FDA's targeting of inspections and firms' compliance patterns based on a theoretical model of enforcement. The hypotheses were then tested using econometric models of inspection and compliance. Although the predictions of the theoretical model were in agreement with stated FDA policies, Alberini, et al. (2005) found that the FDA did not have targeted inspections based on product risk or past compliance performance. Results of the study indicate that the likelihood of compliance by a firm increased with the threat of inspection for sanitation standards but not necessarily for HACCP. Contrary to the FDA's presupposition, the study also found that HACCP compliance did not improve sanitation standard compliance. This suggested the two were not complementary.

The evaluation completed by Alberini, et al. was the first of its kind to evaluate the implementation and actual impacts of HACCP on compliance with food safety standards. Potential negatives of the study were that the data came from the first four years of HACCP implementation, so it may have reflected a period of transition to a new policy that was still becoming familiar to FDA inspectors and the seafood firms. A follow-up study would be useful to determine whether the inspection targeting and compliance strategies Alberini, et al. (2005) observed were transitory or permanent.

2.7. National Animal Identification System

The National Animal Identification System (NAIS) has been the subject of debate and research since the United States Animal Identification Plan (USAIP) became the eventual NAIS in December 2003. A 2004 fact sheet from Wilson Gray and the Western Extension Marketing Committee provided an overview of the basics, blueprint, timelines, and processes behind the NAIS. Gray was of the opinion that the NAIS was needed to “maintain the economic viability of American animal agriculture,” (Gray, 2004). The fact sheet also provided information on what constituted the NAIS, why being able to trace animals was important, what countries could potentially be affected by the NAIS, who was supporting the NAIS, how the NAIS would be implemented, the timetable for implementation, and potential costs of the NAIS. According to Gray’s publication, the NAIS had evolved since 2002, when the National Food Animal Identification Plan was developed. This eventually led to the development of the NAIS from the efforts of the National Animal Identification Development Team (NIDT). The NAIS provides the United States with a system that is capable of tracing an animal or group of animals back to the herd that is the most logical source of a disease, as well as tracing the animals that may have been exposed and have moved from the original premises (Gray, 2004). Success of the system would be depended upon an infrastructure that would be able to collect, record, and analyze animal movement.

Gray also provided information on how the NAIS would work, theoretically. Gray identified three phases and implementation dates of NAIS: premises identification (implemented by fall 2004), animal identification (winter 2005), and traceback (summer 2006) (Gray, 2004). The Gray fact sheet illustrated the basics of the NAIS system while providing an outline of the origins of the program and moving to more current happenings. A follow-up fact sheet could be useful in providing information on present day happenings regarding the NAIS. Although the USDA has stated that the program will not become mandatory in the immediate future, work is still being done on the program and on animal identification.

In 2004, Roberts and O’Brien investigated one of the biggest producer concerns about the NAIS-confidentiality of information. Producers and industry participants in the NAIS have been vocal about concerns regarding who will be able to access the information that must be provided to the USDA. Roberts and O’Brien identified three main concerns regarding information confidentiality: 1) the establishment of a centralized

database may allow other industry participants to discover information about their competitors, 2) government agencies, such as the Internal Revenue Service or Environmental Protection Agency might access the data, and 3) individuals or organizations that operate with goals of harming animal agriculture might be able to access the information (Roberts and O'Brien, 2004a).

Roberts and O'Brien addressed these issues by providing information on various legal aspects. The Freedom of Information Act (FOIA) was developed to provide public access to government records, but does not apply to entities that are not chartered or controlled by the federal government. The agriculture and food industries have been identified as critical infrastructures. In addition, Roberts and O'Brien noted that the NAIS might fall under a provision that public interest in the government receiving good information related to security concerns would outweigh public interest in having access to the information because of increased bio-security concerns. Both of the above may exempt the NAIS from the FOIA. In addition, the article noted that if a federal agency attempts to disclose information that federal law prohibits from being disclosed, then a private party (such as a producer) could seek to enjoin or stop the agency under the Administrative Procedures Act (APA). In addition, various senators and members of Congress have introduced legislation that would exempt an animal ID system from the FOIA or require the information to be confidential. Roberts and O'Brien also noted that as animal ID systems are developed, it will be important for producers to pay attention to the limits on access to the information and how those limits are enforced (Roberts and O'Brien, 2004a). The Roberts and O'Brien article simplified what could be very complicated legal aspects of the NAIS and provided a brief overview for producers.

With regard to privacy concerns, Roberts and O'Brien provided a fact sheet that examined liability exposure and risk management in relation to the NAIS. A key component of a lawsuit, in any industry, is knowing who caused the damage or problem. According to Roberts and O'Brien, there is a fear that the NAIS will allow individuals to discover the name of the owner of a diseased animal at the time it is diagnosed with a disease that results in harm (Roberts and O'Brien, 2004b). The second Roberts and O'Brien fact sheet covered general liability and the NAIS, NAIS and negligence, NAIS and strict liability, practical litigation concerns, and ways to limit risk of liability. The NAIS focuses on live animal traceback, so the ability to trace meat through the processing facility would not be affected, nor would the NAIS allow consumers to know the identity

of the seller. However, Roberts and O'Brien noted that even without the NAIS, livestock producers have always been liable for the livestock they produce.

The Roberts and O'Brien fact sheet presented potential legal situations producers could find themselves in. One such situation would arise if the NAIS increased producer liability by making it easier to determine the owner of a diseased animal, since the animal would be documented until it reached the processing facility. It would follow, suggested Roberts and O'Brien, that a plaintiff could attempt to bring all parties who had previously been in contact with the harmful product into a legal fight (Roberts and O'Brien, 2004b). Or, if a processing facility had a traceback program in place, the packer might bring the feeder of the animal in as a defendant. Producers could limit their risk by carrying liability insurance, keeping good records, structuring their business so liability risk is minimized, or finding out if their state limits liability by exempting livestock production from implied warranty laws. The second Roberts and O'Brien article simplified complicated legal wording for producers to understand. The article also outlined legal situations producers or industries could find themselves in.

A 2004 agricultural law research article by Roberts and Pittman focused on the confidentiality of collected information and the exposure of producers to liability. According to Roberts and Pittman, there are two specific issues related to confidentiality: the type of data to be kept and who would have access to the data. In response, APHIS stated that only essential information would be reported to central databases and only state and federal officials would have access to the premises and animal identification information when performing their duties to maintain the health of the national herd (Roberts and Pittman, 2004). It was not disclosed how the program would restrict access to officials or how safeguards would protect the data from public disclosure.

Roberts and Pittman also included the Freedom of Information Act (FOIA) in their article, noting that whether a plan is voluntary or mandatory could determine whether the information submitted by participants would be obtainable by the general public through the FOIA. However, the findings of Roberts and Pittman agreed with the findings of Roberts and O'Brien that information contained in the NAIS would be exempt from the FOIA. However, "information that would be exempt under FOIA may be obtained through discovery if the party's need for information exceeds the government's need for confidentiality," (Roberts and Pittman, 2004).

Producer liability was also covered by Roberts and Pittman, specifically producers' fear that any information they provide to the NAIS would create a paper trail back to their operations and thus, potentially expose them to liability. Although APHIS had responded to that concern by stating, "producers have always been responsible for the livestock they produce. If practices are employed that would endanger consumers at any level, the producer responsible for creating that threat could have increased liability," (Roberts and Pittman, 2004). Roberts and Pittman noted that one producer concern not covered by that response was that by identifying a producer in the chain of custody of an individual animal, an animal identification system could increase the liability of the producer. Similar to Roberts' earlier findings with O'Brien, this research article simplified what could have been complicated legal jargon for producers to understand and also identified potential situations that producers could encounter in becoming NAIS compliant.

In 2004, Bailey and Slade presented a paper that examined factors influencing support for a national animal identification system for cattle in the United States. This research focused on the attitudes and concerns of state veterinarians and state cattlemen's associations regarding the implementation of a national animal ID system. In January, 2004, after BSE had been discovered in the United States, Bailey and Slade conducted an e-mail and telephone survey of state veterinarians and leaders of state cattlemen's associations. Results from the survey indicate strong support for implementing some form of animal identification program, but only about 40% of the leaders of cattlemen's associations were in support of a specific plan, in this case the USAIP (Bailey and Slade, 2004). Several factors were identified that relate to the level of support a respondent indicated for the USAIP: familiarity with USAIP, the perception that producers would equally share net benefits with other downstream firms, and whether a respondent was from a state with brand laws.

The results of the Bailey and Slade study suggest that state veterinarians view the USAIP and the maintaining of animal and human health as being principally related, but leaders of cattlemen's associations were more concerned about the market implications that the USAIP would bring (Bailey and Slade, 2004). The Bailey and Slade study involved those who would be directly involved in implementation of an animal identification system for cattle. Without the opinions of veterinarians and leaders of cattlemen's associations, the system could face many challenges.

A USDA fact sheet published in December, 2007 presented the facts about traceability and the NAIS. Challenges of traceability were identified as: 1) participation in active disease programs has decreased as diseases have been eradicated, 2) information that is maintained by multiple sources must be accessed quickly, and 3) animal disease traceability varies by species (USDA, December 2007). When livestock disease outbreaks occur, animals are routinely tested and vaccinated. However, with the eradication of diseases in different states, these regulations are no longer needed. This is one reason states, such as Indiana, no longer require health papers for intrastate movement of animals. According to the USDA publication, “current animal identification and data collection methods typically address individual objectives, such as specific disease eradication programs, interstate commerce, breed registries, and age and source verification (USDA, December 2007). Thus, being able to quickly access the information is a challenge.

The fact sheet presented seven keys for achieving a comprehensive, traceable infrastructure: 1) prioritize species and sectors to ensure resources are applied where traceability advances are most needed, 2) harmonize government and industry animal identification programs by creating compatible processes and applying common data standards, 3) standardize data elements of disease programs to ensure compatibility, 4) integrate automated data capture technology with animal disease programs, 5) partner with states, tribes, and territories to facilitate the development of each entities’ animal disease infrastructure, 6) collaborate with industry organizations and animal health officials to accelerate the adoption of practices that will advance traceability, and 7) establish performance standards for ID devices and evaluate emerging technologies with emphasis on systems that can operate at the “speed of commerce” (USDA, December 2007). The facts presented in this article provided a review of the USDA and its commitment to not only improving, but increasing the capabilities of national animal disease tracing in the United States in order to ensure that United States livestock remains some of the healthiest in the world (USDA, December 2007).

The comments from participants at the 2008 National Institute for Animal Agriculture ID-Info Expo were compiled into a document that summarized the thoughts and opinions of the 170 attendees. A result of presentations by USDA personnel, industry panel discussions, and group workshops, the document was submitted to the USDA on April 15, 2008. Instead of including a complete review of all comments made

at the workshop, the document focused on broad, generally accepted views. Eight comments were submitted to the USDA. Comment one stated, “there remains broad industry support for continued funding of NAIS; USDA needs to implement the plan as outlined and follow the published target dates and program elements” (NIAA, 2008). Comment two stated, “for the NAIS system to reach its stated goals, timeframes for mandatory implementation need to be reconsidered,” (NIAA, 2008). Comment three stated, “the focus of the plan must remain on the goal of 48-hour disease traceback, while respecting the needs and practices of all stakeholders,” (NIAA, 2008). Comment four stated, “technology neutrality is problematic in executing the plan; USDA must respect the direction of the species working groups in determining allowable ID devices for recognition as official ID devices,” (NIAA, 2008). Comment five stated, “the USDA must continue to support the development of the market infrastructure needed to execute the plan,” (NIAA, 2008). Comment six stated, “further effort must be expended to ensure proper data collection standards,” (NIAA, 2008). Comment seven stated, “the segregation of Public vs. Private data must be clarified under the plan,” (NIAA, 2008). Comment eight said we need to, “expand the scope of USDA messaging to include for-profit stakeholders; provide clear and consistent messaging over time,” (NIAA, 2008).

The most beneficial part of the NAIS Business Plan Comments was that they presented a variety of opinions from different audiences. By compiling the opinions of those involved in production agriculture, government agencies, livestock and breed associations, private industry, and academia, the USDA was able to get a good handle on what their target audience thinks about the NAIS.

An April, 2008 USDA news release highlighted a key strategy from the NAIS business plan: the provision of NAIS compliant, “840” radio frequency (RF) ear tags to animal health officials for use in the bovine tuberculosis (TB) control program. The “840” tags were provided for individual identification of livestock, with the “840” being the U.S. country code and the beginning of the 15-digit ear tag number. Bruce Knight, undersecretary for marketing and regulatory programs, stated, “Using NAIS-compliant tags with RF technology establishes a consistent data format across our animal disease programs. It will also increase the efficiency and accuracy of the on-ground animal health task force conducting bovine TB testing and response,” (Schelhaus and Harless, 2008). The goal of the ear tags is to link cattle to their premises of origin. If a disease outbreak, in this case TB, occurs, movement of the infected animals could be quickly

traced. The article went on to note five USDA-approved manufacturers that produced both ear tags and an injectable transponder intended for use in horses and other farm animals that would not necessarily enter the food chain.

The Schelhaus and Harless news release illustrated a working example of the need and potential uses for the “840” tags in a livestock operation. As the USDA continues to implement different steps of the NAIS, it would be beneficial to provide other working examples to the producers who would be affected by the program, as well as to illustrate the benefits, as was done here.

2.8. Previous Pilot Projects and Field Trials

The researcher did not find any similar studies that focused on the relationship between livestock exhibitions and NAIS compliance. However, in May of 2007, the USDA published a summary of pilot projects and field trials related to the NAIS. Pilot projects and field trials included participation by Florida, Idaho/Northwest United States, Kansas, Minnesota, Montana, North Dakota, Oklahoma, Pennsylvania, South Dakota, the Southeastern Network (Kentucky), the Southwest United States (California, Arizona, Oregon, and Texas), the Tri-National United States (Arizona, Colorado, and New Mexico), Wyoming, and Virginia. The 16 pilot projects were funded by Federal Commodity Credit Corporation (CCC) funds during the 2004 fiscal year, totaling approximately \$6.6 million. The results from these projects demonstrate that animal identification and tracking could be successfully implemented in a production environment (USDA, May 2007). The projects also determined that advancements had been made in the area of data collection. Early project results reported ear tag read rates of 50-60%, but after adjustments were made in later projects to electronic ear tags, electronic scanners, etc.; read rates were reported in the 90-99% range (USDA, May 2007). According to the USDA, this improvement was a direct result of the continued evaluation that occurred during the pilot projects.

The USDA summary also presented a brief overview of the lessons learned and the outstanding issues that resulted from the pilot projects. Some of the key findings from the pilot projects include: the retention rate of RFID button tags was significantly higher than anticipated, the use of RFID tags at auction markets could reduce the need

to restrain animals when recording individual ID numbers, the use of the group/lot method of animal identification could significantly reduce a major producer participation barrier in the NAIS, RFID technology should be customized to individual locations and needs, and proper tag application and placement had a significant impact on the retention rate and readability of RFID ear tags. Results also showed that in certain environments, the automated recording of animal identification as animals were loaded and unloaded off of trucks was critical for successful animal tracing. Additional findings included the possibility that radio frequency (RF) ear tags used for the NAIS could also support value-added opportunities, that producers' access to technology (or lack thereof) was a key factor impacting their voluntary participation in the NAIS, and the use of electronic identification resulted in more accurate and efficient record-keeping (USDA, May 2007).

Outstanding issues were also summarized in the findings. Highlights of those outstanding issues were summarized as follows: The read-range of RFID ear tags needs to be improved so that tags in certain environments can be read at farther distances. Additional research is needed to determine the optimum location to place RFID tags. In order to justify integrating electronic data collection systems that utilize RFID technology, livestock markets should have the capability to interface those systems with their existing business accounting systems (USDA, May 2007). Overall, the summary of the previous pilot projects and field trials helped determine the practicality of the NAIS protocols and procedures. The summary focused on developing and further testing the integration of solutions for data collection, as well as recognized areas that need further testing or development, which were designated as priority areas.

CHAPTER 3. METHODOLOGY

3.1. Introduction

The purpose of this study was to observe livestock exhibitions in order to evaluate the identification systems currently in place at the NAILE, National Western Stock Show (NWSS), Indiana State Fair (ISF), and three Indiana county fairs (ICFs). Identification systems were evaluated on their ability to identify and track beef cattle, dairy cattle, goats, sheep, and swine.

This study utilized a Hazard Analysis and Critical Control Point (HACCP) approach to identify potential opportunities for intervention to enhance compliance with the NAIS. This was done in order to achieve an ultimate goal of 48-hour traceback/traceforward in case of an animal disease occurrence during or immediately following a national livestock exhibition. The percentage of animal movements that are recorded directly influences the reality of reaching the goal of 48-hour traceback/traceforward and is one of the biggest challenges facing livestock expositions seeking to become NAIS compliant. Additional research is needed to determine if livestock exhibitions can meet the traceback goal and become NAIS compliant. This study evaluated the livestock exhibitions in the following areas:

1. Assessment of completeness and accuracy of certificates of veterinary inspection upon arrival at the exhibition.
2. Efficiency of recording last premises of record upon arrival.
3. Efficiency of methods available to forward the four data elements to a tracking database within 24-hours of arrival (premises number, animal ID number, date, event code).
4. Daily animal inventories on the exhibition premises.
5. Documentation of infectious and/or contagious animal disease diagnosed on the premises during the livestock exhibition.
6. Efficiency of methods available to record the same four data elements when leaving the exhibition (for forwarding to a tracking database).

7. Efficiency of recording premises of destination when leaving the exhibition.

Two goals of this study were to: 1) evaluate the livestock identification and data collection systems used at the various livestock exhibitions and 2) to identify potential additions and/or changes that needed to be made in order to make the systems compliant with the NAIS. Results from this USDA-funded study will assist APHIS in developing guidelines for national and international livestock expositions as they seek NAIS compliance.

3.2. Research Design

The evaluations conducted in this study were based on the HACCP rule developed by the Food Safety and Inspection Service (FSIS) in 1996. The HACCP rule was developed to establish the food safety goal of the FSIS, which was to reduce, as much as possible, the risk of food-borne illnesses associated with the consumption of meat and poultry products (Hulebak, 2002). In doing so, the HACCP rule served as a series of checkpoints to ensure that appropriate and feasible measures were being taken at each step in the food-production process to prevent or reduce the likelihood of a hazard occurring. The Food and Drug Administration (FDA) defines a HACCP Plan as “the written document which is based upon the principles of HACCP and which delineates the procedures to be followed” (FDA, 1997). Hazard Analysis and Critical Control Point plans are based on the following seven principles: 1) conduct a hazard analysis, 2) determine the critical control points (CCPs), 3) establish critical limits, 4) establish monitoring procedures, 5) establish corrective actions, 6) establish verification procedures, and 7) establish record-keeping and documentation procedures. The seven evaluated factors outlined in this study were developed as principles that would assist the exhibitions in developing HACCP protocol.

Since it would be difficult to illustrate the importance of what one specific show would have to undertake in order to become NAIS compliant, multiple shows were included in the study. To maintain consistency from exhibition to exhibition, the same guideline were used at each location. All guidelines were developed by the researcher and attempted to follow previous HACCP protocol.

The livestock exhibitions included in the study were evaluated on a case by case basis. Each exhibition was evaluated following a similar protocol, in that the seven previously listed objectives were evaluated at each exhibition and the same (or similar) questions were asked at each point. Research procedures included interviews and observational periods which focused on the seven evaluation factors listed earlier. The study included three periods of observation. Period one occurred during the NWSS in January, 2008. Period two occurred during a three month period of June, July, and August, 2008 and encompassed three Indiana county fairs and the Indiana State Fair. Period three occurred during the NAILE in November, 2008. Following all periods of observation and interaction, notes on each activity were filed for compilation.

3.3. Participants

The participants in this study consisted of two national livestock exhibitions, one state fair, and three Indiana county fairs. Specifically, the National Western Stock Show (NWSS) in Denver, Colorado, the North American International Livestock Exposition (NAILE) in Louisville, Kentucky, the Indiana State Fair, and the Putnam, White, and Monroe county fairs in Indiana were all evaluated. Two of the exhibitions, the NAILE and the Indiana State Fair, were originally selected for evaluation in the grant from the USDA. The addition of the remaining exhibitions was done when it was decided that a comparison of several shows would yield more useful information than focusing on a single event. Assistance for the national exhibitions and the Indiana State Fair was provided by the following individuals:

- NWSS: Dr. Steve LeValley, Colorado State University
- NAILE: Mr. Bobby Bell, Kentucky Department of Agriculture
- Indiana State Fair: Dr. Clint Rusk, Purdue University

The exhibitions included in this study were selected because of their tendency to feature large numbers of exhibitors from multiple states, and in some cases, different countries. There was a high frequency of animal movement, both into and out of the grounds of each exhibition. In addition, the NAILE, NWSS, and Indiana State Fair are all exhibitions that have an excellent reputation in the livestock industry as being premier events for the species featured in this study. Before travelling to each exhibition, the

researcher initiated contact via e-mail and telephone conversations to inform the exhibition about the study and to answer any resulting questions.

3.4. Data Collection and Analysis

The data collected for this study consisted of observations based on the seven factors previously identified in the USDA document. Data collection methods utilized by the researcher included the use of field notes from memory and daily compilations, written transcripts of daily conversations, and the examination of existing documents unique to each exhibition. A main point of interest in this study was observing the exhibitions as if a HACCP plan was in place, illustrating the importance of the seven-step objective list. The HACCP approach was outlined and included in the proposal for the USDA grant that funded the project. At each exhibition, the researcher acted as a participant observer. In addition to daily periods of observation, the researcher also participated in different areas of each exhibition, such as assisting with check-in upon arrival, assisting with exit procedures, processing entry paperwork, and providing guidance to exhibitors. An example of the daily schedule the researcher adhered to at the NAILE would be as follows:

Day 1

The researcher arrived on the grounds and located, the offices important to that particular exhibition, such as: the main livestock office, the animal health booth, any satellite offices, etc. Time was spent observing animals arriving at the exhibition and any activities related to the seven objectives.

Day 2

Species observed: Dairy cattle and dairy goats. The researcher spent time in the cattle barn and west pavilion. The species studied on Day 2 were evaluated based on the seven objectives. The researcher observed animals entering the barn and the required visual check performed by the Department of Agriculture (or similar organization) staff. The researcher also observed and took notes on the signs posted in the barns regarding visual livestock inspection details.

Day 3/Day 4

Species observed: Swine. The researcher spent time in the south wing and observed the swine check-in procedure. During this time, the researcher also had the opportunity to meet with a veterinarian from the KDA who had formatted his observations into a document. The researcher was able to obtain a copy of this document, which is included as Appendix A.

Day 5

Species observed: Sheep. The researcher observed sheep arriving, coming off trailers, entering the barns and going to their assigned pen. Observations and notes included: the thoroughness of the visual check, the number of personnel stationed at each potential entrance, etc.

Day 6

Species observed: Beef cattle. The researcher worked one shift for the Kentucky Department of Agriculture in the Animal Health Booth. The researcher processed paperwork and checked health certificates.

Day 7

Miscellaneous notes. The researcher spent the last day at the exhibition making sure each one of the seven objectives had been evaluated. If necessary, the researcher took steps to make sure each objective was met. Contacts were secured in the event that the researcher had follow-up questions with exhibition personnel.

The research process was facilitated by the researcher, who collected data according to the schedule of each species arrival and release at the exhibition. The data collected from each exhibition was then included in a series of quarterly reports submitted to the USDA. Data analysis focused on comparisons between the exhibition groups. Comparisons included evaluation of the entrance and exit facilities for each exhibition, evaluation of the available entry points at each facility, and evaluation of the check-in and release procedures for each exhibition.

CHAPTER 4. RESULTS

The purpose of this study was to observe livestock exhibitions in order to evaluate the livestock identification systems currently in place at the NAILE, National Western Stock Show (NWSS), Indiana State Fair (ISF), and three Indiana county fairs (ICFs). The identification systems were evaluated on their ability to identify and track beef cattle, dairy cattle, goats, sheep, and swine.

The objective of the study was to evaluate the livestock identification systems currently being used at livestock exhibitions to check-in and release beef cattle, dairy cattle, dairy goats, meat goats, sheep, and swine. A HACCP approach was used to identify potential opportunities for intervention to enhance compliance with the NAIS in order to achieve an ultimate goal of 48-hour traceback/traceforward in case of an animal disease occurrence during or immediately following a national livestock exhibition. In order to follow a HACCP protocol, 7 factors were noted for evaluation by USDA representatives:

1. Assessment of completeness and accuracy of certificates of veterinary inspection upon arrival at the exhibition.
2. Efficiency of recording last premises of record upon arrival.
3. Efficiency of methods available to forward the four data elements to a tracking database within 24-hours of arrival (premises number, animal ID number, date, event code).
4. Daily inventories on the exhibition premises.
5. Documentation of an infectious and/or contagious animal disease diagnosed on the premises of a livestock exhibition.
6. Efficiency of available methods available to record the same four data elements when animals leave the exhibition (for forwarding to a tracking database).
7. Efficiency of recording premises of destination when exhibitors leave the exhibition.

This chapter will be broken down into sections for each livestock exhibition that was evaluated. Each section will then contain a summary of the researcher's activities while at the exhibition, as well as a break-down for each of the seven objectives.

4.1. 2008 National Western Stock Show

In January of 2008, the researcher traveled to Denver, Colorado to evaluate the livestock identification systems used at the National Western Stock Show (NWSS). This evaluation was the first of the study and was completed in order to identify potential opportunities for intervention to enhance compliance with the National Animal Identification System (NAIS), should it become a mandatory program.

The evaluation was conducted with a HACCP approach in mind. The ultimate goal would be to achieve 48-hour traceback/traceforward, should an animal disease emergency arise during a national livestock exhibition. The HACCP protocol has been utilized in the food and animal production industries for many years, but research was needed within the animal exhibition part of the industry.

Large numbers of animals from multiple states and Canada are exhibited at the NWSS. In order to successfully track these animals, proper animal identification, a complete record-keeping system, and an efficient data management scheme must be in place. Exhibitors at the NWSS came from the United States and Canada. Animals from both countries arrived and were released at various times throughout the two-to-three week schedule of the show. At any point during these procedures, animals that had been co-mingled with other animals were released to return to farms and ranches that are potentially thousands of miles apart, thus, increasing the risk of disease spread.

Two periods of observation were completed at the NWSS: January 9th-14th and January 20th-23rd, 2008. Observations for the previously identified seven criteria were completed, as well as observations on the following species: market swine, market beef, market lambs, and breeding cattle. Table 4.1 is a summary of the total number of animals shown per species at the 2008 NWSS.

Table 4.1 Total Number of Animals Shown at the 2008 National Western Stock Show

Specie	Number Shown
Open Cattle	2,300
Jr. Breeding Heifers	572
Jr. Market Swine	420
Yards Other Breeds	345
Open Sheep	332
Jr. Market Lambs	293
Bull Pens	214
Boer Goats	167
Jr. Market Goats	155
Feeder Cattle	77
Jr. Market Steers	64
Jr. Ewe Lambs	49
Female pens	35
Catch-a-Calf	30
Bull Carloads	18
Total	5,071

Evaluation by Objective

1) Completeness and Accuracy of Certificates of Veterinary Inspection Upon Entry

During the first observational period, the researcher spent time in the satellite office on the grounds of the NWSS. The satellite office is an extension of the main livestock office and is located at the entrance point for livestock going to the “hill”, where haltered cattle, goats, sheep, and swine are housed during the show. Animals coming into the “yards” area of the NWSS grounds are processed elsewhere. The satellite office operated on an assembly line system. Livestock exhibitors arrived and were greeted by a series of traffic cones, stop signs, etc. There were three travel lanes for exhibitors to pull into. Exhibitors then exited their vehicles and entered the satellite office to present health papers for veterinary inspection.

The papers were reviewed by a veterinarian, vet tech, or other certified individual. The individual checking the papers noted the number of animals on the paper and compared it to the actual number of animals on the trailer, according to the exhibitor. Animals that were not on the trailer were marked on the health certificate. In addition, if an exhibitor had entered a certain number of animals but did not have all of them on the trailer and were waiting on the others to arrive, the entire process had to be repeated when the remaining animals arrived. While in the satellite office, officials made copies of the exhibitor's health papers. The original health paper was then returned to the exhibitor and a copy was retained by the NWSS. An NWSS employee then recorded the following information in a binder: the name of the exhibitor, the exact number of animals on the exhibitor's trailer, if the animals had RFID-tags or not, and if the animals had a micro-chip or not. The process at the satellite office was not computerized and the actual animals on the trailer were not examined by any NWSS staff at the entrance point.

All vehicles were stopped at the satellite office as they attempted to enter the grounds, regardless of whether they were carrying animals or not. It was observed by the researcher that the majority of exhibitors stopped at this entrance first. However, those exhibitors with both "hill" and "yard" cattle were at times able to go to tie-outs, unload, and then come to the satellite office. Exhibitors with cattle in the yards were processed in the chute office, which is an extension of the yards office. This is where health papers were checked for those cattle entered in the "yards". If animals were not designated as sale animals, the yards office staff assumed the chute office had properly checked the health papers. It was at the chute office that the researcher observed exhibitors attempting to check-in cattle without proper proof of testing. Staff members from the NWSS stopped the trailer from unloading and contacted the exhibitor's veterinarian. In another instance, health papers came across the table that had been dated January, 2007. This also resulted in a call to the exhibitor's veterinarian to verify that he or she had written the date wrong and the date was in fact supposed to be January, 2008.

2) Efficiency of Recording Last Premises of Record Prior to Entry

Based on observations made by the researcher, the premises of record was not tracked for every exhibitor. This was true for both exhibitors on the "hill" and in the "yards". Colorado, like most states, does not require premises identification in order to

exhibit livestock in their state. The question, “are premises id numbers checked or recorded”, was posed to NWSS staff and the response was that if the NAIS became a mandatory program, then the veterinarians at the NWSS would start enforcing the recording of last premises of record prior to entry. Until then, according to NWSS veterinarian Dr. Mike Scott, the NWSS does not plan to worry about it. The researcher observed that the recording of a previous premises was thought to be just one more thing for the large exhibition to have to deal with. The researcher noted that although an actual premises id number is not recorded, all terminal market animals were tagged with RFID tags.

Although premises identification numbers were not tracked, the NWSS did process a bill of lading, as seen in Appendix B. The bill of lading consisted of the ranch name and representative, address, date, the time of check-in, pen number, breed, display number, tie-out number, stall or pen number, yards/sale/hill classification, type of load (carload, pen, feeder, in transit, etc.), head count, sex, tattoos/tag numbers, other information, and a signature space for the individual who delivered the animals and the individual who yarded the animals. In addition, junior market exhibitors had to complete a primary care and housing form for their 4-H/FFA project, as seen in Appendix C. So, although the recording of premises identification numbers was not observed, the name and address of the exhibitor or the ranch that exhibited the animals was kept on file.

3) Efficiency of Methods Available to Forward the Four Data Elements to a Tracking Database Within 24-Hours of Entry

The four data elements were identified as premises identification number, animal identification number, date of event, and event code. Of the four data elements, premises identification was not recorded at all. If the NAIS becomes mandatory, then premises identification numbers would have to be forwarded to a national animal tracking database, along with animal identification numbers, event dates, and an event code. Based on observations made by the researcher and taking into consideration that the NAIS is not mandatory, the NWSS appears to be doing the minimum amount of work in this area. The majority of the processes that the researcher observed at the NWSS were not computerized. However, it was noted that the entry process itself was computerized.

If the NWSS utilized a computer program that was easy to navigate and allowed only certain employees to access potentially sensitive information, then forwarding the data within a 24-hour timeframe would be feasible. However, it was noted that the current program used at the NWSS was designed by an outside individual who was not familiar with the workings of a major livestock exhibition and the related needs of such an event. Instead of using an established program, such as Show Works, the NWSS opted to build their own program. During the observational periods, the program itself crashed and did not come back up during the researcher's visit. In addition, certain features of the program allowed all employees to be able to gain access to the Social Security numbers of other employees.

The entry procedure, although it did not specifically contain all four data elements, was observed as follows: upon arrival in the yards, exhibitors checked-in at the chute office, where health papers were checked and tie-outs and pens were assigned. Once the health papers were satisfactorily checked, animals were unloaded. However, to check-in at the accounting office the animals did not actually have to be unloaded. Instead, exhibitors could stop and get their parking passes, exhibitor badges, pen signs from the sign shop, etc. before any of their animals arrived on the grounds. Bills of lading were sent to the accounting office from the chute office. Exhibitors had the option of going to the chute office first with animals or to the accounting office without their animals.

4) Efficiency of Methods Available to Record the Same Four Data Elements When Leaving the Exhibition

If the NWSS had difficulty forwarding information during the entry process, it seems logical that they would also have difficulty forwarding information upon exiting. This could be because not all of the information requested by the NAIS was currently required of exhibitors at the NWSS. The primary challenge in the mind of the researcher was the 48-hour timeline. For terminal animals, identification was computerized because of the RFID tag placed in the animal by NWSS staff. However, breeding stock was not processed by NWSS staff, but rather by individual breed associations. An example of the check-in procedures used by the Angus Association can be found in Appendix D. Communication between the two groups, as well as having all of the required information stored in one central (preferably electronic) location, was not observed by the

researcher. In keeping with the absence of requiring premises identification numbers, it also appeared that an event code was not used.

Computer problems seemed to be an issue. The researcher observed several different individuals accessing the computer system at any given time. While that alone did not pose a problem, the amount of information available to these people was seen as a problem by the researcher. This obviously presents an issue of privacy violation. It was also noted by the researcher that the program used for exhibitor information was not without faults. Many of the exhibitor accounts in the computer were outdated. Since the program gave the option of accessing individuals either by name, corporation, farm, etc.; it appeared that several accounts were unpaid. In actuality, this was probably not the case. For example, looking up the exhibitor J. Smith could indicate an unpaid account, but under J. Smith Farms, the account was marked as paid. A separate issue dealt with the program's ability to sort. For example, if a family had three kids in the system as exhibitors, then the feed bill and all other expenses incurred at the exhibition were charged to the individual whose name came up first in the alphabet. The researcher assumed that the four data elements or other related data would be stored in the computer program, but finding the information and assuring its accuracy of the information was a challenge.

5) Daily Inventories on the Premises

Daily inventories on the premises were observed by the researcher. However, these inventory checks were not necessarily specific to certain individuals or days. Instead, it was observed that any performed inventories were very general. For instance, the NWSS was more likely to keep track of when different breeds and species were moving in and out than where an individual animal was at a given time. However, the general location of an exhibitor's animals was noted on a master map of the grounds, both for barn stalling and for leaving tie-outs. The tie-out assignment form is shown in Appendix E.

6) Efficiency of Recording Premises of Destination When Leaving the Exhibition

During observation on the "hill" at the NWSS, the researcher observed four steps in the exit, or release, procedure. First, exhibitors had to obtain a receipt marked "paid" from the feed office, also giving the office a two hour notice before they wished to leave

the grounds. Second, exhibitors had to pick-up health papers from the veterinarian's desk in the livestock superintendent's office. Third, exhibitors had to obtain a Colorado Brand Release from the Colorado Department of Agriculture, also in the superintendent's office. Finally, the receipt from the feed office had to be presented at the superintendent's office in order for the exhibitor to receive a release form. During observation in the yards at the NWSS, five release steps were observed. First, exhibitors had to notify the accounting office at the livestock center twelve hours prior to their desired departure. Second, the accounting office had to take care of obtaining the health papers, brand release, and any charges from to the exhibitor. Third, exhibitors had to obtain a "paid" feed receipt within two hours of departure. Once the exhibitor paid their bills in the accounting office, a release paper was issued. The steps listed above only happened during office hours, from 7:00 a.m. to 5:00 p.m.

Although the researcher was unable to obtain a copy of the release form for exhibitors at the NWSS, the carbon copy form noted the following: exhibitor name, the date/time of permission to exit the grounds, breed, number of animals, type of animal (bull/female/sheep/poultry/rabbit/fleece), sale animal or not, brand certificate stamp, tack or no tack, a paid feed receipt, the make and model of the vehicle exiting the grounds, the make and model of the trailer exiting the grounds, the color and state of both, the driver's name, the license number of the driver, and the state of the driver's license. Examples of the stamps used on these forms can be found in Appendix F. The exhibitor's release form had to have these stamps in order to exit the grounds. In the case of animals that had been purchased through sales or private treaty at the NWSS, the release procedure appeared to be essentially the same. However, some of these animals left the grounds with a different individual than they arrived with, so there were a few adjustments. All official sale animals were sorted by lot number and kept on file in one of the livestock offices. If animals arrived together, but would be going in different directions upon exiting, then each animal needed a separate release form. Both the NWSS and the state of Colorado tracked animals, to a certain extent, as they left the NWSS.

7) Documentation of an Infectious and/or Contagious Animal Disease Diagnosed on the Premises During the NWSS

In relation to earlier observations at the NWSS, the researcher confirmed the requirements of the bovine viral diarrhea (BVD) test. Beginning with the 2008 exhibition, the NWSS required the exhibitors of all shown and sold beef, yak, and camelids who came on the premises to show proof of a negative BVD test. The health requirements that were listed in the premium book read as follows: "all animals entering the grounds must have a current health certificate issued within 30 days. The following conditions must be met: health papers must accompany the animals and be turned in to the veterinarian or superintendent. All animals must be individually identified (except steers), with a tattoo, ear tag, registration number, RFID tag or other electronic ID, biometric form of individual ID, or an ear notch for swine. Show proof of all required tests and vaccinations. Show name and address of owner/exhibitor" (NWSS Premium Book, Appendix G). The requirements for each species were listed in the premium book. If an animal showed signs of an infectious disease, they were immediately withdrawn from the show. If necessary, the animal was quarantined at the exhibitor's expense until the animal recovered or until proper procedures had been followed for the animal to return home. If an animal had to be treated while on the NWSS grounds, it was not necessarily tracked, but treatment was noted on the health certificate. Four copies of the health certificate were then made: one for the exhibitor, one for the livestock office, one for the veterinarian that treated the animal, and one for the state of origin if the animal was treated. The researcher asked NWSS staff about the exposure factor. That is, if the animal was treated for something serious while on the grounds, would the other animals that were also exposed be recorded? The answer was that this situation, on a serious level, had never been dealt with. However, it was noted that if the situation were to occur then yes, exposed animals would be noted.

If the veterinarian had to treat an animal, he or she then made a copy of what was done. If it was an outside service, it was also noted how much was charged for the service. The cost was then added to the exhibitor's account. Release would not be given until the veterinarian bill was paid. There were also situations observed by the researcher where a veterinarian needed to perform tests on the animals that should have been done prior to NWSS arrival. The two incidents, involving llamas and cattle, were due to miscommunication and exhibitors not following the required rules and

regulations put forth by the NWSS. The researcher observed that what the premium book stated, what the exhibitors knew, and what the NWSS actually accepted was very different.

Other Observations

Junior Market Beef Processing

The researcher assisted with the processing of junior market beef. It was observed that the process itself was time consuming and inefficient. Management details could be greatly improved. Cattle were weighed, ear tagged, and RFID tagged. This information was linked to a computer at the scales and thus, was associated with the exhibitor's name and other entry information.

Junior Market Lamb Processing

The researcher did not personally observe market lamb processing but did participate in an informative discussion with a livestock superintendent. The process was described as follows: the lamb is mouthed, ultraviolet scanned, RFID tagged and scanned, measured for tail length, weighed, and released.

Swine Processing and Check-In

The researcher assisted with processing swine during check-in. During this time, NWSS staff members were posted at the public entrances to the swine area to enforce an "exhibitors only" policy. The researcher personally experienced enforcement of this policy, as both the researcher and an additional individual attempted to gain access to the exhibitor area in order to assist with unloading. After being stopped, NWSS staff allowed the two individuals to gain entrance after a livestock superintendent cleared them. The researcher noted that this process would have been easier if personnel who assisting with check-in were given specific identification badges.

The researcher assisted with swine processing, observing 439 total hogs. Three animals stressed out during the process and were not exhibited. The procedure began when hogs entered the show ring and then entered the scales. The animal's RFID tag was scanned with a wand to enter their number in the computer, along with a time and date stamp. The animal's visual tag number was also recorded in the computer, along

with the exhibitor's name, sex of the animal, breed, weight, and a note if the hog was under or over weight. The exhibitor then received a copy of their scale ticket for personal reference. After exiting the scales, the animals were classified by breed. An outside individual, hired by the NWSS staff, classified the animals. The classifier was observed to be calling the animal's breed, ear notch, and visual tag number to make sure the paperwork was in order, the right tags were in the correct ears, ear notches had been entered correctly, etc. This was observed to be a very important job, as the animals were not individually checked at unloading. Rather, when animals were unloaded, the only items that were examined were any paperwork accompanying the animal. Swine exhibitors were also required to complete quality assurance paperwork, which can be found in Appendix H.

Angus Check-In and Processing

As noted earlier, the breed shows checked-in according to the individual preferences of each breed association. The researcher had the opportunity to observe the Angus breed. An example of the Angus procedures is outlined in Appendix D. Veterinarians were on hand for the breed check-ins. The official veterinarians on the "hill" were Drs. Mike and Lori Scott. The official veterinarian in the yards was Dr. Charlie Davis.

Catch-a-Calf

The researcher observed the processing of the Catch-a-Calf steers. There were approximately 30 head of steers of the same breed and all were stalled on the "hill" in one location. The cattle were weighed, retinal scanned, and ultra-sounded. The weigh-in process was computerized and seemed to flow smoothly. After observing the process, the researcher questioned if these were the only animals that were retinal scanned. During processing, the RFID tags were not scanned due to a computer glitch, but the researcher was assured by NWSS staff that the tags would absolutely be read as the steers were loaded on a trailer before going to the processor.

Main Livestock Office

The researcher spent time on the "hill", observing in the main livestock office. The office was divided into cubicles for the junior show, specialty shows, and breeding

cattle. All entries are received in this office. During one day of observation, the researcher assisted the NWSS interns as they assembled exhibitor packets. The researcher assembled exhibitor packets for the sheep show. These packets included: exhibitor back numbers for showmanship and the show itself, ear tags to be put-in during weigh-in, a computer print out of the entries, and any parking passes or exhibitor badges needed. In this office, the researcher also met and conversed briefly with Bill Angell, the livestock manager on the “hill” and in the “yards”.

Livestock Sales

The livestock sales at the National Western play a large role in sending animals to states other than their state of origin. The researcher observed the 2008 Simmental sale at the NWSS and was able to determine the number of lots sold, and the number of states and countries animals were sold to, by visiting the sale manager’s website. The researcher was able to do the same for the 2008 Angus Foundation Female Sale at the NWSS. Table 4.2 is a summary of the two sales.

Table 4.2 Summary of the 2008 NWSS Angus and Simmental Sales

Sale	Number of Lots	Number of States Animals Sold To	Countries Represented
Angus Sale	204	34	2*
Simmental Sale	55	22	2*

* *The countries represented were the same in both sales, the United States and Canada*

4.2. 2008 North American International Livestock Exhibition

In November 2008, the researcher spent ten days observing at the North American International Livestock Exposition (NAILE), in Louisville, Kentucky. The researcher worked directly with the Kentucky Department of Agriculture (KDA), specifically the Division of Producer Services from the office of the State Veterinarian. This was the second evaluation of a national exhibition for the study and was again completed in order to identify potential opportunities for intervention to enhance compliance with the National Animal Identification System (NAIS), if it becomes a

mandatory program. Two periods of observation were completed: from November 5th-9th and from November 12th-16th, 2008. Table 4.3 is a summary of the total number of animals shown per species at the 2008 NAILE.

*Table 4.3 Total Number of Animals Shown at the 2008 NAILE**

Specie	Number Shown
Sheep	4,227
Beef Cattle	3,330
Dairy Cattle	1,554
Meat Goats	667
Swine	600
Dairy Goats	498

**Numbers are a combination of the junior and open shows*

Evaluation by Objective

1) Completeness and Accuracy of Certificates of Veterinary Inspection Upon Entry

The researcher worked out of the animal health booth, located in the cattle barn at the NAILE. Important information for exhibitors was posted here, such as what the livestock were being inspected for. A sign posted in the booth stated that livestock were inspected for:

- Signs of Disease:
 - Nasal and eye discharges
 - Sores on muzzle, mouth, eyes, or feet
 - Excessive drooling
 - Pox lesions (sheep, swine)
 - Lameness
 - Neurological (behavior changes such as aggressiveness, stumbling)
 - Lice
 - Mange

- Ringworm
- Warts
- Animals were Inspected (Viewed):
 - In the tie-out area
 - When entering and leaving the barn area
 - During aisle surveillance times
 - While going to and from the wash rack

The researcher observed that the procedure for checking certificates of veterinary inspection for each of the species was similar in each barn. Ideally, the KDA would like to have a staff member at each entrance where animals might enter the barn. The researcher observed approximately five to six doors where animals were allowed to enter the barn. Several staff members stated that they would prefer to have only one entry point for all trailers hauling livestock. It was noted that the NAILE does not currently have the space to do this and the upper-level NAILE management would not let the KA staff shut down the additional entrances or slow down the flow of traffic around the grounds to funnel everything through one entrance. The researcher was told that due to retirements and resignations, there were not enough staff members on hand to position a separate individual at each entrance. Thus, the researcher observed exhibitors unloading animals before bringing their health papers to the animal health booth.

When exhibitors came to the animal health booth, they presented their health papers, which were then stamped, signed, and dated by KDA staff. Beef exhibitors were given colored zip ties to put on the halters of their cattle, which signified that the health papers for that animal had been checked. The researcher obtained copies of the Validation Statement, Notice of Violation, and Disqualification forms, as seen in Appendices I-K. The Validation Statement was used when exhibitors checked-in for their show and again to obtain a release form. Once health papers were stamped and the exhibitor had a Validation Statement on file with the KDA, exhibitors were told that visual checks of their animals would be done at a later time. If KDA staff happened to be at the door as animals came in, those animals were observed prior to being stalled. The researcher observed KDA staff performing a walk-through of each aisle in the barn, where they checked for animals that were not wearing zip ties or that exhibited signs of disease.

During the dairy show, the researcher observed animals entering the barn before a health check could be performed by KDA staff. In the sheep barn, animals were given a brief visual check, but blankets/hoods/tubes/socks/etc. were not required to be removed. However, during the beef show, the researcher noted that animals were not allowed in the barn without being observed by KDA staff or with a colored zip tie in place.

2) Efficiency of Recording Last Premises of Record Prior to Entry

The researcher did not observe any staff at the NAILE recording premises ID numbers for any exhibitor. The researcher asked the KDA staff if premises ID numbers were considered to be important, and was told that the number was not part of the information required for entry. Staff also explained that when the push for a national animal identification program first began, Kentucky was one of the strongest advocates. However, when the government did not implement a mandatory program, the state followed suit.

3) Efficiency of Methods Available to Forward the Four Data Elements to a Tracking Database Within 24-Hours of Entry

In order to efficiently forward the four data elements (premises identification number, animal identification number, date of event, and event code), the NAILE would have to change what was required of the exhibitor for entry. At the time of observation, the NAILE did not require premises ID numbers, AIN number, etc. so changes would have to be made in order to meet the 48-hour timeframe. The researcher observed mostly paperwork and no computer work during her observation. However, this could have taken place in the main livestock office, where the researcher did not have a chance to observe. The NAILE would need a functioning computer system in order to efficiently forward required information.

4) Efficiency of Methods Available to Record the Same Four Data Elements When Leaving the Exhibition

Similar to the finding for the third objective, the NAILE would have to change what is required of exhibitors in order to be able to track any data elements as exhibitors exit the grounds. Since the NAILE did not appear to require any of the four data

elements, then the potential to not only be efficient in this category, but to meet it in any way was observed to be low. Again, the NAILE would need a functioning computer program with the capability to forward required data.

5) Daily Inventories on the Premises

Daily inventories were observed by the researcher at the NAILE. However, inventories appeared to be done on a specie by specie basis, instead of inventorying specific animals at any given time. The researcher did not observe a master map or other key that would have shown where individual exhibitors were stalled in the barns and how much space they were allotted. The KDA staff took broad animal inventories and were well aware of what species and breeds would be coming and going and at what times.

6) Efficiency of Recording Premises of Destination When Leaving the Exhibition

Premises ID numbers are not required for entry by the NAILE. That being said, the researcher did not observe any staff recording or attempting to record the premises of destination for any exhibitor as they exited the grounds. The researcher noted that Kentucky differed from Colorado in that it is not a brand state. Security should have been a prominent issue at the 2008 NAILE, as four Shorthorn heifers were stolen from the tie-out area during the 2007 exhibition. The researcher spoke with Dr. Ed Hall and Mr. Bobby Bell regarding this issue and how premises of destination would impact security. According to both individuals, the KDA staff members who are positioned at the NAILE exit gates are not knowledgeable about livestock and ownership issues. Thus, the exit procedure is mediocre at best, although release forms are required for exit.

7) Documentation of Infectious and/or Contagious Animal Diseases Diagnosed on the Premises During the NAILE

The researcher had the opportunity to speak with Dr. Moran, the head veterinarian on the grounds, as this objective was evaluated. Dr. Moran explained that if an animal has to be treated while on the grounds he must administer the treatment and write-out a receipt to the exhibitor. This is so there will be a paper trail of the procedure in case something happens after the animal leaves the grounds or another problem arises. It was noted that if an animal is extremely infectious or contagious, it would be

removed from the barn and taken to the quarantine barns located on the outer perimeter of the grounds. The researcher observed a dairy heifer in quarantine for ringworm during one evaluation period. If an animal had to be disqualified from the show, a disqualification form also had to be filled-out. A copy of this form can be seen in Appendix K.

Other Observations

While at the NAILE, the researcher spoke at length with Dr. Ed Hall, a field service veterinarian for the KDA. Dr. Hall offered his personal opinions on what direction the NAILE should take regarding security and animal identification. A document drafted by Dr. Hall can be found in Appendix A. The researcher noted that animal ID numbers (AIN) and premises identification numbers (PINs) were not required by the NAILE. Dr. Hall concurred, stating that he did not believe the NAILE had registered its location with the KDA. However, Dr. Hall did note that the NAILE is located on the grounds of the Kentucky Fair and Exposition Center, which does have a PIN. Dr. Hall also noted that Kentucky scaled back their NAIS compliance effort when the government made the NAIS a voluntary program. It was explained to the researcher that the difference between Indiana (which requires PINs) and the state of Kentucky was that Indiana already had the NAIS requirements in place before the USDA scaled back its efforts. Kentucky did not have those regulations in place.

Dr. Hall and the researcher also spoke about health and security issues. Dr. Hall said that health papers in Kentucky are good for one year. While working at the animal health booth, the researcher observed health papers that were several months old. Even though the twelve month rule is a state regulation, some would argue that a health paper written more than 30 days prior to an exhibition has limited value when it comes to preventing diseased animals from arriving at the exhibition. Dr. Hall doubts that his supervisors will adapt or approve of any proposed changes to current NAILE regulations. It was noted that KDA staff have attempted to push such things through in the past, but have consistently been denied.

Beef and Dairy Cattle

The researcher worked several shifts with the KDA in the animal health booth, located in the west wing of the NAILE. Exhibitors were required to obtain a validation

statement and to have their health papers checked by KDA staff prior to entering the barn. At this point, exhibitors also received the previously mentioned color-coded zip ties. Carbon copies of the validation form were used by the exhibitors to check-in (for the show) at the livestock office and also to gain release after the show. Dairy cattle were also required to milk-out prior to exiting, which had to be checked by an approved KDA staff member.

Dairy Goats

The dairy goat show was held in the south wing of the Fair and Expo Center and shared space with the llama and swine shows. The researcher observed that the unloading space was a separate room of the wing that allowed trailers to pull in, unload animals and tack, then exit the building. Signs reminded exhibitors that no trucks and trailers were allowed beyond certain points, i.e. into the stalling area. During the unloading period, exhibitors were required to fill-out a validation statement. The animals were then walked past the check-in table, where a visual inspection was performed. During this time, the researcher observed multiple goats hooked together as they were inspected, which possibly prevented complete inspection of each individual animal.

Sheep

The researcher spent two hours evaluating the sheep arrival process. Trailers were allowed to back into the loading dock, where they met KDA staff. Lambs were not allowed in the barn until a validation statement had been obtained and health papers had been verified. Lambs were then allowed to be unloaded and visually inspected. The check-in was brief. Exhibitors were required to lift blankets and socks off of their animals; however, the coverings did not have to be completely removed. Breeding stock were also mouthed, in addition to the visual inspection.

Swine

The researcher spent two days assisting with swine check-in. Similar to the dairy goats, swine exhibitors were allowed to pull into the unloading room. Health papers were then checked by KDA staff, but the animal itself was not examined. Exhibitors received a validation statement that was used to check-in and be released.

Swine processing was also observed by the researcher. Staff members from Team Purebred and the National Swine Registry were present to verify breed type and ear notches on the hogs. During this time, animals were also paint branded and weighed. The swine show at the NAILE is terminal, meaning all animals are loaded from the show onto a trailer and taken to a processing center.

Livestock Sales

Similar to the NWSS, the livestock sales at the NAILE also play a large role in sending animals to states other where they originated prior to the show. The researcher observed the 2008 Simmental sale at the NAILE and was again able to determine the number of lots sold and the number of states and countries animals were sold to, by speaking with the sale manager. Table 4.4 is a summary of the sale.

Table 4.4 Summary of the 2008 NAILE Simmental Sale

Sale	Number of Lots	Number of States Animals Sold To	Number of Countries Represented
Simmental Sale	67	20	1*

**The United States was the only country with buyers at the sale*

4.3. 2008 Indiana State and County Fairs

During the summer of 2008, the researcher spent several days observing at three Indiana county fairs, as well as the Indiana State Fair. The researcher evaluated the Monroe, Putnam, and White county fairs in July, 2008. In addition to this evaluation, a second researcher also conducted a survey of 4-H members in three Indiana counties, as well as at the Indiana State Fair. The purpose of the survey was to determine which management practices Indiana livestock exhibitors utilize to prevent and control the spread of disease. Table 4.5 is a summary of the total number of animals shown per species at the 2008 Indiana State Fair, the Monroe County Fair, the Putnam County Fair, and the White County Fair.

Table 4.5 Total Number of Animals Shown at the 2008 Indiana State and County Fairs

Specie	Number Shown: Indiana State Fair	Number Shown: Monroe County Fair	Number Shown: Putnam County Fair	Number Shown: White County Fair**
Beef Cattle	741	122	73	99
Dairy Cattle	400	25	52	69
Goats*	1,097	53	95	179
Sheep	1534	215	97	160
Swine	2061	225	220	543

* Goat numbers include Boer goat does, dairy goats, meat goat wethers, and Pygmy goats

** White County Fair numbers indicate the number of animals that were entered on the animal enrollment forms of 4-H members

Evaluation by Objective

1) Completeness and Accuracy of Certificates of Veterinary Inspection Upon Entry

The researcher noted that per the General Terms and Conditions of the Indiana State Fair 4-H/FFA Handbook and Premium List, the terms and conditions numbered 2-10 dealt with the explanation of and penalties for unethical tampering of animal exhibits. Health papers are not required at the Indiana State Fair (ISF). The Health Requirements and Recommendations for the Exhibition of Domestic Animals at the 2008 Indiana State Fair can be found in Appendix L. Section A of the Handbook/Premium List explains Limitations of Exhibition, Section B explains requirements for Certificates of Veterinary Inspection, Section C explains regulations for animal identification, and Section D explains testing requirements. Additional requirements are also outlined for cats, cattle, dogs, goats, horses, poultry, sheep, and swine. All exhibitors are required to fill out a 4-H Animal Affidavit, as seen in Appendix M. If an animal was treated while on the ISF grounds, the attending veterinarian must fill out a carbon copy record that notes the treatment procedure. Copies of this record are then given to the ISF, the State Fair veterinarian, and the exhibitor's family.

2) Efficiency of Recording Last Premises of Record Prior to Entry

The researcher noted that the Indiana State Fair Board requires all Indiana beef, dairy cattle, goat, sheep, and swine exhibitors to provide a PIN on all their entry forms. The Indiana State Fair requests that Indiana exhibitors alpacas, horses, poultry, and llamas, as well as out of state exhibitors voluntarily provide a PIN.

3) Efficiency of Methods Available to Forward the Four Data Elements to a Tracking Database Within 24-Hours of Entry

The researcher observed that the ISF utilized the FairTracker program to sort classes and to perform a variety of other tasks. This program could possibly be modified to include the four data elements, so they could be efficiently forwarded as needed. Several areas of the ISF utilize on-line services, such as the entry department. It is not unreasonable to think that the ISF could to not only utilize, but also understand an on-line data forwarding system.

4) Efficiency of Methods Available to Record the Same Four Data Elements When Leaving the Exhibition

In keeping with findings for the above objective, the FairTracker program was noted as a possible way to forward data elements as exhibitors leave the State Fairgrounds. The researcher did not observe the recording of any data elements as exhibitors exited the grounds in 2008.

5) Daily Inventories on the Premises

The daily inventories performed at the ISF were found to be consistently similar to other exhibitions. Specie by specie inventories were noted by ISF officials in order to keep track of which species were on the grounds on any given day. The location of treated animals was also noted, as was the location of champion animals in their respective shows. Champions, in some cases, were allowed to remain on the grounds after their respective species or breeds had been dismissed.

6) Efficiency of Recording Premises of Destination When Leaving the Exhibition

The researcher did not observe any premises of destination being recorded at the ISF. With the exception of champion market animals, the destination did not appear

to be a concern. Livestock champions were evaluated differently; as all champion market animals were sent to Purdue University for processing. After each breed show was completed, exhibitors were allowed to load-up and leave.

7) Documentation of Infectious and/or Contagious Animal Diseases Diagnosed on the Premises During the ISF

As animals unloaded at the ISF, the researcher noted that the majority were examined by a veterinarian or approved ISF staff. If an animal showed visible signs of disease, a second approved individual also examined the animal. If the animal was found to be diseased, entrance into the barn was denied and a record of the incident was recorded by the staff. If an animal required treatment on the grounds, it had to be performed by a licensed veterinarian and documented. A copy of the treatment was then distributed to the veterinarian, family, and ISF staff. The researcher observed situations where animals, particularly in the sheep barn, were unloaded on one side of the barn and walked inside, without proper examination.

Other Observations

During the loading of the champion swine, it was determined that one of the breed champions had exited the grounds on the general load-out trailer and was instead processed at Tyson. All trailers entering the Tyson plant unload directly into the facility, so ISF staff was unable to transport the animal to Purdue for proper testing.

As breeding sheep arrived on the grounds, a miscommunication was observed by the researcher. No official veterinary checks were performed on several trailers of animals. As a result, sheep entered the barn that showed visible signs of disease, particularly ringworm. It is possible that these animals passed the disease on to other sheep penned near them. As the infected sheep left the grounds, the potential existed for other animals to be infected.

Beef Cattle

The researcher observed that no veterinarian was present as trailers entered the lot to unload. If the need for a health check occurred, beef barn staff examined the animal. In contrast, out of state exhibitors were asked to provide health papers.

Exhibitors were allowed to exit the grounds after the completion of their breed show. No release form was needed, instead a “load and go” rule was loosely adhered to.

Cattle check-in for the shows was completed by each breed and each one had different specifics. Cattle in the open show did not necessarily have to present their animals for visual inspection. Show staff checked the registration papers and then walked the barns to verify tattoos. In the junior show, animals were all brought to the front of the barn, regardless of breed, and tattoos were verified. 4-H staff also verified that the animal was enrolled on the yellow copy of the 4-H enrollment form. Steers were weighed and sifted for breed requirements at this stage.

Dairy Goats

The researcher observed that only a certain number of trailers were allowed behind the goat barn to unload at any given time. When an animal was taken off of the trailer, the exhibitor was required to present the yellow copy of the 4-H enrollment form, as well as their registration papers. Staff would then hold the animal while another person read the tattoo to match it against both the yellow form and registration papers. Any animal that did not have a tattoo that matched both documents was allowed to show in the open show only. Any discrepancies were noted and filed by staff. No veterinarian was present as animals came off the trailer unless it was determined that a veterinarian needed to be called.

Champion and reserve champion dairy goat does in each breed again had their tattoo checked against the registration paper. Animals were released after completion of their respective breed show. Exhibitors were required to check-out with the barn staff in order to obtain a release ticket after their pens had been cleaned. Animals were monitored while on the grounds by tag number and tattoo.

Market Lambs

Market lambs were admitted, shown, and released prior to the breeding sheep show. The researcher noted that all market lambs were slick shorn, with a fleece that measured $\frac{1}{4}$ inch or less in length, which was found to be in accordance with the ISF Premium Book. Lambs were required to unload and remove all blankets or socks. A visual inspection was then performed by ISF staff or an official ISF veterinarian.

The researcher found that all trucks and trailers were held in Lot 5 on the grounds until unloading space became available. Two unloading lines were observed, both with proper staff at each. Each trailer was inspected before it was allowed to proceed. A radio relay was used by ISF staff to keep trailers moving. This was found to prevent traffic conflicts and also decreased the chance that staff would either miss inspecting a trailer or an animal.

After a trailer arrived at the unloading area, designated staff members checked the yellow copy of the 4-H enrollment form, noted which animals were on the trailer and determined who would be showing the animals. If, after inspection, an animal was found to be unsatisfactory to show, the animal was returned to the trailer and a staff member recorded the name of the 4-H member, the county of the exhibitor, the animal ID, and the reason for disqualification. Upon release, exhibitors were required to return to the same area used for unloading. Load-out and exit were not allowed without obtaining a release form from the sheep office and cleaning the pens. Premises ID of the destination was not recorded.

Meat Goats

Unloading was supervised by barn staff. If a representative from the Indiana BOAH was available, they were present as well. After a visual health inspection, staff matched the ear tag number of the animal to the number recorded on the yellow copy of the 4-H enrollment form. In order to be released, exhibitors had to clean their pens and receive a release ticket.

During the meat goat show, ear tags were again checked against what the number on the 4-H enrollment form. As animals exited a class, they were weighed and had their tags checked against the number on the entry card for that animal. Boer goat does were also checked as they entered the show ring. If an animal had a tattoo that was illegible, the animal did not enter the ring. After speaking with the show manager, the researcher learned that tattooing was not necessarily a good form of identification for goats because of inconsistencies with application of the ink. A tamper-resistant button tag would be preferred by the show manager.

Swine

The researcher noted that all swine exhibitors were required to obtain an unloading number upon arrival at the ISF, in accordance with the ISF Premium Book. As exhibitors moved to the barn to unload, animals had to be examined by ISF staff for any outward signs of disease and ear notches were also read and compared with the notches recorded on the yellow copy of the 4-H member's swine enrollment form. Once the hogs were unloaded, the 4-H member was required to go to the front of the swine barn and complete the paperwork process. When it was time for exhibitors to exit, a general announcement was made for animals to be loaded that were going to market. All release times occurred after the show had been completed. Animals returning to the farm could not be loaded until the exhibitor had cleaned their pens and obtained a release form from the swine barn office.

The paperwork process began when the exhibitor received the white copy of the 4-H enrollment form. The exhibitor then filled-out entry cards for barrows and gilts and verified that the correct animals had been noted on the enrollment forms. State Fair 4-H staff sorted the enrollment forms by breed. When exhibitors entered the show ring, they gave the entry card to a ring worker, who then sorted the cards from top to bottom in placing order. Additional staff collected the entry cards and checked the ear notches against the number on the white copy of the 4-H swine enrollment form, in order to verify that the correct animal was shown.

Livestock Sales

In keeping with findings from the NWSS and NAILE, the researcher found that the Indiana State Fair also hosts livestock sales that sell animals to states other than the animal's state of origin. At the Indiana State Fair, the most prominent of these sales occur in the swine barn. The researcher chose to focus on the Crossbred Classic Sale, which sells both boars and gilts to a variety of buyers from different states each year. Table 4.6 is a summary of the 2008 Crossbred Classic at the Indiana State Fair.

Table 4.6 2008 Crossbred Classic Sale Summary

Sale	Number of Lots	Number of States Represented by Buyers and Consigners	Number of Countries Represented
Crossbred Classic	113	16	1*

**The United States was the only country represented*

Monroe County Fair

The researcher traveled to Bloomington, Indiana in July, 2008 to assist with a separate research project funded under the same USDA grant as this study. While at the Monroe County Fair, the researcher electronically scanned and recorded the RFID tag of each animal in the swine project. In addition to the RFID work, the researcher also had the opportunity to observe the check-in and processing of swine in a smaller type exhibition-the county fair.

Putnam County Fair

The researcher traveled to Greencastle, Indiana in July, 2008 to assist with a separate research project funded under the same USDA grant as this study. While at the Putnam County Fair, the researcher electronically scanned and recorded the RFID tag of each animal in the beef project, with the exception of registered breeding heifers. In addition to the RFID work, the researcher again had the opportunity to observe the check-in and processing of beef cattle in a smaller setting, as compared to the NWSS, NAILE, and ISF.

White County Fair

The researcher traveled to the White County Fair in Reynolds, Indiana in July, 2008 to examine the seven characteristics that had been evaluated at the NWSS, NAILE, and ISF, but on a smaller scale. If the NAIS were to become mandatory, all exhibitions, regardless of size or type, would have to comply.

Similar to many Indiana counties, the researcher found that White County published its own 4-H Handbook each year. In White County, 4-H livestock projects must adhere to specific rules, as summarized in the 4-H Livestock Project Exhibits section of

the 4-H handbook, which is shown in Appendix N. Exhibitors were also required to adhere the exhibition regulations listed in the Indiana 4-H Statement of Policy, Appendix O.

Exhibitors at the White County 4-H Fair were required to meet health requirements for the exhibition of their animals. If an animal was brought to the fair that showed signs of disease, the livestock committee for that particular species could prevent the animal from being unloaded, checked-in, judged, or shown unless it had been approved, at the expense of the 4-H member, by a certified veterinarian. In addition to the county requirements, each project (such as beef, sheep, swine, etc.) had its own list of regulations. The researcher found that the rules for each species were in accordance with the terms and conditions of the ISF. The White County rules for each species covered in this study (beef cattle, dairy cattle, sheep, swine, and goats) are included in Appendices P-T.

4.4. Summary

Overall, the results from the evaluation of each exhibition were uniform. The researcher was able to identify areas unique to each exhibition that would allow the exhibition to become NAIS compliant, but also found areas that would need to be improved. Results of each evaluation effectively identified areas that would need further development or corrections in order to meet the current standards of the NAIS. These instances and related factors are further explained in Chapter Five.

CHAPTER 5. CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The two primary goals of this study were to: 1) evaluate livestock identification and data collection systems used at various livestock exhibitions and 2) to identify potential additions and/or changes that need to be made in order to make the systems compliant with the NAIS. The exhibitions that participated in the study were the National Western Stock Show (NWSS), in Denver, Colorado, the North American International Livestock Exposition (NAILE), in Louisville, Kentucky, the Indiana State Fair (ISF), in Indianapolis, Indiana, and three Indiana county fairs. The data collected from this USDA-funded study will assist APHIS in developing guidelines for national and international livestock expositions as they seek NAIS compliance.

Seven objectives were identified as evaluation points for this study. The seven objectives are as follows:

1. Assessment of completeness and accuracy of certificates of veterinary inspection upon arrival at the exhibition.
2. Efficiency of recording last premises of record upon arrival.
3. Efficiency of methods available to forward the four data elements to a tracking database within 24-hours of arrival (premises number, animal ID number, date, event code).
4. Daily animal inventories on the exhibition premises.
5. Documentation of infectious and/or contagious animal diseases diagnosed on the premises during the livestock exhibition.
6. Efficiency of methods available to record the same four data elements when leaving the exhibition (for forwarding to a tracking database).
7. Efficiency of recording premises of destination when leaving the exhibition.

The evaluations conducted in the study began at the 2008 NWSS and concluded with the 2008 NAILE. The ISF and county fairs were evaluated in July and August of 2008. The researcher traveled to each exhibition with the intent of conducting evaluations based on observational periods and participation in the animal identification

processes used at the exhibitions. At each exhibition, the researcher recorded daily observations and findings, as well as findings for each of the seven objectives listed earlier. These records were then converted to an electronic document and eventually formatted into quarterly reports to the USDA. A quarterly report was filed for each of the three observational periods: the NWSS, the NAILE, and the ISF and county fairs.

5.1. Conclusions

The first objective of this study was to evaluate livestock identification and data collection systems used at livestock exhibitions. After conducting evaluations at the NWSS, NAILE, ISF, and Indiana county fairs, the results summarized in Chapter 4 indicate that significant improvement and adaptation would be needed in order for livestock exhibitions to become NAIS compliant. The second objective was to take the evaluation results and identify potential additions and/or changes that need to be made in order to make the systems NAIS compliant. These potential additions and/or changes were identified by comparing each of the exhibitions with how well they did or did not meet the previously discussed objectives.

The biggest barrier to the exhibitions becoming NAIS compliant was that each exhibition was unique, with their own rules, species, and procedures. The first change exhibitions would need to make would be to implement an online computer system that is uniform in its design and connected in some way from exhibition to exhibition. This program would need to have the ability to work for a large international show (such as the NWSS) all the way down to a smaller exposition, such as the White County Fair. Having a streamlined information system would allow staff at each exhibition to identify and address potential disease outbreaks that may occur at their show, as well as to identify the exhibitor or animal in such a way that if they attend the next exhibition (such as going from Louisville to Denver), then a red flag would identify the need for additional vet checks at the second show.

The second change that needs to be made is to change the health paper requirements to where these regulations are the same for each exhibition. Currently, the NAILE and NWSS require health papers, but the length of time the papers are valid varies from state to state. Indiana County Fairs do not require health papers at all.

Instead, a PIN is used to show where animals are being raised. However, a PIN doesn't have anything to do with the physical health of the animal. The problem with this change would be attempting to get all expositions and organizations on the same page. Results from this study suggest that the best way to address the problem would be for every exhibition, regardless of size, to require health papers that are good for the same amount of days.

The third change that would need to be made in order to become NAIS compliant deals with the use of PINs. Registering a location for a PIN does not mean the exhibitor would then need to participate in the other two steps of the NAIS, but it is the first step to NAIS compliance. For that reason, exhibitions should strongly consider requiring a PIN of all exhibitors. In Indiana, both at county fairs and at the ISF, this is already done and it appears that exhibitors preferred the PIN over having to secure health papers for each show. The NWSS and NAILE have registered their exhibitions for a PIN, but were not requiring a PIN from exhibitors. Requiring a PIN would go a long way towards making the shows NAIS compliant. If a PIN was required of all exhibitors, the exhibition would then be able to forward the information to a tracking database, as well as keep track of animals as they left the grounds.

The fourth change would improve the daily inventories done on the grounds of each exhibition. As far as a general inventory, all of the exhibitions were aware of what species or breeds were moving in or out on a given day. The addition of a more specific daily inventory would prevent exhibitors from leaving the grounds early, from taking animals to the tie-out at times outside the designated tie-out times, etc. It is possible that increasing awareness of where animals are at all times while on the grounds of an exhibition could prevent situations like the theft of four Shorthorn heifers from the 2007 NAILE.

All of the exhibitions that participated in this study did a satisfactory job of meeting objective 5, which is documenting contagious and/or infectious diseases diagnosed while on the grounds of the show. With the exception of common infections, such as ringworm, a serious disease has never occurred on the grounds of these exhibitions. That being said, the procedure for documentation has never been strenuously tested in the event of an animal disease emergency. However, after speaking with the staff at each exhibition, it was confirmed that an effective plan is in place, should a disease emergency ever occur.

Objective 6 focuses on the ability of exhibitions to forward certain data elements (premises number, animal ID number, date, and event code) to a tracking database within 24 hours of animals arriving at the exhibition. In order for this to be done, changes would need to be made to the entry requirements of each exhibition. The primary difference between the exhibitions was that not all of the four data elements were required at each show. For example, the ISF requires (in some form) a PIN, AIN, and date of arrival. The NWSS requires (in some form) an AIN and a date of arrival. County fairs in Indiana require (in some form) a PIN, AIN, and date of arrival. The entry form for all exhibitions should be modified so that all four of the data elements are required. The exhibitions would then be able to focus on being able to forward the information, if needed, to a tracking database within 24 hours of a disease diagnosis.

Objective 7 focuses on recording the PIN of destination when exhibitors leave the exhibition. Results indicated show this was not done at any of the exhibitions. However, at the exhibitions that required a PIN for entry (such as the ISF), a number would be on file. However, the number on file would not necessarily be the PIN for where animals go after an exhibition. Since the NWSS already has an exit strategy in place that requires exhibitor's to fill-out information regarding their exit from the grounds, adding a destination PIN could easily be added to the form. If an exhibition does not require a release form, the addition of such a form should be considered.

Overall, the results show that in order to become NAIS compliant, livestock exhibitions would need to implement the following changes:

- Add an online computer system that is uniform in its design and connected in some way from exhibition to exhibition
- Standardize health paper requirements for each exhibition
- Require a PIN from each exhibitor
- Improve and regulate the daily inventories conducted on the grounds
- Modify the entry form for all exhibitions so that each of the four data elements are required on the form
- Add a destination PIN to the release form used by exhibitions when animals leave the grounds
- Require a release form for the exhibition if one is not already in place
- Inspect all livestock trailers as they leave exhibitions to ensure that the animals on the trailer are the same ones listed on the release form

5.2. Implications

There are a few implications that result from the findings and conclusions presented in this study. If the USDA were to make the NAIS mandatory and livestock exhibitions did not choose to implement the suggested changes, they would be risking not being allowed to hold the exhibition at all. This would have negative connotations for the many exhibitors that participate in these exhibitions every year, particularly those who make their living showing livestock. A single disease outbreak has the potential to shut down interstate and intrastate animal movement. If livestock exhibitions take time to understand the reasons behind the suggested changes and understand the potential consequences of not becoming NAIS compliant, they may be more likely to start making changes. However, the results do not indicate that the exhibitions will implement these changes on their own. It appears that some exhibitions will not change the way they receive and release animals unless the NAIS becomes mandatory or there is a disease outbreak on the grounds of a livestock exhibition.

5.3. Recommendations

The researcher recommends that second study be conducted of other types of livestock exhibitions. The evaluation in this study was confined to the NWSS, NAILE, ISF, and Indiana county fairs. The southwest portion of the United States is home to several prominent livestock exhibitions that are very different from the NWSS and NAILE. These include exhibitions in Fort Worth, Houston, and San Antonio. In addition, county fairs outside of Indiana would also be beneficial to study. The results of the evaluations conducted in this study suggest that additional evaluations may prove to be beneficial, should the NAIS become mandatory. Future evaluations should include a focus on determining the level of awareness an exhibition has regarding the NAIS and what steps, if any, the exhibition has taken to become NAIS compliant. If no steps have been taken, it may be beneficial to determine what is preventing change, such as: are there financial concerns, privacy issues, or problems with the required entry information.

A second recommendation would be to establish one point of entrance and/or exit on the grounds of the exhibition. This point should be staffed with individuals who are knowledgeable about the exhibition and who are required to stop and inspect each trailer that is hauling livestock as it attempts to leave the grounds. At the NAILE, there are several entrance and exit points. This creates confusion as trailers move on and off the grounds and also increases the chance that some animals may slip through the cracks. To accompany this point, it is also recommended that the exhibitions implement firm entrance and exit times. During exit times, someone from the exhibition itself (not grounds security) should be in place to prevent those without proof of ownership or other form of permission to exit the grounds. If this were done, situations like the stolen Shorthorn heifers at the 2007 NAILE could be decreased, if not prevented entirely. If exhibition staff is not available to work the exit gates, then security personnel should be trained to inspect trailers and animals as they leave the grounds.

The researcher also recommends that exhibitions strongly consider implementing a rule that requires all exhibitors to provide a PIN. Beginning with the 2009 NWSS, PINs were required for at least the junior shows. This is a big step for a national livestock exposition desiring to become NAIS compliant. Requiring a PIN would enable exhibitions to comply with potential NAIS regulations, such as being able to forward information to tracking databases within a certain timeframe. The researcher also recommends that the exhibitions designate specific unloading areas for livestock and provide staff, signs, or other directional tools designed to aide exhibitors in arriving at the correct location. This would decrease the problems observed at the ISF, where animals (including those with visible signs of disease) unloaded outside designated areas and were walked into the barns.

The researcher also recommends that all animals be examined as they come off the trailer, instead of once they have entered the barn or are going through check-in the next day. For example, swine exhibitors at the NWSS were allowed to unload their animals without each animal being examined for correct ear notches or disease. On the other hand, at the ISF, hogs are examined by swine barn staff before they can continue the unloading process. This additional visual check would help ensure that no diseased animals or those that had not been entered in the show make it into the barn.

It would also be beneficial if all exhibitions required similar forms of identification for each species. There are a variety of ways to identify animals, such as tattoos, paint

brands, ear notches, ear tags, RFID tags, etc. Designation one or two preferred methods would allow exhibitions to enter information into the computer more efficiently, as well as cut down on the information required from exhibitors. Another way to approach this problem would be for the exhibition to tag the animals once they arrive at the show. This is done at several shows already, such as the NWSS putting RFID tags in the steers and swine.

The following recommendations are based on Dr. Ed Hall's protocol designed for the Kentucky State Fair and NAILE, but could be adapted to different expositions as well. The researcher recommends that all exhibitions consider the following:

- Exhibition personnel on-duty 24/7 or during certain times that exhibitors are made aware of
- Have a document for re-consignment of sale animals
- Limit access to the grounds after certain evening hours
- Identify specific hours or days for each specie to enter the grounds
- Require RFID identification of all animals
- If RFID tags are required, ensure that staff posted at the entrance to livestock exhibitions are using wand readers to confirm the AIN and to keep track of the animals entering the grounds
- Be able to cross-reference the AIN read at the entrance with the animals entered in the exhibition
- Ensure that all groups (department of agriculture, exhibition staff, veterinarians, etc.) are connected so that each entity has access to the status of the animals on the grounds at any given time

The researcher feels that strong consideration should be given to the RFID recommendation, along with an accompanying retinal image (where applicable). The use of RFID technology would go a long way towards decreasing instances where exhibitors may try to switch animals in addition to decreasing the odds of a potential animal disease outbreak. Animals tagged with RFID tags could also be tracked once they leave the grounds, which falls into NAIS compliance.

The final recommendation of the researcher accompanies the earlier suggestion of additional exhibition evaluations. The National Junior Swine Association (NJSA) conducts a series of regional shows every year. These swine exhibitions include shows in Texas, Pennsylvania, Georgia, California, Iowa, and Kentucky. Evaluating these

shows based on the objectives presented in this study would help determine whether the exhibition side of the swine industry is ready to become NAIS compliant as well. Similar studies should also be conducted for the other species covered in this study. However, the NJSA is the most prominent organization of its type and a closer look into their exhibitions could be beneficial.

LIST OF REFERENCES

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APPENDICES

Appendix A. NAILE Draft Document

KSF-NAILE Animal Protocol for KDA AH performance

Upgrades since 2004:

24/7 Check in KDA personnel on duty

New protocols to assist producers in quickly check in protocol:

Designated check in areas that exhibitors know about

Sign validation statement

Re-consignment document for sales and KEC Veterinarian

Limit Access to Fairgrounds after certain nighttime hours

Designate specific entry doors for the animals to enter the building

NAILE release document to exit the Fairgrounds

Areas for further upgrade of movement validation:

Designate specific gates for livestock to enter fairgrounds (Gate 6)

Check in site in parking lot adjacent to gate 6 (*hogs move directly to designated site for check in to avoid heat death losses*)

Use cones to designate lanes for exhibitors to follow to check in

Use of KDA Mobile Ops Center for check-in location

Move toward designated hours for each species to enter the premises

Allow freedom of movement post check in to stall/stable/pen area

Move to RFID

Use reader panels at designate entry doors to confirm animal ID

Link Panels to computers and cross reference with entries

Allows real time info about animals on the premises

Use of RFID/visual ID for weigh ins, exhibits etc.

Hand wands for animal ID where necessary.

Link KDA AH, KDA S&F, and KEC for access to status of animals on the KEC Premises.

Appendix B. NWSS Bill of Lading

364788



BILL OF LADING

NATIONAL WESTERN LIVESTOCK CENTER

AT THE NATIONAL WESTERN COMPLEX
4701 MARION ST. • DENVER, CO 80216 • PH. 303-297-1166

THIS IS NOT A BILL OF SALE

RANCH NAME: _____ BREED _____
 RANCH REP: _____ PEN # _____
 ADDRESS: _____ H/S DISPLAY # _____
 CITY/STATE: _____ TIE OUT # _____
 DATE: _____ TIME: _____ AM/PM BEDDING PEN # _____

CLASS: YARDS _____ SALES ONLY _____ HILL _____

PEN _____ FEEDER/PROSPECT _____ H/S DISPLAY _____
 CARLOAD _____ COMM HEIFER _____ SHOW ONLY _____
 IN TRANSIT _____ OTHER _____

EXPECTED DATE OUT: _____

HEAD COUNT	SEX	TATTOO(S) OR TAG NUMBERS
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

_____ TOTAL COUNT

Other Info. _____

DELIVERED BY: _____ YARDED BY: _____

Appendix C. NWSS Primary Care and Housing Form

PRIMARY CARE AND HOUSING FORM FOR NATIONAL WESTERN STOCK SHOW
JUNIOR MARKET PROJECTS

HUMANE POLICY STATEMENT FOR 4-H/FFA LIVESTOCK PROJECT(S)

It is the responsibility of every 4-H/FFA member to ensure that proper care is taken of their animal(s) according acceptable methods of good animal husbandry. A healthy animal requires sufficient food, water, shelter and appropriate health care. Cruel and inhumane fitting or training methods are prohibited in any 4-H/FFA program and will not be tolerated by the National Western Stock Show. Specific animal husbandry guidelines and humane training methods are provided in the appropriate 4-H manual.

The National Western 4-H/FFA current project recommendation for primary care states that "4-H/FFA members will provide primary and continuous care of their project animals". Primary care is defined as the 4-H/FFA member making the decisions for and/or providing the care, handling, and training of their animal project(s) a majority of the time. 4-H/FFA members must keep a record book on their project animal(s). Primary care exemption must be provided by the designated local representative body comprised of at least one Extension agent and other committee representatives as appointed by the Extension Office. *The county will determine a one-step appeal process if request is denied.

Each situation for exemption of primary care will be evaluated within the exhibitor's county by an appropriate review body. An approval or disapproval of the situation will be communicated to the participant(s) in writing. An appeal may be submitted through established grievance channels established in each county. 4-H/FFA members and guardians acknowledge that the approval of facilities and animal welfare checks may be conducted at any time by the local county extension agent or their representing body without advance notice. Random visitations may occur.

Submission of this primary care document is required by all animal project participants for each project entered in each year of exhibition. Please complete, sign, and submit to National Western Stock Show office at the processing of your animal(s).

DATE _____ 4-H Club/FFA Chapter _____

EXHIBITOR NAME _____

ADDRESS _____ CITY _____ STATE _____ ZIP CODE _____

TELEPHONE NUMBER _____ CELL PHONE _____

1. Will all of your animals be housed at your primary residence? Submission of this form does not give approval of the project not being housed at the primary residence.

_____ YES _____ NO

IF YOUR ANSWER IS YES, PLEASE SIGN BELOW.

IF YOUR ANSWER IS NO, PLEASE ANSWER THE FOLLOWING QUESTIONS ON THE BACK PAGE AND SUBMIT TO YOU EXTENSION AGENT FOR APPROVAL.

I HEREBY CERTIFY THAT I HAVE READ THE ABOVE INFORMATION AND WILL COMPLY WITH THE RULES SET FORTH ABOVE.

4-H MEMBER'S SIGNATURE

PARENT'S/GUARDIAN'S SIGNATURE

2. List the particular circumstances that prevent you from having your project animal(s) housed at your primary residence.

3. If your project animal(s) will not be housed at your primary residence please indicate where (including address) each animal will be housed and the landlord/caretaker of the residence.

LANDLORD/CARE TAKER: _____
PHYSICAL ADDRESS: _____
CITY, STATE AND ZIP CODE: _____
TELEPHONE/CELL PHONE NUMBER: _____

4. How do you plan to care for the project animal(s) not located at your primary residence. What arrangements have you made for traveling to and from the non-primary residence to care for your animal(s).

5. If you will not be providing primary care for your project animal(s) during the entire ownership period, please explain who will be providing primary care, when they will be caring for the project animal(s), and why you are unable to provide primary care for the project animal(s) through the ownership period.

As the landlord/caretaker of the property listed above, I acknowledge the 4-H/FFA programs intent is education; as such I will encourage and require the 4-H/FFA member to be extensively and continuously involved in the care of their animal(s) housed at my property. If deemed necessary by the Extension agent, I grant the Extension agent or a designated person acting in their stead, permission to check on the 4-H/FFA member's animal(s) while they are housed on my property.

LANDLORD/CARETAKER
SIGNATURE _____ DATE _____

I hereby certify that the above information is truthful and accurate.

4-H/FFA MEMBER'S SIGNATURE PARENT'S GUARDIAN'S SIGNATURE

FFA ADVISOR OR 4-H LEADER'S SIGNATURE _____

*YOUR REQUEST FOR PRIMARY CARE EXEMPTION HAS BEEN:
APPROVED _____ DENIED _____

4-H Extension Agent/FFAAdvisor _____ Date _____

Appendix D. NWSS Check-In Procedures for the Angus Breed

Attention Angus Exhibitors

The following information sheet explains procedures for the check-in process for the open class and junior Angus shows.

Check-in Time: Sunday, January 13, 2008, 8:00 a.m. We will check in by aisle, starting with the aisles closest to the sale arena. The check-in process will be completed Sunday afternoon.

Location: We'll check-in along the aisle closest to the Beef Palace Auction Arena. Look for Association staff.

Check-in Process:

- ◆ Bring original registration paper(s) and the animal(s) to the check-in area.
- ◆ Tattoos (permanent identification marks) and papers will be checked on all animals, (heifer, bulls, cow/calf pairs) including any that have been stamped at previous shows.
- ◆ Tattoo (or other accepted permanent identification mark) must be legible and match the registration paper.
- ◆ Scrotal measurements will be taken on all bulls.
- ◆ Show day weights will be taken on both open class bulls and females.
- ◆ **Ultrasound measurements will be taken** for fat thickness (rib and rump).

Please Note: On Tuesday (time to be announced) each exhibitor will receive a copy of the class breaks and an exhibitor number "back tag" for each animal in the show. If you do not receive the proper number of cards, be sure to contact an American Angus Association representative immediately.

Show Day: All bulls and females must be weighed in the barns prior to coming to the line-up area and entering the show ring. No coloring agents are allowed.

Angus Event Schedule:

Sunday, January 13 8:00 a.m.	Hill Cattle check-in — Behind sale arena
Monday, January 14 6:30 p.m.	Herdsman Banquet — National Western Club
Tuesday, January 15 8:00 a.m. 1:00 p.m.	Pen & Carload check-in by alley Junior Angus Heifer Show — Stadium Arena
Wednesday, January 16 8:00 a.m.	Angus Cow/calf Pairs & Female Show — Stadium Arena
Thursday, January 17 8:30 a.m. 2:00 p.m. 6:30 p.m.	Judging Angus Sale Bulls — Stadium Arena Angus Bull Sale — Beef Palace Auction Arena Angus Reception — Denver Marriott City Center
Friday, January 18 8:00 a.m. 1:00 p.m. (approximate)	Angus Bull Show and Group Classes — Stadium arena Foundation Female Sale — LCAA (Lvst. Center Auction Arena) immediately following Angus bull show
Saturday, January 19 8:30 a.m.	Carload & Pen Shows — LCAA (Lvst. Center Auction Arena)

LIVESTOCK HEALTH REQUIREMENTS

Colorado Department of Agriculture - State Veterinarians Office
700 Kipling, Suite 4000, Lakewood, CO 80215-5894
Call (303) 239-4161

There have been several new health requirements.

PLEASE READ CAREFULLY!

*****Please share this information with the accredited veterinarian issuing paperwork. If you have any questions, please contact the State Veterinarians Office.***

HEALTH CERTIFICATES

General Requirements and Information

The term "health certificate" means a legible record, made on an official form of the state of origin, issued by an accredited veterinarian, which shows that the animals listed thereon meet the health requirements of the state of destination. **All animals entering Stock Show grounds must have a current health certificate within 30 days. **See other testing requirements by species listed below.**

Health certificate must:

1. Accompany animals and **must be turned in to Animal Health Officials or Show Superintendents upon arrival.**
2. Individually identify all animals showing positive identification of each animal by tattoo, ear tag, registration number, RFID tag or other electronic ID, or biometric forms of individual ID, or registration ear notch on swine and showing them free of all infections, contagious or communicable diseases.
3. Show required tests and/or vaccinations.
4. Show name and address of owner or exhibitor.
5. All health certificates must be issued by an Accredited Veterinarian within 30 days of show.

Animals with active lesions of ringworm with resulting loss of hair, or multiple warts easily visible without close examination will not be permitted to exhibit.

All livestock entering this show will be subject to examination by the State Veterinarian's Office upon entry or during the show. Any found showing evidence of infections, contagious or communicable diseases may be immediately withdrawn from the show and held in quarantine at owner's risk and expense until properly treated and recovered, or until properly released to return to owner's premises following treatment.

If the state of origin has had a confirmed index case of vesicular stomatitis (VS) and has any premises under quarantine for VS during the National Western Stock Show, health certificates must be issued within 48 hours.

REQUIREMENTS FOR CATTLE AND BISON SALES

"Hill" cattle sales, "Yard" sales, Pen cattle, Carload cattle and Private Treaty sales.

Regardless of origin, all sale animals must meet the following requirements to transport from NWSS to any state in the Continental U.S.

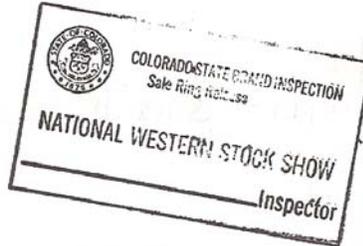
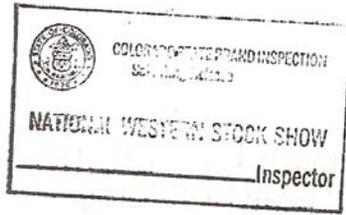
Individual health certificates (3 copies) are required for each animal or lot consigned to a sale held in conjunction with the show.

- A. Brucellosis
 1. All females must have been officially calfhood vaccinated for Brucellosis and have a legible tattoo.
 2. All female test eligible breeding cattle or bison (18 months of age and over) must be tested and negative within 30 days prior to sale date or be from a certified herd.
 3. Bulls over six months of age must be tested and negative within 30 days prior to sale date or be from a certified herd
- B. Tuberculosis- All breeding cattle and bison must be tested and negative within 30 days prior to sale date and/or be from an accredited herd. Cattle or Bison from any modified accredited or modified accredited advanced state shall have a negative whole herd test (with individual animals included) within 12 months and an individual test within 30 days of sale date.

Appendix E. NWSS Tie-Out Assignment Form

TIE-OUT ASSIGNMENTS		TIE-OUT ASSIGNMENTS	
NAME: _____		NAME: _____	
BREED: _____		BREED: _____	
STALL NUMBERS: _____		STALL NUMBERS: _____	
TIE-OUT NUMBERS: _____		TIE-OUT NUMBERS: _____	
_____ NW SIGNATURE		_____ NW SIGNATURE	

Appendix F. NWSS Stamps



[Faint, mostly illegible handwritten text in yellow and black ink, possibly including names like "BIVANIS KIRKOS" and "KIM"]

Appendix G. NWSS Health Requirements

ATTENTION - VERY IMPORTANT!!

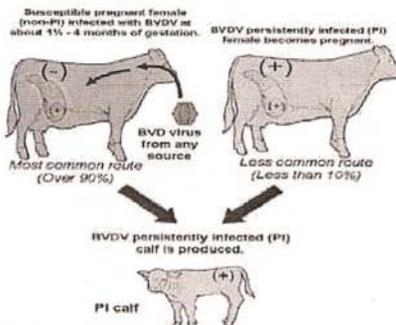
BOVINE VIRUS DIARRHEA - persistent infections

The National Western Stock Show, as a responsible leader of the livestock industry requires that all beef cattle, bison, yak and camelids shown and sold during its event, show proof of a negative PI test for BVD. The National Western is in support of the AABP, NCBA Cattle Health and Well-being Committee and the Academy of Veterinary Consultant's position stating responsible disposition of BVD persistently infected animals is an important component of BVD control.

BVD is a disease that is damaging to the industry. Cattle owners have a moral and ethical obligation to the beef industry not to sell known diseased or damaged animals without full disclosure.

Background:

- Persistently infected (PI) cattle are the major source for BVD infection and disease in cattle that come in contact with them. PI cattle become infected before they are born (about 45 - 125 days of gestation) and shed huge amounts of BVD virus throughout their lives.
- The common ways BVD is introduced into herds are through herd additions that are PI or contact with other PI cattle - including PI calves, yearlings, bulls, females and fetuses carried by pregnant females. Any calf, replacement heifer, bull or cow can become temporarily infected with BVD virus for a few days to weeks until their immune system can clear the virus. The disease is usually not fatal by itself, but BVD virus suppresses the immune system and makes infected cattle more susceptible to diseases such as pneumonia, scours, foot rot and others. The virus may also cause infertility and/or abortion in susceptible cows, heifers and bulls.
- Testing for PI cattle is different than testing for many other animal diseases in that PI status stays the same throughout the animal's life. In other words, a non-PI animal will be negative its entire life and a PI animal will remain so its entire life. Because of this fact, PI testing is usually done once. A test for PI status only needs to be repeated to confirm a positive, or if evidence indicates, a faulty test. As with all tests, a few false-positive and false negative results can occur.



PI animals are defective. Their status should be disclosed and the marketing or movement of these animals in any manner that causes exposure to non-infected cattle is an act that ignores a cattleman's ethical obligation to the industry.

Meet with your veterinarian to determine or review your BVD goals and current exposure risk. The dilemma of how to deal with known PI cattle becomes more critical as BVD testing becomes more widespread. Appropriate disposition of known PI cattle must take into account the adverse impact these cattle have on health, welfare and the economic return of other cattle and cattle operations they may expose.

We appreciate your support on this matter! If you have questions, please call 303-239-4161 or 303-299-5557.

Livestock Health Requirements (Continued)

- C. Bovine Virus Diarrhea (BVD) - All cattle, bison, yak and camelids entering the National Western Stock Show, for show or for sale, must be tested negative for BVD persistently infected (PI) status PRIOR to arrival at the National Western. Testing will NOT be allowed or performed on any animal after arrival. **THOSE WITHOUT A NEGATIVE TEST WILL NOT BE ALLOWED ON THE GROUNDS.** Documentation of said testing with negative results will be listed on the required health certificate and/or laboratory reports of negative status provided. Acceptable tests include: (a) immunohistochemistry (IHC) skin, (b) antigen capture ELISA serum, (c) antigen-capture ELISA skin, (d) polymerase chain reaction (PCR) skin, whole blood or serum, or (e) virus isolation, whole blood or serum. Pooled sample testing methodology will be accepted so long as individual animal identification is maintained and can be documented to assure NWSS regulation compliance.
- D. Scabies - All beef cattle, except market steers, and bison must have been officially treated for Scabies by the following: Injected with Ivermectin or Ivermectin-like products at required dose between 1 and 10 days prior to sale date.
- E. Anaplasmosis & Bluetongue - If you think there is any possibility that the cattle or bison may sell to states requiring a negative test for either or both, a test is recommended within 30 days of sale date.
- F. Trichomoniasis - All bulls entering Colorado must be accompanied by a Certificate of Veterinary Inspection (Health Certificate). All non-virgin bulls shall have a negative T. fetus test within thirty (30) days prior to entry into Colorado. All non-virgin bulls that are sold in Colorado, including those sold through a sale or private treaty at the National Western will have to be tested negative before they are sold. A Virgin Bull is defined as a sexually intact male bovine less than 12 months of age or a sexually intact male bovine between 12 and 24 months of age, that is accompanied by a signed affidavit from the owner or manager as having had no potential breeding contact with females.

REQUIREMENTS FOR CATTLE, BISON, CAMELIDS AND YAK (SHOW ONLY)

If there is any possibility cattle or bison may sell privately at the National Western Stock Show, a negative test for Brucellosis and TB is required within 30 days of show. **A negative test for BVD-PI is required.**

Out of State Origin: Health Certificate is Required (See Livestock Health Requirements).

Brucellosis -

Cattle or bison may enter the show if they qualify for Brucellosis in one of the following ways, and if information is recorded properly on the health certificate.

- A. They originate in a Brucellosis certified herd, and the certification number and date of test is properly recorded.
- B. They originate from a herd not under quarantine in a Brucellosis Class Free state.
- C. They are females officially vaccinated for brucellosis under 18 months of age and properly identified by legible tattoo and/or ear tag as such, and said information is properly recorded, and do not originate from a Brucellosis quarantined herd.
- D. Class A states/areas: Brucellosis blood tested and negative within 30 days prior to entry into Colorado or be from a certified herd.
- E. Steers exempt from brucellosis testing.

Tuberculosis -

- A. Beef Cattle or Bison from herds not under quarantine for Tuberculosis originating from a tuberculosis accredited free state or area or accredited free herd may enter a test.
- B. Cattle from a modified accredited advanced state must have two (2) individual negative tests within 12 months, the last being within 30 days prior to arrival.
- C. Modified accredited state, whole herd test (with individual animals included) within 12 months, individual test within 30 days of show date.

BVD-PI - Beef cattle, bison, yak and camelids must show a negative BVD-PI test prior to the start of the show.

Livestock Health Requirements (continued)

Trichomoniasis -

Exhibition bulls are exempt from testing as long as no potential breeding contact will occur while in Colorado.

Colorado Origin: Health Certificate is Required. (See Livestock Health Requirements).
Brucellosis - Tuberculosis - No tests required, but must be from a herd not under quarantine. **A negative BVD-PI test is required.**

Trichomoniasis - Exhibition bulls are exempt from testing as long as no potential breeding contact will occur while at the National Western Stock Show.

**IDENTIFICATION OF CANADIAN ORIGIN CATTLE ENTERING
THE 2009 NATIONAL WESTERN STOCK SHOW**

Colorado welcomes Canadian cattlemen to attend the NWSS and recognizes the great addition they bring to this international livestock show.

The charge of the Colorado Department of Agriculture is to protect the livestock industry of Colorado. Import requirements are an important part of this responsibility. Permanent identification of Canadian cattle is vital to facilitate traceability.

At the Spring 2008 Western States Animal Health Association meeting a resolution to the USDA was passed by the attending state animal health officials to recommend that all Canadian cattle entering the U.S.A. have a hip brand. U.S.A. Port veterinarians have stated the C N ear tattoos on cattle entering the U.S.A. from Canada are not being applied correctly and will not be legible in a short time.

A. Cattle required to have a C N brand high on the right hip.

1. Cattle that originated in Canada at any time and coming to the NWSS to be SOLD in a breed sale or private treaty sale. This includes cattle that entered the U.S.A. previously with a C N ear tattoo.

2. A C N freeze brand or hot iron brand shall be placed high on the right hip.

3. The characters shall be a minimum of 2"x 2" and shall not exceed 3"x 3."

B. Cattle NOT required to have a C N hip brand.

1. Cattle that originated in Canada at any time and are coming to the NWSS for exhibition ONLY.

2. These cattle must have a legible C N ear tattoo.

3. They must return directly to Canada or to the state they originated in prior to coming to the NWSS.

4. If an animal intended for exhibition only is sold, the Colorado Brand Commissioner shall be notified of this sale. The animal shall be C N branded high on the right hip before leaving the NWSS grounds.

OPEN BREEDING GOAT AND SHEEP REQUIREMENTS

All sheep and goats must have an official health certificate issued by a Licensed Veterinarian. All sheep and goats will be subject to re-examination before stalling. Sheep and goats with lesions of ringworm with resulting loss of wool/hair and/or sores that are not completely healed (with wool/hair regrowth) will not be permitted to exhibit. **If signs of dermatitis, lesions, and/or fungus (ringworm) are visible, animal(s) will immediately be removed from the National Western Stock Show grounds.** Health Certificates should be presented to the Show Superintendents upon arrival.

Brucella Ovis - All rams, 6 months of age or older, to be sold at auction or private treaty during the National Western Stock Show must be negative to the ELISA test for Brucella Ovis within 30 days prior to sale or be from a certified Brucella Ovis free flock.

The certificate of veterinary inspection for all breeding sheep and goats imported into Colorado shall contain identification numbers for each animal. **All sheep and goats coming to the National Western Stock Show must comply with current scrapie tagging rules. The USDA requires sheep and goats to have flock identification ear tags that list their flock of origin.** Registration tattoos in Goats when accompanied by a certificate of registration from a goat breed registration association are acceptable.

Livestock Health Requirements (continued)

JUNIOR MARKET

GOATS AND LAMBS

Health Certificate is Required (See Livestock Health Requirements). All animals must be accompanied by an official health certificate individually identifying each animal and showing them free from all infectious, contagious or communicable diseases. Health certificates must be turned in to an animal health official or Show Superintendent upon arrival.

All sheep AND goats must have an official health certificate issued by a Licensed Veterinarian. All sheep and goats will be subject to re-examination before stalling. Sheep and goats with lesions of ringworm with resulting loss of wool/hair and/or sores that are not completely healed (with wool/hair regrowth) will not be permitted to exhibit. **If signs of dermatitis, lesions, and/or fungus (ringworm) are visible, animal(s) will immediately be removed from the National Western Stock Show grounds.**

The certificate of veterinary inspection for all Junior Market sheep and goats imported into Colorado shall contain identification numbers for each animal. **All sheep and goats coming to the National Western Stock Show must comply with current scrapie tagging rules. The USDA requires sheep and goats to have flock identification ear tags that list their flock of origin.** Registration tattoos in Goats when accompanied by a certificate of registration from a goat breed registration association are acceptable.

STEERS AND CATCH-A-CALF

Health Certificate is Required (See Livestock Health Requirements). All animals must be accompanied by an official health certificate individually identifying each animal and showing them free from all infectious, contagious or communicable diseases. Health certificates must be turned in to an animal health official or Show Superintendent upon arrival. **All beef cattle must show a negative BVD-PI test prior to entering the Stock Show grounds.**

SWINE

Health Certificate is Required (See Livestock Health Requirements). All swine must be accompanied by an official health certificate individually and unequivocally identifying each animal and showing them free from all infectious, contagious or communicable diseases. Health certificates must be turned in to an animal health official or Show Superintendent upon arrival.

Pseudorabies - All swine entered and exhibited at the National Western Stock Show must originate in herds not known to be quarantined with Pseudorabies. No test is required if the swine originates from a pseudorabies free status state (stage 5). If this condition is not met, the swine must be tested and negative to pseudorabies test within 30 days of the show date.

ALPACA / LLAMA REQUIREMENTS

In or Out of State Origin: Health Certificate is Required (See Livestock Health Requirements).

All Alpacas/llamas must be accompanied by a health certificate issued within 30 days prior to date of the show. All Alpacas/llamas must be treated for scabies within thirty (30) days prior to date of show. **Alpacas/Llamas must have a negative test for the persistently infected form of BVD prior to the show.**

POULTRY/CAVY/RABBIT REQUIREMENTS

In or Out of State Origin:

These animals will be subject to inspection upon arrival or during the show by the State Veterinarian's Office. For information please call Brenda (303) 274-5017.

COMPETING DOGS

Proof of current rabies vaccination.

Appendix H. NWSS Junior Market Swine Quality Assurance Certificate

JUNIOR MARKET SWINE QUALITY ASSURANCE CERTIFICATE

The National Western Stock Show, Rodeo, and Horse Show (NWSS) endorses and supports the **USDA Wholesome Meat Act** and insists exhibitors be in compliance with proper utilization of medications. Exhibitors of all market animals must certify their compliance with manufacturer's pre-market withdrawal periods specified for any and all medications, drugs, pesticides or feed additives administered. The use of non-approved chemicals or improper use of approved chemicals is strictly prohibited. Similarly, unethical fitting, tampering with, or sabotage of animals is strictly prohibited

CERTIFICATION AND STATEMENT OF DISCLOSURE

This certifies that the Junior Exhibitor has attended a quality assurance program and is thus permitted to participate in the NWSS. Additionally, the exhibitor/family agrees and consents to abide by the rules of competition and will be in compliance with the proper labeled use of vaccinations, medications and additives as required under the USDA Wholesome Meat Act, and the quality assurance requirements of NWSS and that non-compliance can result in civil and/or criminal liability.

The exhibitor/family agrees not to engage in unethical fitting practices, tampering, or sabotage and to use the proper animal husbandry techniques and practices to become a better steward of their project(s). The exhibitor is responsible for:

- The proper care and treatment of their animals.
- The production of wholesome foods.
- The development of sound moral character themselves and others.

We acknowledge that NWSS reserves the right to examine, inspect, and test any market animal for drug residues, vaccinations, and injections of any nature and take any action deemed appropriate if testing results show any positive residues exceeding FDA/EPA/USDA established tolerance for any foreign substance including medications, drugs, pesticides, feed additives or chemicals. We acknowledge that NWSS reserves the right to examine, inspect, and test for vaccinations, injection or unethical fitting. We acknowledge that NWSS reserves the right to pass any and all fees and costs required for examinations, inspections, and testing, if any, on to the exhibitor.

We, the undersigned, further certify that the market animals listed below have not received any non-approved drugs and that we have adhered to the withdrawal time required for all approved drugs or medications.

ANIMAL NAME	ANIMAL ID# (Ear Tag/Ear Notches)
_____	_____
_____	_____
_____	_____
_____	_____

Our signatures indicate we have read and understand the above statements. (ALL SIGNATURES REQUIRED)

_____ Exhibitor Signature	_____ Printed Name	_____ Date
_____ Parent or Guardian Signature	_____ Printed Name	_____ Date
_____ Extension Agent/Vo Ag Instructor Signature	_____ Printed Name	_____ Date

(OVER)
PLEASE COMPLETE BOTH SIDES

EXHIBITOR VERIFICATION FORM

With this application, I verify that I have reviewed with the verifier, whose signature is provided below, the practices of the Pork Quality Assurance Program. (www.porkboard.org) (Please return one fully completed form for each Junior Exhibitor.)

Exhibitor's Name: _____
Please print clearly.
 Farm Name (If applicable) _____
 Home Address _____
 City _____ State _____ Zip _____
 Telephone _____ Date of Birth _____
 Social Security Number _____ - _____ - _____
 Exhibitor's Signature _____

VERIFIER CERTIFICATION

(Extension Agent; VoAg Instructor; Veterinarian; or bona fide Quality Assurance Instructor)

I have discussed the exhibitor's responses to the checklists. It is my professional judgment that he/she has met the requirements of Pork Quality Assurance. (www.porkboard.org)

Signed _____ Date _____
 Name _____ Title _____
Please Print Clearly
 Address _____
 City _____ State _____ Zip _____

**REMINDER: ALL SIGNATURES MUST BE COMPLETE.
THANK YOU**

Complete history of all vaccinations/medications given to this animal while under control of the exhibitor.

TREATMENT	ANJMAL ID #	DATE	EXHIBITOR'S INITIALS
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Please supply additional records if necessary.

PLEASE BRING THIS FORM TO NWSS AT THE TIME OF PROCESSING

Appendix J. NAILE Notice of Violation Form



COMMONWEALTH OF KENTUCKY • KENTUCKY DEPARTMENT OF AGRICULTURE
A Consumer Protection And Service Agency • Richie Farmer, Commissioner
Office of the State Veterinarian • Robert C. Stout, DVM, State Veterinarian
100 Fair Oaks Lane, Suite 252, Frankfort, KY 40601 • Phone (502) 564-3956 • Fax (502) 564-7852

NOTICE OF VIOLATION 01002

Date of Notice: _____, 20____

Name _____ PIN No. _____

Address _____

City _____, KY ZIP _____

Phone Nos. _____ E-mail _____

Company Name (if applicable) _____

Company Address _____

Company Phone _____ E-mail _____

YOU ARE HEREBY NOTIFIED that you are in violation of:

Site of Violation(s) and explanation:

Animal Identification(s) if applicable: _____

YOU **WILL / WILL NOT** RECEIVE A LETTER BY U.S. MAIL ASSESSING A FINE WITH INSTRUCTIONS FOR APPEAL.

I have read the above violation statement and acknowledge receipt of this notice. I understand that my signature is not an admission of any liability or violation of the law.

Recipient Signature _____ Office of State Veterinarian Staff Member Signature _____

Recipient Name (print) _____ Date _____ OSV Staff Member Name (print) _____ Date _____

White Copy - KDA Yellow - OSV Official Pink - Recipient KYSV-108 Revised 9-08

Appendix K. NAILE Disqualification Form

Disqualification Form

Name: _____ CVI _____

Address: _____

Ear Tag: _____

Inspector's Signature _____

Reason for Disqualification:Suspicious skin lesions: Warts: Signs of respiratory distress:
Runny Eyes: Sore Mouth: Other: _____

This animal must be re-evaluated and a new certificate of veterinary inspection issued prior to showing again.

Disqualification Form

Name: _____ CVI _____

Address: _____

Ear Tag: _____

Inspector's Signature _____

Reason for Disqualification:Suspicious skin lesions: Warts: Signs of respiratory distress:
Runny Eyes: Sore Mouth: Other: _____

This animal must be re-evaluated and a new certificate of veterinary inspection issued prior to showing again.

Disqualification Form

Name: _____ CVI _____

Address: _____

Ear Tag: _____

Inspector's Signature _____

Reason for Disqualification:Suspicious skin lesions: Warts: Signs of respiratory distress:
Runny Eyes: Sore Mouth: Other: _____

This animal must be re-evaluated and a new certificate of veterinary inspection issued prior to showing again.

Appendix L. ISF Health Requirements and Recommendations

HEALTH REQUIREMENTS AND RECOMMENDATIONS FOR THE EXHIBITION OF DOMESTIC ANIMALS AT THE 2009 INDIANA STATE FAIR

GENERAL REQUIREMENTS FOR ALL SPECIES

This document describes the Indiana State animal health requirements for all animal exhibitions in the state. **HOWEVER**, exhibition organizers may impose additional animal health requirements as a condition of entry. BOAH recommends contacting the exhibition organizer for specific information about requirements for each event.

Please call the Indiana State Board of Animal Health at 1-877-747-3038 with questions concerning animal health requirements.

A. Limitations on Exhibition

This section describes limitations on exhibiting animals in Indiana. There may be other exhibition limitations that are described in the specific species requirements.

- 1. Failure to meet all animal health requirements will result in removal of animals from the exhibition premises.**
2. The following animals are not eligible for exhibition in Indiana:
 - a. Animals that originate from a herd that is under quarantine.
 - b. Any animal classified as a brucellosis "suspect".
 - c. Animals showing symptoms of any infectious or communicable disease or that are a health hazard to persons or other animals.
 - d. Any animal that does not meet state animal health requirements.
3. Any animal that develops or shows signs of any infectious or communicable disease during exhibition must be removed from the premises including the surrounding exhibition grounds. An owner that is disputing the exclusion of their animal from exhibition may not exhibit the animal in question pending any appeal.

B. Certificates of Veterinary Inspection

1. **For animals that originate in Indiana**, contact the exhibition organizer to determine the certificate of veterinary inspection (CVI) requirement, if any.
2. **For animals that originate outside the State of Indiana, the exhibitor must have a properly completed official certificate of veterinary inspection (CVI, commonly known as "health papers") for the animal. This CVI requirement applies to the following types of animals:**
 - a. All animals of the family Bovidae, including cattle, sheep, goats, and buffalo.
 - b. All animals of the family Equidae (horses, donkeys, etc...).
 - c. All animals of the family Suidae, such as domestic and feral swine.
 - d. All animals of the family Cervidae, such as deer and elk.
 - e. All animals of the family Camelidae, such as camels, llamas, and alpacas.

A certificate of veterinary inspection on any animal coming from outside Indiana for exhibition in Indiana is valid for 30 days.

3. **Certificates of veterinary inspection accompanying animals for exhibition must be completed by a licensed and accredited veterinarian who has personally inspected the animals and must clearly include a description of each animal including the age, sex, and breed of the animal, and the official identification for each animal.**
4. **Certificates of veterinary inspection for all out-of-state swine and cattle going to the Indiana State Fair must have the import permit number for the 2009 Indiana State Fair, "INSF09", written on the certificate.**
5. **A copy of the official certificate of veterinary inspection for each animal exhibited must be on file at the state veterinarian's office prior to the opening day of the exhibition.**

C. Identification

All exhibition animals must be permanently and individually identified by an acceptable method. Acceptable methods vary by species but may include an ear tag, legible tattoo, standard ear notch, and individual brand or breed registration number. Official identification acceptable for specific species of livestock exhibited in Indiana are as follows:

1. Swine: standard ear notch for breeding and exhibition swine.
2. Cattle: official ear tag, tattoo, or individual brand or registration number if accompanied by registration papers. Indiana steers that do not require testing may use an ear tag (e.g. plastic ear tag).
3. Sheep and Goats: official scrapie ear tag, scrapie tattoo, or breed registration tattoos that are enrolled in the scrapie program. Wethers younger than 18 months of age may be identified using any form of permanent identification. Electronic chips may be used if preapproved by the Indiana Board of Animal Health.
4. Horses: lip tattoo, individual brand, description of markings with name, or a registration number if accompanied by the registration papers.
5. Cervidae: tattoo or official ear tag.
6. If any additional identification other than the official identification is present, one of the additional identifications should also be listed on the certificate of veterinary inspection.

D. Testing

All tests required for exhibition must be conducted at the Animal Disease Diagnostic Laboratory (ADDL) at Purdue University, a laboratory approved by the Indiana Board of Animal Health or a state-federal-approved laboratory.

CATTLE

1. **SEE GENERAL REQUIREMENTS FOR ALL SPECIES.**
2. **Cattle from Indiana** do not need a brucellosis test or a tuberculosis test for exhibition in Indiana.
3. The following **cattle from outside the state** must test negative for **tuberculosis** within 60 days prior to the date of arrival to the exhibition:
 - a. All sexually intact female dairy cattle that are six (6) months of age or older that will be sold or otherwise not removed from the state within ten (10) days of the fair.
 - b. **Cattle from states that are not designated tuberculosis free by the U.S. Department of Agriculture must meet additional requirements for entry into Indiana. Contact the Indiana Board of Animal Health for specific information at 1-877-747-3038, extension 315. As of November 1, 2008 areas of Minnesota, Michigan, California and New Mexico are not USDA designated tuberculosis free.**
4. **Cattle from outside the state do not need a brucellosis test as long as the state of origin is classified as brucellosis free by the United States Department of Agriculture.**
5. All cattle, including Indiana cattle, that are to be offered for sale at an exhibition must have the necessary testing and other requirements completed within 30 days prior to the sale date.

For more information on cattle health requirements, call the Indiana Board of Animal Health at (317) 227-0315.

SHEEP AND GOATS

1. **SEE GENERAL REQUIREMENTS FOR ALL SPECIES.**
2. Blankets must be removed from all sheep at the time of arrival.
3. All sheep wethers must be presented slick shorn for inspection at arrival.
4. No sheep or goats may be exhibited that are showing signs of being infected with ringworm.
5. For more information on sheep and goat health requirements, call the Indiana Board of Animal Health (317) 227-0318.

LLAMAS/ALPACAS

1. **SEE GENERAL REQUIREMENTS FOR ALL SPECIES.**
2. No test is required on any llamas or alpacas for exhibition in Indiana.

For more information on llama/alpaca health requirements call the Indiana Board of Animal Health at (317) 227-0315.

SWINE

1. **SEE GENERAL REQUIREMENTS FOR ALL SPECIES.**
2. **Brucellosis Testing.**
Swine from Indiana do not need a brucellosis test.

Swine from outside the state do not need a brucellosis test as long as the state of origin is classified brucellosis free by the United States Department of Agriculture. A certificate of veterinary inspection is still required.
3. **Pseudorabies Testing.**
Swine from Indiana do not need a pseudorabies test.

Swine from outside the state do not need a pseudorabies test as long as the state of origin is classified pseudorabies free by the United States Department of Agriculture. A certificate of veterinary inspection is still required.
4. All swine that are to be sold at a breed sale should have a certificate of veterinary inspection issued within 30 days prior to the sale to facilitate interstate movement after the sale.

For more information on swine health requirements, call the Indiana Board of Animal Health at (317) 227-0310.

POULTRY

1. **SEE GENERAL REQUIREMENTS FOR ALL SPECIES**
2. All poultry presented for exhibition shall be accompanied by an official certificate of veterinary inspection or an appropriate National Poultry Improvement Plan (NPIP) certificate.
3. All poultry presented for exhibition must meet one of the following requirements:
 - a. Test negative for pullorum-typhoid within 90 days prior to the date of their exhibition.
 - b. Be hatched from eggs originating from certified NPIP pullorum-typhoid clean flocks.
 - c. Originate from a flock where the entire flock is certified NPIP pullorum-typhoid clean.

For more information on poultry health requirements, call the Indiana State Board of Animal Health at (317) 227-0320.

HORSES

1. **SEE GENERAL REQUIREMENTS FOR ALL SPECIES.**
2. Horses coming from outside Indiana for exhibition in Indiana must meet the following requirements:
 - a. Each horse must test negative for Equine Infectious Anemia (E.I.A.) (a "Coggins test") within 12 months of the date of exhibition. Each horse must be accompanied by an official certificate of veterinary inspection that indicates the results of the E.I.A. test.
 - b. A suckling foal accompanying a dam that has tested negative for E.I.A. within twelve months of the exhibition is exempt from the E.I.A. testing requirement.

3. The following applies to horses coming from Indiana for exhibition in Indiana:
 - a. A certificate of veterinary inspection is not required.
 - b. An E.I.A. test is not required.

For more information on horse health requirements, call the Indiana Board of Animal Health at (317) 227-0320.

DOGS

1. SEE GENERAL REQUIREMENTS FOR ALL SPECIES.

2. No dog may be exhibited showing any symptoms of a communicable disease.
3. Each dog presented for exhibition must be accompanied by a certificate of vaccination or other statement that is signed by a licensed and accredited veterinarian and that indicates the vaccinations each animal has been given. A certificate of veterinary inspection may be used to document vaccinations but is not required.
4. All dogs 3 months of age and over must be vaccinated for rabies by a licensed and accredited veterinarian in accordance with the state rabies vaccination law. A certificate of vaccination for rabies must accompany the animal to the exhibition.

NOTICE: Indiana State 4-H Imposes Vaccination Requirements for Dog Show Participants Beyond the Requirements of the Indiana State Board of Health Minimum Requirements. Check With Your Local 4-H County Extension Educator for those Requirements.

For more information on dog health requirements, call the Indiana Board of Animal Health at (317) 227-0320.

CATS

1. SEE GENERAL REQUIREMENTS FOR ALL SPECIES.

2. No cats may be exhibited that test positive for or show any symptoms of any communicable diseases.
3. Each cat presented for exhibition must be accompanied by a certificate of vaccination or other statement that is signed by a licensed and accredited veterinarian and that indicates the vaccinations each animal has been given. A certificate of veterinary inspection may be used to document vaccinations but is not required.
4. All cats over 3 months of age must be vaccinated for rabies by a licensed and accredited veterinarian in accordance with the state rabies vaccination law.

NOTICE: Indiana State 4-H Imposes Vaccination Requirements for Cat Show Participants Beyond the Requirements of the Indiana State Board of Health Minimum Requirements. Check With Your Local 4-H County Extension Educator for those Requirements.

For more information on cat health requirements, call the Indiana Board of Animal Health at (317) 227-0320.

Appendix M. ISF 4-H Animal Affidavit

4-H Member's Name _____ 4-H Member's County of Enrollment _____
 (Print last name first)



4-H ANIMAL AFFIDAVIT ⁽¹⁾

4-H 836

Rev. 1/09

2009

Complete one affidavit for EACH 4-H Species (4-H Beef Steers, Dairy Steers, Market Lambs, Meat Goat Wethers, Gilts and Barrows) entered at the Indiana State Fair. Exhibitors of all other species whose animal(s) is/are selected for drug testing and/or the 4-H Sale of Champions will also be required to complete and sign the animal affidavit.

I hereby certify that:

1. My 4-H animal has been in my continuous ownership since the date printed on the respective 4-H Enrollment Form; (except for Poultry and Rabbits, which do not have such a form).
2. The exhibitor and the exhibitor's parents and/or legal guardians agree that they are the people absolutely responsible for the care and custody of their animals in preparation for and while at the Indiana State Fair; including, but not limited to, policies regarding drug use and animal well being.
3. I am responsible for: adhering to withdrawal times on all drugs administered to my animal, only giving my animal drugs that are approved by the FDA, and keeping my animal free of illegal drugs prior to and during the Indiana State Fair.
4. My 4-H animal has not been maintained at a professional fitter's facilities:
5. My submission of a 4-H entry expressly binds me to all terms and conditions contained in any and all parts of the Indiana State Fair 4-H/FFA Handbook/Premium List, to include, but not limited to, consent to drug, steroid, tissue tests, examination of my animal's carcass and insertion of a micro chip for identification as a condition of entering the Indiana State Fair.

*Complete information requested for your State Fair 4-H Livestock entries. (ONE FORM PER SPECIES.)
 Then bring the completed and notarized form to the department registration table on check-in day at the Indiana State Fair.*

Animal I.D. Number	Specie	Has Not received any drug(s), steroid(s), or other medication(s), within the past thirty (30) days. (✓)	Has received the following drug(s), steroid(s), or other medication(s), within the past thirty (30) days and date of treatment.

** Please check with your veterinarian if your animal is on any over-the-counter medication.*

Violation of Indiana Health Requirements for the exhibition of domestic animals, is punishable under Indiana law. (code 15-2.1-21-9) (2)

I swear or affirm under the penalties of perjury ⁽³⁾⁽⁴⁾ that I have read, understand, and accept the above statements to be true, accurate, and complete.

Parent/Guardian Signature _____ Date _____ 4-H Exhibitor Signature _____ Date _____

OATH⁽⁵⁾
 Before me, a Notary Public in and for _____ County, State of Indiana, personally appeared _____ and he being first duly sworn by me upon his oath, says that the facts alleged in the foregoing instrument are true.

(Signed) _____ My commission expires: _____

Print your name _____ County in which you reside: _____

(SEAL)

1. Affidavit - a written statement of fact which is sworn to as the truth before an authorized officer.
2. (code 15-2.1-21-9) - A person who knowingly or intentionally violates or fails to comply with this article commits a Class D Felony.⁽⁶⁾
3. Perjury - knowingly making a false material statement under oath or affirmation. In Indiana, a person who commits perjury commits a Class D felony⁽⁶⁾, which may be punishable by imprisonment, fine or restitution. (Indiana Code 35-44-2-1 and 35-50-2-7).
4. Prosecution for violations of Indiana law will be referred to the proper authorities.
5. Oath - An affirmation of truth of a statement before an authorized person.
6. Felony - A crime of graver or more serious nature than those designated as misdemeanors.

Appendix N. White County Project Rules for Livestock Exhibits

4-H Livestock Project Exhibits

19. 4-H exhibitors having an entry in animal classes are expected to show their own animals. In cases where this cannot be done, the owner may request another White County 4-H member to serve as a substitute showman. Substitute showmen must be approved in writing by the 4-H show manager prior to the show. Requests will only be granted for medical emergencies, conflicts with showing other animals, or desperate circumstances deemed unavoidable by the 4-H show manager. Failure to be excused from a job and/or participation in a band or sporting event or practice will not result in a substitute showman being granted.
20. All livestock must meet the State Veterinarian health rulings.
21. Each exhibitor must furnish his or her own livestock and bedding. Exception: See beef, rabbit and poultry rules in this handbook.
22. Exhibitors will not be permitted to remain overnight with their exhibit. A representative of the Ag. Association will be on guard 24 hours each day.
23. No exhibitor advertising is allowed inside or on the barns, including feeders and waterers. *No farm names will be allowed on show attire.* Business donations and recognition must be approved by the White Co. Ag. Assn., Inc. board of directors.
24. Fans and extension cords used in the livestock barns are to have polarized plugs (two prongs of different sizes). Fans should be mounted on wooden structures, not on metal gates or fences. Freestanding metal fans are acceptable.
25. No one will be allowed within the show arena except the exhibitors, the judge and members of the show committee.
26. Each 4-H member meeting the general rules, exhibit regulations and completion requirements may sell only one livestock project in the 4-H Auction: either beef, dairy beef, sheep, swine, goat, rabbit or poultry. Each member is limited to the sale of 1 market beef animal or dairy beef steer, or 1 market swine, or 1 market lamb, or 1 wether goat, or 1 poultry, or 1 rabbit meat pen or single fryer.
27. If an exhibitor owns a Grand Champion in more than one species in the same year, he or she will be permitted to sell any or all of these animals but no additional animals in the 4-H Auction.
28. A 2% commission will be charged on all sale and pool animals.
29. 4-H animals purchased, sold or offered for sale after the animal enrollment deadline and prior to the Indiana State Fair, shall not be eligible to be shown in the 4-H show at the Indiana State Fair.
30. The White County Ag. Association reserves the right to examine and/or test any 4-H animal exhibit for any tampering; altering; misrepresentation; unethical fitting; and natural or foreign substance, to include, but not limited to, artificially introduced air, blood, oil, drugs, steroids, or chemicals. The submission of any 4-H entry to the White County 4-H Fair by an exhibitor expressly grants the White County Ag. Assn. the right to conduct such tests. Positive test and/or refusing such tests will result in disqualification and forfeiture of all awards.
4-H Market animals shall not contain any identifiable or unidentifiable foreign substance, including drugs, steroids, or chemicals, greater than those standards established by the United States Department of Agriculture (USDA) or Food and Drug Administration (FDA) as permissible for sale for consumption as human food both on day of show and day of shipment to market from the White County 4-H Fair. Test samples collected from any 4-H animal exhibit shall be free of any foreign substance, including any steroids, drug, or chemical affecting the central nervous system (for example, stimulants, depressants or pain killers).

Appendix O. Indiana 4-H Statement of Policy

Exhibition Regulations **Indiana 4-H Statement of Policy**

EXHIBITION: Exhibition of 4-H projects in local, county or state exhibits/fairs is considered a privilege and is voluntary on the part of the exhibitor. The exhibition of 4-H projects provides 4-H'ers an opportunity to display their 4-H projects, entertain wholesome competition, & enjoy an educational/social environment with their peers. With the privilege of exhibition comes the obligation to abide by all rules attendant to the respective 4-H project. Not following established terms and conditions of projects will be grounds for exclusion from competition/exhibition or the project itself.

The following regulations have been established and must be followed in order to exhibit at the White County 4-H Fair. The member must:

1. Be enrolled in White County 4-H. Enrollment must be reinstated annually by completing an appropriate county 4-H enrollment form.
2. Enroll in any live animal project by 4 p.m. May 15th or earlier for some species requiring retinal scanning, weigh-in, etc. as listed below.
3. Record the following livestock on the respective Official Indiana 4-H Ownership, Enrollment & Entry Form or Official White County 4-H Ownership, Enrollment forms as follows. All necessary information (including 4-H member and parent signatures) must be completed on the above Official Livestock Ownership forms on or before 4 p.m. May 15. Earlier livestock enrollment may be required for certain animals requiring retinal scanning, ear tagging, etc. See specific species regulations below. Failure to do so may make you ineligible for County and/or State Fair Exhibit.

NOTE: For 4-H animals that are eligible to be co-enrolled by brother and/or sisters (Beef, dairy cattle, *meat* goats, dairy goats, *pygmy goats*, horses, ponies, sheep, and swine), the siblings may show each other's animals at any show during the year without jeopardizing State Fair eligibility, regardless of whether or not the sibling is a 4-H member.

NOTE: 4-H animals are expected to be in the personal possession and regular care of the 4-H member who owns/leases them (unless other arrangements have been agreed upon by the White County Ag. Association and/or the designated livestock committee) from the animal enrollment deadline until the conclusion of the county and/or State Fair.

NOTE: Each exhibitor in Beef, Dairy, Goats, Horse & Pony, Llamas, Poultry, Rabbits, Sheep, & Swine will complete a "White County Animal Location Form".

NOTE: 4-H animals (except Horse and Pony) exhibited after the animal enrollment deadline under a different name than the person listed on the Indiana 4-H animal enrollment form shall not be eligible to be shown in the 4-H show at the Indiana State Fair. This term/condition does not apply to siblings, who may show each other's animals at any show during the year without jeopardizing State Fair eligibility, regardless of whether or not the sibling is a 4-H member. Note: This term/condition does not apply to the horse & pony program where a parent may also show the horse or pony after it has been enrolled in the 4-H program.

- a. Beef Market Steers, Market Heifers and Commercial Heifers:** Must be ear tagged, retinal scanned, weighed and entered on the Forms 4-H 515 at the County Beef Weigh-In in February. Cattle which lose ear tags will be retagged and retinal scanned by the committee before the Beef show. Members should contact the committee chairman or the Extension Service Office immediately if an ear tag is lost. County-bred steers and commercial heifers must be declared at this time by entering the initials C.B. next to that animal on the Form 4-H 515.
- b. Beef Breeding Heifers (purebred with registration papers) and Cow/Calf entries:** Must be entered on Form 4-H 515 on or before 4 p.m. May 15. Registered beef heifers must be identified by a registration number, a tattoo, animal name, and their birth date on Form 4-H 515. County-bred breeding heifers must be declared at this time by entering the initials C.B. next to that animal on Form 4-H 515. (See Beef rules for more info. on Cow/Calf guidelines.) All heifers must be permanently identified with a tattoo or metal tag in order to meet federal health requirements.
- c. Dairy:** Must be recorded on Form 4-H 678 on or before 4 p.m. May 15. Dairy Beef Steers must be ear tagged, retinal scanned, weighed and entered on the Beef Form 4-H 515 at the County Beef Weigh-In in February. Registered dairy heifers must be identified by a registration number, a tattoo, animal name, and their birth date. *All animals must have a permanent ID of either a tattoo, metal vet tag or registration picture.*
- d. Goats:** All goats must be permanently identified and entered on the 4-H Goat Enrollment Form 4-H 933. *All Dairy and Meat goat wethers must be weighed, ear tagged, retinal scanned, and entered on the form 4-H 933 at the May weigh-in. All Pygmy and LaMancha goat wethers must have permanent tattoo, microchip (exhibitor must provide scanner), or a county tag placed, and entered on form 4-H 933 at the May weigh-in. All Dairy, Pygmy, and Meat goat does must be identified by a permanent identification, animal name, birth-date, and registration number (if applicable) on Form 4-H 933 by 4 p.m. May 15.*
- e. Horse & Pony:** Geldings, Mares, and/or current year foals must be recorded using lip tattoo, brand, or descriptive marking; must also include animal's height (done by a certified measurer), sex and birth date on Form 4-H 516 on or before 4 p.m. May 15. A color photo of each horse must be attached showing all four feet and the face of the horse. Failure to include all information will make animal ineligible for exhibit at the County, Area IX and State Fair.

- f. **Sheep:** All market sheep must be ear tagged, weighed, retinal scanned and entered on Form 4-H 670 at the County Sheep Weigh-In in May. Registered females will be retinal scanned at the 4-H Fairgrounds in May. Entry forms (4-H 670) are to be completed for all sheep. For County Fair exhibit, registered breeding stock must have a flock number or tattoo & be entered on Form 4-H 670 on or before 4 p.m. May 15. Registered breeding stock must be accompanied with registration papers at the fair.
- g. **Swine:** Must be identified by standard ear notch system & entered on 4-H 514 on or before 4 p.m. May 15.
4. For all livestock (Beef, Dairy, Goats, Horse & Pony, Llamas, Poultry, Rabbits, Sheep, and Swine) submit a 4-H Fair Preregistration Form to the White County Extension Service Office on or before 4 p.m. July 1. *For 4-H Fashion Revue, submit a 4-H Fair Preregistration form to sewing project check-in.* (This is in addition to the completed member enrollment form and the livestock ownership forms as required in #3 above.)
 5. Turn in to the Extension Office all completed live animal project record sheets and *educational activities* by 4 p.m. July 1.
 6. All completed non-livestock project record sheets and *activities* must be turned in when the exhibit is checked-in, prior to judging. See 4-H Record Book rules elsewhere in this Handbook for further details.
 7. **No project will be *accepted or eligible* for exhibit without completed *activities (where appropriate)* and record sheet.**
 8. 4-H exhibitors having an entry in animal classes are expected to show their own animals. In cases where this cannot be done, the owner may request another White County 4-H member to serve as a substitute showman. Substitute showmen must be approved in writing by the 4-H show manager prior to the show. Requests will only be granted for medical emergencies, conflicts with showing other animals, or desperate circumstances deemed unavoidable by the 4-H show manager. Failure to be excused from a job and/or participation in a band or sporting event or practice will not result in a substitute showman being granted.
 9. The proper compliance with established, stated and published final dates and deadlines is considered an appropriate expectation of 4-H membership. Submitting things on time and following the terms and conditions/rules is part of the 4-H learning experience and is considered a reasonable thing to do. Individuals not complying with these expectations will lose awards and privileges. This is especially true in animal projects where animal ownership, and the raising of the animal(s) have a specific time period as part of the project requirements. Members not complying with established and published dates and deadlines for exhibition will be denied exhibition privileges as well as premiums or awards for that project. Published deadlines—Items must be received in the Extension Office by the close of business (4 p.m.) on all due dates. The drop box will NOT be available after 4 p.m. on any day that is a publish 4-H deadline. If a deadline falls on a weekend, all paperwork will be due in the Extension Office by 4 p.m. the Friday before that date.
 10. Follow specific project regulations regarding exhibition as stated elsewhere in this handbook.

Health Requirements for the Exhibition of Animals

All poultry must have a health certificate or appropriate NPIP certificate submitted by the 4 p.m. July 1st deadline. All dogs and cats must be accompanied by a certificate of vaccination certified by a licensed, accredited veterinarian within 1 year prior to the date of exhibition. BRING YOUR COPY TO THE FAIR, AT CHECK-IN TIME.

At the discretion of the State Veterinarian, in the case of poultry and small animals to be shown at the 4-H and county fairs, the approved health certificate may be waived and an inspection made by a person assigned to inspect the fair. No animals will be exhibited with warts or ringworm, or if they appear to be unhealthy. Domestic animals which are under quarantine are not eligible for exhibition in Indiana.

Contact your Veterinarian or the Indiana Board of Animal Health for more details of the state health requirements.

All animals must be healthy at the time of arrival at the fair. At the livestock committee members' discretion, any animal showing signs of disease or sickness will not be allowed to unload, check-in, be judged, or shown unless inspected and approved by a certified veterinarian at the 4-H member's expense.

Appendix P. White County Beef Regulations

BEEF

Dirs.: Rodney Hall, John Lemming, Don Mills, Hilary Tebo.

Comm.: Andy Humphreys & Dale Lehe, Co-Chm.; Josh Humphreys & Brian Pilotte, Co. Ass'ts.; Jim Blake, Lorne Brooke, Tom Byers, Craig Byroad, Matt Claeys, Louie Coble, Rodney Hall, John Maxwell, Seth Maxwell, Greg Meents, Don Mills, Doug Morehouse, April Pruett, Wayne Ringer, Doug Rodehan, *Fritz & Melissa Salomon*, Dan Sullivan, Jon Tebo, Barry Wesner

Beef Show Rules

1. All 4-H Beef steers, crossbred breeding heifers, and market heifers must have been retinal scanned, weighed and ear tagged with a county assigned number, at the 4-H Fairgrounds on February 28 (Snow date: March 7). Cattle which lose ear tags will be retagged and retinal scanned by the committee before the 4-H Beef Show. Members should contact the committee chairmen or the Extension Service Office immediately if an ear tag is lost. If the same calf is enrolled by more than one 4-H member (brothers and sisters), only one set of retinal images from that calf needs to be submitted along with the family's beef enrollment forms.
2. All heifers must be permanently identified with a tattoo or metal tag, in order to meet federal health requirements.
3. All 4-H Beef must be entered on the Beef enrollment form 4-H 515 at County Beef Weigh-in in February. Registered heifers may be added until 4 p.m. May 15. Registered heifers must be identified by a registration number, a tattoo, and their birth date. All forms must contain the member and parent/guardian signatures before being submitted to the State 4-H Office.
4. To exhibit at the White Co. 4-H Fair, all 4-H Beef members must follow established "Exhibition Regulations for White County 4-H" as listed in this Handbook. Members will complete at least 3 educational activities each year. These activities will be turned in with member's Beef Records by 4 p.m. July 1 to the Extension Office. Members enroll in Beef by grade during current school year: Level 1, grades 3-5; Level 2, grades 6-8; Level 3, grades 9-12.
5. **County-bred steers and County-bred heifers** must be bred and born in White County. Steers, market heifers, and commercial heifers **must** be declared at the February weigh-in and purebred heifers by 4 p.m. May 15 by entering the initials C.B. next to that animal on the Official Ind. 4-H Ownership, Enrollment & Entry Form 4-H 515.
6. To qualify for the cow-calf class, the cow must be the heifer that you, the member, *entered* in 4-H and entered on form 4-H 515 on or before 4 p.m. May 15. Use the registration number of the cow or the previous year's White County tag number of the crossbred cow on entry form.
7. Entries in Prospect calf classes are born on or after January 1 to July 1 of current year. Entries in these classes are to be completed on the July 1st 4-H Fair Pre-registration form for Beef animals. If the calf is to be shown as part of a cow-calf pair, it must be entered both ways. Females and males will be shown by weight. Prospect calves are ineligible to compete for Gr. Champion Heifer or Market Animal. To be eligible for State Fair exhibit, prospect heifer calves must be born by March 31st of the current year and entered on the May 15th Beef Enrollment Form 4-H 515. There is no State Fair class for prospect beef steers.
8. Purebred heifers & purebred steers will be shown by breed regardless of number. All purebred animals must *meet State Fair rules as far as percentages and registration paper requirements. Tattoos will be checked.*

9. (a) Unload and check-in all Beef: 7:00 a.m.-11:00 a.m. on Saturday of the 4-H Fair. (b) Weigh-in will be at check-in time, on Saturday of the 4-H Fair. (c) Cow-Calf entries should check-in on Saturday morning as other Beef animals. *D. Calves will be allowed to come late to the fair if showing at a National Junior Show. Late entries must arrive by Monday at 5 p.m. Any conflicts see committee chairmen.*
10. The Agricultural Association asks you to bring your own gates for dividers.
11. No grooming chutes will be allowed in the aisles of the beef barn at any time. No butt fans or misters allowed. Only one overhead fan *facing east* per 3 head per 4-H exhibitor will be allowed.
12. Tanbark will be supplied for all members at a cost of \$10.00 per head or per cow/calf pair to be paid and sent with the July 1st form which lists the animals that you will bring to the fair. Make checks payable to: White Co. Ag. Association, Inc. Mandatory - no straw is allowed in the barn.
13. No horns except on breeding heifers and prospect calves.
14. On show Day the 4-H Exhibitor may receive clipping and grooming assistance (working on the calf) only from their immediate family which is defined as father, mother, legal guardian, brother, sister, grandfather, grandmother, aunt or uncle, another Indiana 4-H exhibitor or any current White County 4-H members' parents or current approved White County 4-H Volunteer. Consequences of the above are elimination from Show and Sale.
15. Tie outs must be cleaned before 3 p.m. on Thursday.
16. All 4-H Beef animals, except auction animals, will be released on the last day of the 4-H Fair. See the official 4-H Fair Schedule to be released in June.
17. Each 4-H Beef member may sell only one market animal in the 4-H Fair Auction. Members who wish to consign a beef calf as their 1 sale entry, must do so by declaring the beef sale animal **at weigh in** on Saturday of the 4-H Fair. DO NOT declare more than 1 livestock project for the livestock sale; i.e. do not declare both beef & swine. See 4-H Livestock Sale Rules in this Handbook.
18. Calves will be offered for sale using the exhibit weigh-in weight, without shrink.
19. Animals sold must be secured in the barn with a rope halter.
20. SHOWMANSHIP: **Novice**- First and second year showing in Beef project, and prior to completing 5th grade. Previous winners are ineligible. **Junior**- members who have completed 5th - 8th grades. Exceptions: previous years' Novice winners are eligible, and previous years' Junior winners are ineligible. **Senior**- members who have completed 9th - 12th grades. Exceptions: previous years' Junior winners are eligible, and previous years' Senior winners are ineligible. **Grand Champion**- All previous Senior showmanship winners, current year included. NOTE: the Grand Champion Showman is not required to show in the Ultimate Showmanship Contest. If Gr. Champion chooses not to show, the Res. Champion would be eligible.
21. Members may choose to exhibit any combination of live animals, a poster, and/or present an action demo detailing some aspect of the 4-H Beef project. The poster and action demo exhibit options may be in place of or in addition to the live beef exhibit. Posters should meet guidelines described in the 4-H Livestock Poster Project section found elsewhere in this handbook. Action Demo guidelines are described elsewhere in this handbook.
22. The White County Ag. Association reserves the right to examine and/or test any 4-H animal exhibit... See "General 4-H Livestock Rules" in this Handbook for further details.
23. Interpretation of any term or condition, policy, the code of ethics or prohibited activities contained in this book including the assessment of any violation and/or penalty to be imposed against a 4-H member shall routinely involve the committee chairman or his designee, or the barn director and two committee members for a total of three.

References: 117R (Ohio State University Publications) "Beef Resource Handbook"; Livestock Record WC-34

Unethical Fitting and Showing of Cattle

The showing of unethically fitted cattle, or of cattle that are over the age eligible for exhibition in the particular class in which they are presented for exhibition at the White County 4-H Fair, is prohibited. "Unethical fitting" within the foregoing prohibition, means the artificial alteration, by operation or otherwise of the natural conformation of any part of the animal being exhibited. The presence of tissue

or of any substance which, in the opinion of the examining veterinarian, is abnormal or unusual will be presumed to be evidence the artificial alteration of such natural conformation is in violation of this rule, unless in his opinion such abnormal tissue or unusual substance has resulted from wholly natural causes.

Every exhibitor, in consideration of his entry being accepted by the White County 4-H Fair for exhibition, represents that no animal entered therein by him for exhibition is unethically fitted or is over the age limit of the class in which it is entered.

Every exhibitor, in consideration of his entry being accepted at the White County 4-H Fair, agrees to submit any animal so entered by him to examination by any veterinarian appointed for such purpose by the Board of Directors of the White County Agricultural Association, Inc. or by its Executive Committee and further agrees to submit such animal to such tests as may be required by such veterinarian and that the conclusions reached by such veterinarian as to whether such animal is unethically fitted, or is an over-age animal under this rule, shall be final and binding, without recourse against said Association or any officer or director thereof or such veterinarian and said exhibitor by such entry waives any right of action for any determination made or action taken under this rule and releases said Association and any veterinarian appointed to act for it under this rule from any and all claims or demands whatsoever in connection therewith or any account thereof.

Any exhibitor may be barred from any further participation in the White County 4-H Fair for violation of this rule. Any animal which is declared by such veterinarian to be unethically fitted shall be barred from competition at the White County 4-H Fair.

In case any awards have been given to animals shown in violation of this rule, the Association shall immediately request the exhibitor to refund all awards to such animals.

All beef steers must be permanently identified as outlined by Indiana State Fair rules.

Beef Show Classes

- | | |
|--|---|
| 1. Novice Showmanship | 12. Champion Dairy Beef Steer |
| 2. Cow/Calf | 13. Market Heifers |
| 3. Prospect Heifer | 14. All Steer Classes: Classes will be determined after weigh-in, including County-bred steers. |
| 4. Prospect Male | 15. Rate of Gain - To be eligible, calves will be weighed in February and during the 4-H Fair, under the supervision of the 4-H Beef Committee. |
| 5. Purebred Breeding Heifers (by breeds):
Classes will be broken after check-in at fair.
Heifers should be born 9/1/06 to 3/31/08. | 16. Senior Showmanship |
| 6. Crossbred Breeding Heifers (by weight) | 17. Junior Showmanship |
| 7. Grand Champion Heifer | 18. Grand Champion Showmanship |
| 8. Grand Champion County-Bred Heifer | 19. Grand Champion Market Beef |
| 9. Dairy Beef Light-Weight Feeder Steers (under 450#) | 20. Grand Champion County-Bred Market Beef |
| 10. Dairy Beef Heavy-Weight Feeder Steers (451-650#) | 21. Mini 4-H Halter Class (see Mini 4-H section for details) |
| 11. Dairy Beef Fat Steers (over 650#) | Note: Dairy Beef Showmen will show with Beef Showmen in respective classes. |

Appendix Q. White County Dairy Regulations

DAIRY

Dir.: Greg DuVall, Roger Geisler. Comm.: Roger Geisler, Chm.; Clyde DuVall, Greg & Maria DuVall, Jeff DuVall, Steve Hendress, Kathy & Rex Mathew, Nichole Ranco, Harold Reiff, Howie Reiff, Chuck Snow.

Dairy Rules

1. To exhibit at the White Co. 4-H Fair, all 4-H Dairy members must follow the established "Exhibition Regulations for White County 4-H" as listed in this Handbook. Members will complete at least 3 educational activities each year. These activities will be turned in with the member's Dairy Livestock Records by 4 p.m. July 1 to the Extension Office. Members enroll in Dairy by grade in current school year: Level 1, grades 3-5; Level 2, grades 6-8; Level 3, grades 9-12.
2. Each 4-H member may exhibit a total of 8 dairy animals, *however only 1 animal per class will be allowed*. Members who wish to show dairy steers, may enter a maximum of 1 fat steer, 1 heavy-weight feeder steer and 1 light-weight feeder steer; however, the total number of dairy animals may not exceed 8. All animals eligible for exhibition must be listed on the May 15th and July 1st forms.
3. 4-H Grand Champion Dairy animals in previous White County 4-H Fairs are eligible to show.
4. No horns allowed, except on Junior calves.
5. All animals must be of one recognized dairy breed of sire and dam. *All animals must have a permanent ID of either a tattoo, metal vet tag or registration picture.*
6. All animals will be released from the 4-H Fair at a time to be announced.
7. Each exhibitor shall show in only one showmanship class, with the exception as noted in Showmanship Class 4-Champion.
8. Animals must be owned & in member's possession by May 15 of current year.
9. Milk cows will be allowed to arrive at the 4-H Fair on show day and may be dismissed after the show. See official 4-H Fair Schedule to be released in June.
10. Members may choose to exhibit any combination of live animals, a poster, and/or present an action demo detailing some aspect of the 4-H Dairy project. The poster and action demo exhibit options may be in place of or in addition to the live dairy exhibit. Posters should meet guidelines described in the 4-H Livestock Poster Project section found elsewhere in this handbook. Action Demo guidelines are described elsewhere in this handbook.
11. The White County Ag. Association reserves the right to examine and/or test any 4-H animal exhibit... See "General 4-H Livestock Rules" in this Handbook for further details.

Dairy Beef Steer Rules/Eligibility Dates

1. For Dairy Beef Steers to be eligible, sire & dam should be of the same recognized dairy breed.
2. To be eligible for exhibit, Dairy Beef Fat Steers must be retinal scanned, ear tagged, and weighed at the 4-H Beef Weigh-in in February. To be eligible for State Fair exhibit, Dairy Beef Feeder Steers must be retinal scanned, ear tagged, and weighed at the 4-H Beef Weigh-in in February.
3. Dairy Beef members may exhibit 3 steers; however, only 1 animal per class will be allowed.
4. All Dairy Beef classes will show in the Wednesday Beef Show.
5. Each 4-H Dairy Beef member may sell only one dairy beef steer in the 4-H Fair Auction. Members who wish to consign a dairy beef steer as their one sale entry, must do so by declaring the sale animal at weigh in on Saturday of the 4-H Fair. DO NOT declare more than one livestock project for the livestock sale, i.e. do not declare both dairy beef & swine. See 4-H Livestock Sale Rules in this Handbook.
6. No horns will be allowed on any steer exhibited.
7. The White County Ag. Association reserves the right to examine and/or test any 4-H animal exhibit... See "General 4-H Livestock Rules" in this Handbook for further details.
- 8.

References: 127R (Ohio State University Publications) "Dairy Resource Handbook"; 117R (Ohio State University Publications) "Beef Resource Handbook", Livestock Record WC-34.

Appendix R. White County Goat Regulations

GOATS

Director: Brett Petrie, Byron Tiede. Club Leader: Sue Schroeder.

Show Announcers: Rod & Jane DeCamp. Comm.: *Cindy & Jeff Campbell*, Lisa & John Gooding, Shawn & Sharon Pherson, Barb & Jammie Propes, Brandon Ruff, *Andy Stoll*, Merrill VanMeter

Goat Rules

1. 4-H'ers who show goats at the White County Fair should join the White County 4-H Goat Club.
2. NO HORNS ALLOWED on exhibited dairy goats. Meat goats and pygmy goats may be shown with or without horns.
3. NO BUCKS WILL BE EXHIBITED.
4. Goats must be healthy. At the committee members' discretion, any goat showing signs of disease or sickness will not be allowed to check-in, be judged, or shown, unless inspected and approved by a certified veterinarian.
5. If an animal leaves the grounds, it shall not return.
6. All does must have a permanent ID of either an ear tattoo (tail for Lamancha), an ear tag or microchip (exhibitor must provide scanner). No write-on tags will be permitted. *Dairy and Meat* wethers must have county weigh-in ear tags placed. *Pygmy and Lamancha wethers must have a permanent tattoo, microchip, or county weigh-in ear tag placed.* NOTE: ALL exhibition goats must meet the new federal identification guidelines designed to eradicate the Scrapie disease. Additional information on these guidelines is available from the Extension Office and the Indiana State Board of Animal Health.
7. Permanent identification for all does must be completed by May 15.
8. Each member may exhibit a total of 10 animals, with a limit of 2 entries per class. Animals may be of more than one goat breed.
9. Does may be of grade, recorded, or registered stock. (Recorded or registered stock only, at State Fair). *Dairy wethers must show dairy characteristics.*

10. All goats must be in the 4-Hers possession on or before May 15. Wethers must be in 4-Hers possession by the weigh-in date.
11. All goats must be owned or leased by 4-H member or member's family, and cared for by 4-H'er. Leased goats must have a complete White County 4-H goat Lease Form completed and submitted to the Extension Office in accordance with the May 15th deadline. Note: 4-Hers may not exhibit leased animals at State Fair.
12. Goats may not be switched from one 4-H'er to another after May 15th.
13. To exhibit at White Co. 4-H Fair, all 4-H Goat members must follow the established "Exhibition Regulations for White County 4-H" as listed in this Handbook. Members will complete at least 3 educational activities (3 activities in Dairy and/or 3 activities in Meat/Pygmy) each year. A separate record sheet must be completed for Dairy, Pygmy, or Meat Goat projects. These activities will be turned in with the member's Goat Records by 4 p.m. July 1 to the Extension Office. Members enroll in Goats by grade in current school year: Level 1, grades 3-5; Level 2, grades 6-8; Level 3, grades 9-12.
14. All goats are to be shown by the 4-H member. Any/All exceptions to be reviewed by the Goat Committee prior to the 4-H Show. If the member has 2 goats in the same class, any White County 4-H member may show the second goat.
15. For all milking dairy goat does, there will be a set time for a complete milk out at 6 p.m. the evening before the show. They must be stripped out completely. Committee members will check all milking does after the milk out has been completed.
16. Each 4-H Goat member may sell only one wether goat in the 4-H Fair Auction. Members who wish to consign a wether goat as their one sale entry, must do so by declaring the wether goat sale animal at check-in on Saturday of the 4-H Fair. DO NOT declare more than one livestock project for the livestock sale; i.e. do not declare both a goat and swine. See 4-H Livestock Sale Rules in this Handbook. All pool goats must also be declared at check-in.
17. Only goats being shown are allowed on fairgrounds except for kids less than 8 weeks old and still nursing.
18. Each Dairy Goat exhibitor should wear a white shirt and white pants during the Dairy Goat show. All exhibitors should follow the general guidelines for appropriate clothing as listed in this handbook (Listed under General Rules: 4-H Exhibits).
19. Only White County 4-H members, their families and approved White County 4-H Volunteers are permitted to assist White County 4-H Goat exhibitors with feeding, grooming, and general care of 4-H goats. NO PROFESSIONAL FITTERS.
20. The animal standing in 1st in each class will return for Champion selection. The animal standing in 2nd place to animal selected as Champion will compete for Reserve Champion.
21. Top Producer rules for milking contest:
 - a) Each 4-H'er may enter two does which are also shown in a milking class.
 - b) The animal must be milked out by the 4-H'er, not by the parents or relatives. Exceptions will be made with the approval of the committee.
 - c) The animals must be milked at specified times in front of one of the Goat Committee members and the udder must be checked by one of the members also. Multiple entries in this class must be milked out in the same sequence during milk out.
 - d) The milk will be weighed and recorded by the committee chairperson.
 - e) Milk out times are: Sun.-6 p.m. (Milk will not be weighed.); Mon.-6 AM & 6 PM. (Milk will be weighed Monday am & pm and weight recorded by the committee).
 - f) Members must be on time to milk or they will be disqualified.
 - g) The highest total pounds of milk produced in 24 hours (two milkings) wins a trophy to be awarded after the show. In case of a tie, the doe that freshened first shall be the winner.
22. Dam & Daughter-animals must be enrolled by the same 4-H member. Dam can only be shown once in a single class (dam can only be show with one daughter as a single entry - not with two daughter as two entries).

23. All dry stock must be under 2 years of age and never fresh. All milking stock must be in milk.
24. There will be a "Best of Udder" picked following each milking class. (Classes 11-15).
25. Showmanship - *To participate in the Showmanship Classes, you must sign-up during check-in on Saturday of the 4-H Fair. You are to use your own animal. (Exceptions will be reviewed by Goat Committee Members).*
26. All dairy breeds will show together. Pygmy and meat goats will be shown in their own classes.
27. To be eligible to show in group classes, animals must have been exhibited in individual classes.
28. Produce of Dam - to consist of 2 does, any age, the produce of 1 dam. Each exhibitor is limited to 1 entry by same dam. The dam is not shown in this class, but should be named on entry form.
29. Market class (wethers only) - Exhibitors are permitted two entries per class. All goat wethers will be weighed, ear tagged, and retinal scanned in May at the County Fairgrounds. These same wethers will be weighed again at check-in at the fair. Classes will be determined after animals are weighed. Dairy and pygmy wethers must be born from January 1 to weigh-in date in May of current year. Meat Goat wethers must be shown with milk teeth in place. Any goat wether showing evidence of testicular tissue is ineligible for the 4-H goat show (clamping is not a valid form of this rule). *Effective in the year 2010, there will be a minimum Meat and Dairy wether weight of 40 lbs.*
30. Rate of Gain Class:
 - a) There will be a class for Dairy wethers, Pygmy wethers and Meat wethers.
 - b) All wethers will be weighed at the May weigh-in. *All Dairy and Meat wethers must have a county ear tag placed. All Pygmy and Lamancha wether must have a permanent tattoo, microchip, or county tag placed. They will be ear tagged with a county tag at that time. They will be weighed again the day they are checked in at the fair by the goat committee.*
 - c) All wethers competing in "Rate of Gain" must be shown in a wether class.
 - d) Award will be given to the top winner in each class.
31. Members may choose to exhibit any combination of live animals, a poster, and/or present an action demo detailing some aspect of the 4-H Goat project. The poster and action demo exhibit options may be in place of or in addition to the live goat exhibit. Posters should meet guidelines described in the 4-H Livestock Poster Project section found elsewhere in this handbook. Action Demo guidelines are described elsewhere in this handbook.
32. The White County Ag. Association reserves the right to examine and/or test any 4-H animal exhibit... See General 4-H Livestock Rules in this Handbook for more information.
33. *White County Bred and Born Doe and Wether class rules:*
 - a) *All does and wether must be bred and born in White county, and declared on the May 15th form to be eligible for the White County Bred and Born awards.*
 - b) *The top two animals (previously declared White County Bred and Born) placing in each class shall be eligible for participation in the White County Bred and Born Champion classes.*
34. *All Dairy, Pygmy, and Meat goats must be officially check-out by committee members prior to leaving the fairgrounds on Thursday of the fair.*

References: 135R (Ohio State University Publications) "Goat Resource Handbook"; Livestock Record WC 34

Dairy, Pygmy and Meat Goat Show Classes: All dairy breeds will show together; pygmy and meat goats will show in their own classes. *All dates are as of day of show.

1. Novice Dairy Goat Showmanship - 1st year in goats & has not completed 6th grade.
2. Junior Dairy Goat Showmanship - members who have completed grades 4-6, plus winner of Novice.
3. Sr. Dairy Goat Showmanship - members who have completed grades 7-12, plus winner of Jr. Showmanship.
4. Dairy Wether - Rate of Gain
5. Dairy Wether - born Jan. 1 to May weigh-in. Animals will be weighed in May and again when they are checked in at the fair under the supervision of the goat committee.
6. *White County Bred & Born Champion Dairy Wether*
7. Junior Doe Kid - Born April 1 to June 1, current year
8. Intermediate Doe Kid - Born March 1 to March 31, current year
9. Senior Doe Kid - Born Jan. 1 to Feb. 28, current year
10. Jr. Yearling Doe (Never Fresh) - Born June 1 to Dec. 31, previous year

Appendix S. White County Sheep Regulations

SHEEP

Dir.: Maradith Dondlinger, Larry Kilmer. Comm.: Mitch Cosgray & Larry Kilmer. Co-Chm.: Walter Chitty, Marly Cotterman, Rodney Dondlinger, Andy Hayden. *Neil Hayden*, Tim Hardebeck, Mike Neary, Josh Roberson, Rob Simms, Andy Tolley, Dave Tolley, Cory VanMeter, Bruce Vogel, Kerry Vogel, *Todd Wolff*.

Sheep Rules

1. To exhibit at the White Co. 4-H Fair, 4-H Sheep members must follow established "Exhibition Regulations for White County 4-H" as listed in this Handbook. Members will complete at least 3 *educational activities* each year. These *activities* will be turned in with member's Sheep Records. All Sheep records and *activities* are due by 4 p.m. July 1 in the Extension Office. Members enroll in Sheep by grade during current school year: Level 1, grades 3-5; Level 2, grade 6-8; Level 3, grades 9-12.
2. All 4-H Sheep must be entered on Sheep enrollment form 4-H 670 at County Sheep Weigh-in in May. All forms must contain member and parent/guardian signatures before being submitted to State 4-H Office. Breeding ewes and market lambs may be placed on same enrollment form.
3.
 - a) ALL market sheep (including registered females with papers) MUST be weighed, retinal scanned, and ear tagged with a county assigned number, at 4-H Fairgrounds in May. Registered females will be retinal scanned at the 4-H Fairgrounds in May. This excludes rams. Registered breeding stock must be accompanied with registration papers at the fair. **NOTE: ALL** exhibition sheep must meet federal identification guidelines designed to eradicate Scrapie disease. Additional information on these guidelines is available from the Extension Office and Indiana State Board of Animal Health
 - b) No health papers will be required, but a vet inspection will be required at check-in to admit sheep.
4. Market lamb classes:
 - a) Market lambs may be a wether or a ewe lamb.
 - b) Market lambs show by breeds with a minimum of 3 required to make breed class. Breeds with less than 3 show in an All Other Breeds class.
 - c) Breed class does not apply to pair of market lambs class.
5. White County Born and Bred Market Lamb class rules:
 - a) All market lambs must be born and bred in White County, and declared at the May weigh-in by listing on the identification form as County-bred.
 - b) The top two animals (White County declared) placing in each market section shall be eligible for participation in the White County born and bred market lamb Champion class.
6. Females will be shown by breeds, with a separate class for commercial animals (crossbreds).
7. Ewe lambs must be declared as Market Class or Breeding Stock Class at the check-in at the 4-H Fair in July. Lambs may not be declared in both classes.
8. Market lambs and all commercial breeding sheep shall be slick shorn with no more than 1/4" of wool on show day or be consistent with breed standards.
9. No grooming paint or coloring that alters or misrepresents breed characteristics will be allowed.
10. At the White County 4-H Fair, the 4-H animal exhibitor may receive clipping and grooming assistance only from their immediate family which is defined as a father, mother, stepfather, step-mother, legal guardian, brother, sister, grandfather, grandmother, aunt, or uncle or from another Indiana 4-H exhibitor or *White County Sheep* committee member. Guardianships granted on a temporary basis for the purpose of circumventing these terms and conditions will not be recognized as "family". Any other assistance may be given verbally only.
11. Only lambs shown in the market classes are eligible for the sale. *Pool sale lambs must have been exhibited in the fair (buyer stipulations may apply).*
12. Only 1 lamb may be sold per member. Members may consign and sell only one livestock project in the 4-H Sale. Members choosing to sell a lamb as their one sale entry, must declare that lamb at weigh-in. See 4-H Livestock Sale Rules in this Handbook for complete information.
13. Sheep not intended for sale will be released on the last day of the 4-H Fair at a time to be announced (with committee approval).
14. Showmanship—members show their own sheep in Showmanship classes. Each first place winner in the showmanship classes will be allowed to move up to the next class in the current year.
 - a) First Year Novice Showmanship: members who have completed grade 3 (prior to completing

- 4th grade). For first year Sheep members only. May not show in Novice class.
- b) Novice Showman: members who have completed grades 4-5. Exceptions: Previous Novice winners are ineligible.
 - c) Junior Showman: members who have completed grades 6-8. Exceptions: Previous Novice winners are eligible and previous Junior winners are ineligible.
 - d) Senior Showman: members who have completed grades 9-12. Exceptions: previous Junior winners are eligible and previous Senior winners are ineligible.
 - e) Super Showman: includes all previous 4-H eligible Super Showman and current year's Senior Showman winner.
- The winner of each showmanship level is eligible to move up to the next level and each level thereafter, as long as that individual wins the given level.
15. Members may choose to exhibit any combination of live animals, a poster, and/or present an action demo detailing some aspect of 4-H Sheep project. The poster and action demo exhibit options may be in place of or in addition to live Sheep exhibit. Posters and Action Demos should meet guidelines described elsewhere in handbook.
 16. Inhumane treatment is subject to disqualification.
 17. Tampering, altering, and/or misrepresentation relative to any exhibit is prohibited. This prohibited activity includes but is not limited to the breeding, age, ownership, and or method or preparation or completion (for example, this includes, but is not limited to, coloring that alters or misrepresents breed characteristics, pumping, drenching and filling).
 18. Unethical fitting of animal exhibits is defined as administration of any substance (to include, but not limited to, drugs covered in rule #21 below, blood, oils, steroids, air, chemical substances) or performance of any surgical or non surgical procedure altering animal's configuration or natural conformation of any part of animal's body, or rendering its tissues unfit for human consumption, and is prohibited. Exceptions allowed to rule 19 or 20 include hoof trimming, dehorning, removal of hair, manipulation of normally attached hair, castration, branding, tattooing, ear notching, docking of tails, and coloring that does not alter or misrepresent breed characteristics.
 19. 4-H market animals shall not contain any identifiable or unidentifiable foreign substance including: drugs, steroids, or chemicals, greater than those standards established by the USDA or the FDA as permissible for sale for consumption as human food both on day of show and day of shipment to market from the fair.
 20. Test samples collected from 4-H animals shall be free of any foreign substance, including steroids, drugs or chemicals affecting the central nervous system (for example, stimulants, depressants or painkillers). Drugs may not be administered to 4-H animal exhibits at the fair except those administered by a veterinarian after approval from the chairman. The procedure must be witnessed by the chairman or his designee.
 21. The use of ice, cold water, alcohol, ice packs, etc. in the preparation of sheep for the 4-H show is by definition a deceptive, fraudulent, misrepresentative and unacceptable practice for the 4-H Youth Show. Icing is determined to be an improper practice and if documented would result in strict disciplinary action and/or disqualification.
 22. The White County Ag. Association reserves the right to examine and/or test any 4-H animal exhibit for... See General 4-H Livestock Rules in this handbook for further details.
 23. An exhibitor may not take exception to the decisions of an official and/or judge in an unprofessional and/or public manner. Nor shall any exhibitor, or person representing the exhibitor, interfere with or show disrespect to any judge or show official.
 24. A 4-H animal exhibit may not be maintained at a professional fitter's facility.
 25. Interpretation of any term or condition, policy, the code of ethics or prohibited activities contained in this book including the assessment of any violation and/or penalty to be imposed against a 4-H member, shall routinely involve the committee chairman or his designee, or the barn director and two committee members for a total of three.
 26. Sheep Barn will hold a meeting on Sunday at 6 pm for all sheep exhibitors.
 27. See Official 4-H Fair Schedule (released in June) for relevant dates and times.

Appendix T. White County Swine Regulations

SWINE

Dirs.: Jeff Altman, Randy Freshour.

Comm.: Don Kopka, Chm.; Dave Thomas, Vice-Chm.; Ed Applegate, David Allen, Joe Bilyeu, Ron Byrd, Gordon Denton, Randy Freshour, Brian Furrer, Mark Furrer, Kent Hall, Joe Hancock, Matt Holderly, Steve Jennings, Brian Perry, Damon Sheets, Rick Sheets, *Lynn Teel*.

Pool Hog Comm.: David Allen, Brian Furrer, Brian Perry.

Swine Rules

1. To exhibit at the White Co. 4-H Fair, all 4-H Swine members follow the established "Exhibition Regulations for White County 4-H" as listed in this Handbook. Members will complete at least 3 *educational* activities each year. These *activities* will be turned in with the member's Swine Records by 4 p.m. July 1 to the Extension Office. Members enroll in Swine by grade in current school year: Level 1, grades 3-5; Level 2, grades 6-8; Level 3, grades 9-12.
2. The Swine Committee recommends all hogs be slaughtered after the 4-H Fair. If anyone takes pigs

- home, they do so at their own risk and against committee recommendations.
3. All pigs must be farrowed on or after Jan. 1 of current year. The Swine Committee recommends pigs be six months of age.
 4. All 4-H Swine intended for show must be ear notched by Standard Ear notch System and correctly enrolled on 4-H Swine Identification Form prior to 4 p.m. May 15. No additions or corrections can be made to 4-H Swine I.D. Form after May 15. Exhibitors bring their copy of Swine I.D. Form to check-in at the 4-H Fair. **NOTE:** Pigs with ear notches not matching 4-H Swine I.D. Form **will not** be unloaded at the 4-H Fair.
 5. 4-H Swine **MUST** be in 4-H members' possession prior to May 15 to be show eligible at the 4-H Fair. Record keeping starts with possession date.
 6. 4-H Swine members turn in a completed record sheet and activity manual, signed by the 4-H club leader, by 4 p.m. July 1st in the Extension Office.
 7. Swine shown as purebred must have purebred registration papers. Exhibitors must bring registration papers to weigh-in at the 4-H Fair.
 8. Each member may exhibit a total of 4 individual animals (4 of any combination) not exceeding 3 of the same sex as listed on the May 15th and July 1st forms. Animals may be any combination of breeds.
 9. Members who plan to bring fewer hogs than are indicated on the July 1st form, must notify swine committee member from their township by barn set-up day, which is the Saturday prior to the fair. With exception of extraordinary circumstances (such as animal's death or severe sickness), members must bring number of animals indicated on July 1st form. If fewer hogs are brought for any other reason, member will be ineligible to sell a hog in the 4-H Livestock Auction.
 10. All swine members are asked to attend set up day. The date and time of set up will be the Saturday prior to the fair at 8:30 a.m.
 11. *Swine check-in will be from 4 to 9 p.m. Friday.* Orientation meeting for all Swine Members will be held in show arena, at 9 p.m. Friday night after hogs have finished unloading.
 12. Open weigh-in of hogs will be held Friday midnight until 12:00 noon Saturday.
 13. Members wishing to sell a hog in the 4-H sale must declare their sale animal at weigh in. DO NOT declare more than one livestock project for the livestock sale, i.e., do not declare both swine & beef.
 14. All pigs must weigh 200 lbs. to be eligible for show or sell.
 15. Only one market swine animal per member may be sold at the auction. Read and be familiar with all 4-H Livestock Sale Rules in this Handbook.
 16. **Selling Non-Auction Hogs at the Fair (Pool Hogs):**
 - a) As a service to the 4-H'er, the White County 4-H swine committee will arrange to sell any 4-H hog that participates in the fair. These animals, also referred to as POOL HOGS, are those animals that will not be sold in the auction, taken home, delivered to a butchering service, or sold to another buyer.
 - b) The 4-H hog pool committee will solicit bids from packers and select the processor with the highest bid. Bids for the pool hogs will be posted in the swine barn no later than 5:00 p.m. Tuesday.
 - c) To enter your hog in the pool, you must bring your hog and your hogs' weight ticket slip to the hog loading area between 5:00 p.m. and 7:00 p.m. Wednesday. It will be the responsibility of each 4-H member to bring your pool hogs to be loaded. Hogs will be loaded, as space is available on trucks. Be sure the slip is filled out properly with animal weight, ID#, and exhibitor number.
 - d) Pool hogs will be shipped directly to processor by 4-H Swine pool committee. Money from hog pool sales will be included in auction check, sent to the 4-H'er a few weeks following the fair.
 - e) Prices will be based on weight ranges. Extremely light hogs & heavy hogs may receive substantial discounts.
 17. All other swine, not intended for the 4-H Auction or Pool Hogs, will be released at 12 a.m. Thursday.
 18. Swine are to be cared for and each pen cleaned daily! Pens also must be cleaned immediately following the 4-H Auction.
 19. Breeds with less than 6 show eligible barrow entries will be moved to the All Other Purebreds class.
 20. Showmanship - Members show their own hogs in Showmanship classes. Each first place winner in the showmanship classes will be allowed to move up to the next class in the current year.

First Year Novice - members who have completed grade 3. For first year Swine members only. May not show in Novice class.

Novice - members who have completed grades 4-5. Exceptions: Previous Novice winners are ineligible.

Junior - members who have completed grades 6-8. Exceptions: Previous Novice winners are eligible & previous Junior winners are ineligible.

Senior - members who have completed grades 9-12. Exceptions: Previous Junior winners are eligible and previous Senior winners are ineligible.

Grand Champion Showman - Includes all previous 4-H eligible Grand Champion Showmen and current year's Senior Showman winner.

21. No cleaning pens during 4-H Swine Show. Swine members may use only the west wash racks on show day.
22. Members may choose to exhibit any combination of live animals, a poster, and/or present an action demo detailing some aspect of 4-H Swine project. The poster and action demo exhibit options may be in place of or in addition to live swine exhibit. Posters and Action Demos should meet guidelines described elsewhere in handbook.
23. *Top 2 placing pigs in each barrow class will be weighed back in class. The individual pigs must weigh within 15 pounds of their original weight. Ex.: if pig weighs 250 pounds at weigh-in he cannot weigh more than 265 pounds at time of show. Pigs weighing more than 15 pounds over original weight will be declared ineligible. Swine placing below an ineligible pig will be moved up one placing. The same official scale will be used for both official weigh-ins. A practice scale will be set up in the middle of the north swine barn after 11 p.m. Friday. Swine can be weighed anytime up to and during Swine Show on Tuesday. If you choose to weigh your pigs during the Swine Show, do not use center aisle between barns or holding area.*
24. The White Co. Ag. Association reserves the right to examine and/or test any 4-H animal exhibit ... See General 4-H Livestock Rules in this Handbook.

Refs.: 134R (Ohio State University Publications) "Swine Resource Handbook for Market and Breeding Projects"; Livestock Record WC-34

Swine Show Classes

All Champion animals are to return for consideration for Grand Champion awards.

1. Crossbred Barrows (Lightweight) 200-229 lbs.
 2. Crossbred Barrows (Light-Medium) 230-250 lbs.
 3. Crossbred Barrows (Medium weight) 251-265 lbs.
 4. Crossbred Barrows (Heavy) 266-280 lbs.
 5. Crossbred Barrows (Ultra Heavy) 281 lbs. & up
 6. Purebred Barrows Only
 7. Crossbred Gilts (Lightweight) Less than 229 lbs.
 8. Crossbred Gilts (Medium weight) 230-249 lbs.
 9. Crossbred Gilts (Heavyweight) More than 250 lbs.
 10. Purebred Gilts - January, February, March.
 11. First Year Novice Showmanship
 12. Novice Showmanship
 13. Junior Showmanship
 14. Senior Showmanship
 15. Breed Champion Gilts
- CHAMPION SWINE EVENING SHOW**
16. Grand Champion Showmanship
 17. Grand Champion Gilt
 18. Grand Champion Barrow