

Animal Identification



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The National Animal Identification System: Basics, Blueprint, Timelines, and Processes

Overview

This fact sheet is the introduction to a series on animal identification in the United States. This article addresses the following questions: what is the National Animal Identification System, what is the importance of being able to trace animals, are only U.S. animals affected, who is supporting the animal identification system, how will the system be implemented, what is the timetable for implementation and what are the potential costs, and where can one obtain more and updated information on this rapidly evolving subject.

What is the National Animal Identification System?

The National Animal Identification System (NAIS) has evolved since 2002 when industry leaders developed the National Food Animal Identification Plan. The NAIS resulted from further advancement of the work plan through the efforts of the 2003 National Animal Identification Development Team (NIDT). This team was established by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA/APHIS) Veterinary Services at the request of the United States Animal Health Association and is composed of approximately 100 animal and livestock industry professionals representing over 70 associations, organizations, and government agencies.

The NAIS is able to provide the United States with a system capable of tracing an animal or group of animals back to the herd that is the most logical source of a disease of concern, as well as tracing potentially exposed animals that have moved from the subject premises. The long-term goal of the NAIS is to trace back to all of the locations (premises) where a suspect animal has been during its life within 48 hours, and to provide information on all of the other animals that came in contact with the subject animal at each premises. Success will be dependent upon the development of a comprehensive system infrastructure capable of facilitating the ability to collect, record, and analyze the movement of animals.



Why is it Important to Track Animals?

The NAIS is needed to maintain the economic viability of American animal agriculture. This national plan will enhance disease preparedness by providing the ability to quickly trace animals exposed to disease, thus permitting rapid detection, containment, and elimination of disease threats. The rapid control of animal disease is essential to preserving the domestic and international marketability of our nation's animals and animal products. The NAIS will strengthen the nation's reputation for having a safe food supply and will promote continued confidence in U.S. livestock products.

Fundamental to controlling any foreign or domestic disease threat is having a system that identifies individual animals or groups, the premises where they are or were previously located, and the date of entry to those premises. Furthermore, in order to achieve optimal success in controlling or eradicating an animal health threat, the ability to retrieve that information within 48 hours of a disease outbreak confirmation and to implement intervention strategies is necessary. The NAIS is focused on utilizing state-of-the-art national and international standards with the best available and practical technologies. The plan is designed to be flexible enough to incorporate new, proven technologies as they become available. States' needs in implementing animal identification (ID) programs will receive priority early in the process and federal oversight of the plan will provide uniformity.

Confidentiality of the data remains the producer's greatest concern under this system,

and the department is exploring appropriate solutions (see the fact sheet in this series that discusses confidentiality). USDA expects its primary NAIS role to be an issuer of numbers and a storehouse for animal data. State agencies and private groups would assign the numbers to producers and relay the data to USDA.

Are Only U.S. Animals Affected by the NAIS?

Animals entering the United States from other countries will be subject to the same ID procedures as animals already in the country. The Canadian ID program is compatible with the NAIS. The ID devices already on animals entering the United States would remain on the animals as official devices and would not be removed.

Are the NAIS and Traceability Connected?

"Yes" is the short answer when only discussing live animal traceability. The NAIS is designed to quickly trace live animal movements in the event of a disease outbreak. However, the answer to this question becomes more complicated once an animal enters the processing phase. After an animal enters the processing plant, the connection is soon broken between the live animal and the meat products that leave the plant a few days later. Due to modern technology in processing plants, it is difficult and expensive to maintain the links between the whole carcass and the individual cuts of meat that go to separate packages for delivery to various retailers.

Consequently, traceability in the current system for meat animals will not generally be



available from “farm to fork” because of the break in the chain at the processing level. Traceability can be established in a two-step process from “farm to slaughter” and from “plant to retail,” but with no direct connection between the two steps. Processors would prefer to establish the safety of the product as it enters and leaves the plant. This would, at least theoretically, eliminate the need to track throughout the entire system, at least for food safety purposes. Tracking throughout the system is possible, but only at higher costs than those for beef in the non-segregated general processing pool. Consequently, processors will probably only incur these added costs if a segment of the market is willing to pay for the characteristics that can be assured using a fully traceable system (e.g., assurances about credence characteristics such as humane animal treatment, organic beef, environmental responsibility, etc.).

How Does the Recent BSE Discovery Impact the NAIS?

In the wake of the discovery of the first U.S. case of Mad-Cow Disease or BSE, Agriculture Secretary Ann M. Veneman announced on December 30, 2003 that implementation of a nationwide animal ID plan would be accelerated. The goal of the plan is to identify the herd mates of the suspect animals when there is a disease outbreak within 48 hours of discovery.

Mad-Cow Disease is a disease of the central nervous system (CNS) in cattle. In all studies BSE has never been found in meat or muscle cuts. Thus the USDA’s changes in beef processing are to prevent CNS materials from

contaminating meat products. Downer or non-ambulatory animals are now banned from entering the food system, as those are most likely to be affected by BSE. Other animals that exhibit possible clinical signs of BSE are pulled out of the processing system and held until conclusive tests show they are free of BSE. The most common source for animals contracting BSE is contaminated feed, as was the case for both recent North American BSE animals. Therefore, it is important to be able to quickly trace an animal’s premises history and identify herd mates that may also be affected. The NAIS should allow for this to occur within 48 hours.

Who is Supporting the NAIS?

Currently the dairy, cattle, sheep, and swine industries have developed preliminary implementation plans. All other livestock, including goats, cervids, equine, aquaculture, poultry, llamas, and bison are becoming engaged in the plan. Some features of the plan are common to all species, while others are species specific. Species working groups are currently being established to further define their needs in developing transition and implementation plans to include in the NAIS.

A complete list of NAIS participants and other plan information can be found at <http://www.usaip.info>.

How Will Implementation of the NAIS Occur?

The NAIS defines the standards and framework for implementing and maintaining a national animal ID system for the United States. It also includes a premise numbering system, an individual and group/lot animal



number system, and standards for data and data handling. Ensuring that these standards are recognized in the Code of Federal Regulations and beginning to issue premise ID numbers are immediate priorities.

Because the plan is being developed at this time, there are no mandatory requirements in place. Eventually, as the system is developed and tested, and the details are worked out, all livestock and food animals will be tracked through the system.

The ID and infrastructure varies among the species groups. The utilization of individual animal ID and/or group/lot ID is dependent upon the management practices of a particular species. For example, not all animals will need to be individually identified if they are raised, fed, and slaughtered as a group. An animal production system can use group/lot ID if the producer is able to demonstrate to the satisfaction of state animal health officials that, through group ID and production records, trace-back to all premises with direct contacts to a suspect animal can occur in 48 hours.

When Will Implementation of the NAIS Happen?

On July 19, 2004 the USDA/APHIS announced it had selected a premises registration system as an interim solution to record locations where animals reside or will reside. This important first step in the implementation of a national animal ID system uses the system developed by the Wisconsin Livestock ID Consortium. The USDA is providing an interim standardized premise registration system which states or tribes can elect to use.

States and tribes can also use other premises registration systems, as long as these systems meet national data standards. The USDA will evaluate other premises registration systems to ensure compliance with the national data standards. Participation in the identification program will be voluntary, at least in the initial period.

The Wisconsin Livestock ID Consortium has been involved with animal identification efforts for several years. While they are multi-species oriented, dairy animals have also been a major component. In addition, the National Holstein Association's Farm Animal Identification and Records (FAIR) program and the National Dairy Herd Improvement Association (NDHIA) have had on-going animal ID efforts for several years. FAIR currently has 1.2 million animals listed in their ID and tracking database. In conjunction with the NDHIA they are planning to increase that effort considerably as a pilot for USDA's NAIS program.

On August 5, 2004 Agriculture Secretary Ann M. Veneman announced the selection of 29 state and tribal projects to receive a total of \$11.64 million to advance the national animal ID initiative. The USDA's APHIS will distribute the funds through 29 cooperative agreements. The selected states and tribes will use the funds to register premises through standardized systems that comply with NAIS data standards.

In addition to registering premises and establishing necessary data transfer procedures, many states and tribes will also conduct field trials or research in order to test and fine-tune ID technologies and collect animal movement



data. State and tribal plans include collecting intra- and interstate animal movement records electronically, integrating data collection technologies at livestock marketing facilities and processing plants, tracking livestock imported from other countries, and electronically collecting animal movement data as livestock are loaded on and off trucks and trailers at their ship-from and ship-to locations.

The USDA is committed to developing a technology neutral program so as to enable producers, to the extent possible, the flexibility to use current and effective systems and technologies as well as the ability to adopt new technologies as they are developed.

The USDA, via the premises allocator, plans to begin issuing premises ID numbers by the fall of 2004 to farms, ranches, feed lots, packing plants, and other premises where animals congregate. This plan is shown in Figure 1-1.

What Will the NAIS Cost?

While preliminary projections for financial requirements have been made, it must be recognized that the plan is still being developed. Initial start-up costs will be different than the costs of a fully operational system in all 50 states and will be directly related to the extent in which animal movements are recorded.

Secretary Veneman announced that \$18.8 million would be transferred from the USDA

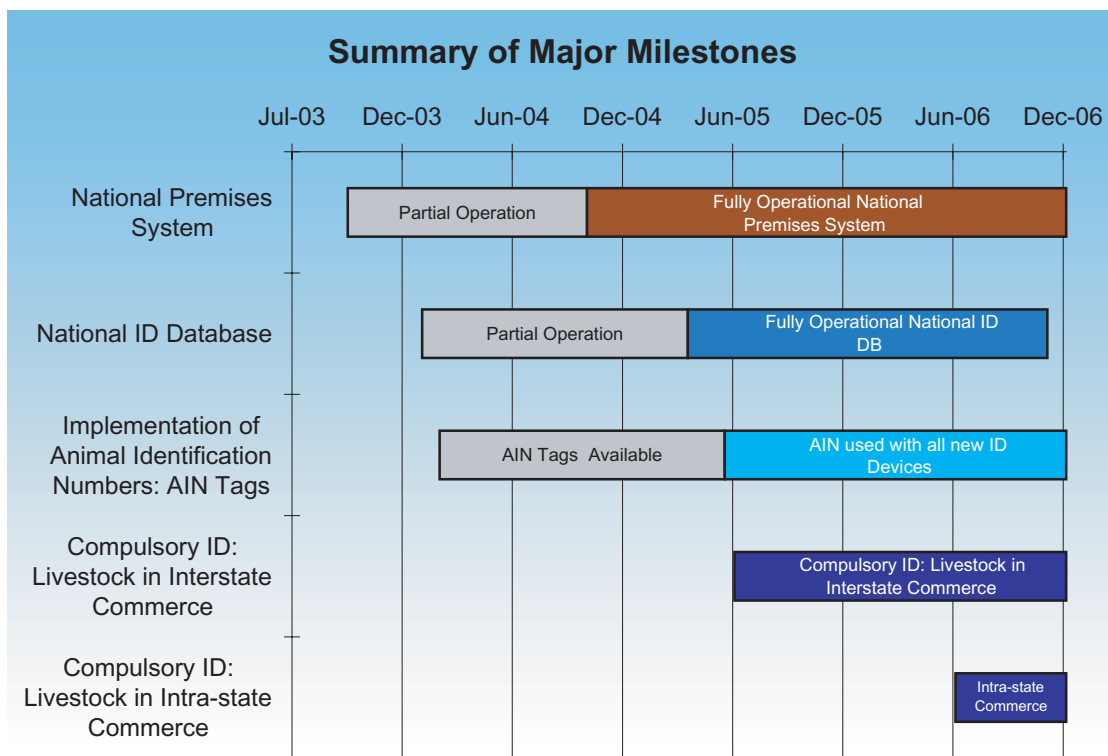


Figure 1-1. Milestones to implement a 48-hour trace back system.



Commodity Credit Corporation (CCC) to provide initial funding for the program during fiscal year (FY) 2004.

The Bush administration has requested \$33 million for animal ID work in FY 2005 beginning October 1, 2004. If \$33 million is the benchmark, the federal government may pay \$165 million, or one-third of the cost, over five years. This would make USDA, along with state governments and the livestock industry, partners in bearing the cost of the program. One group involved in developing an animal ID plan estimates the five year cost at \$550 million. Costs of the plan are divided between the ID device(s), retrofitting facilities to utilize the ID devices, and upgrades to software to handle the database requirements.

Firms with experience in military, bank security, and database management estimate much lower adaptation costs and shorter time to implement a viable system. Radio frequency identification (RFID) is already widely used in general commerce for tracking merchandise and shipments as well as managing inventory control. As reported in *The Economist*,¹ the Auto-ID Centre, a partnership between academic researchers and business based in Cambridge, Massachusetts developed a standard for a new, stripped-down RFID chip in 2002. This chip stores 96 bits of information—enough to give every object in the world a unique number. With tag readers plugged into a computer network, this number can be used to look up detailed information about any object, such as its origin, age, and expiry date. At the same time, the Auto-ID Centre also challenged manufacturers to produce a five-cent tag. Several start-ups, including Alien Technology and Matrics, said

they could produce this. Currently several retailers including Wal-Mart, Albertson's, and Target are testing the device on warehouse-to-store shipments.

Kansas State University's web page, www.beefstockerusa.org, has a bulletin available on RFID titled "A Guide for Electronic Identification of Cattle." The publication provides an overview of information relative to electronic ID technology and the components necessary to implement an individualized animal ID system.

How Will the NAIS Work in Theory?

The NAIS currently supports the following species and/or industries: bison, beef cattle, dairy cattle, swine, sheep, goats, camelids (alpacas and llamas), horses, cervids (deer and elk), poultry (eight species including game birds), and aquaculture (eleven species). Implementation will be in three phases:

- Phase I involves making premises ID available; this should be implemented by the fall of 2004.
- Phase II involves individual or group/lot ID of animals for inter- and intrastate commerce; this is planned for implementation by February 2005.
- Phase III involves retrofitting remaining processing plants, market outlets, and other industry segments with appropriate technology that will enhance the ability to track animals throughout the livestock marketing chain thereby protecting and improving the health of the national herd. This is planned for implementation by July 2006.

Initial implementation will focus on the cattle, swine, and small ruminant industries. In

¹ The future is still smart Jun 24th 2004, From *The Economist* print edition.



transition, the NAIS recommends that all states have a premises ID system in place by July 2004. Unique, individual, or group/lot numbers should be available for issuance by February 2005. All cattle, swine, and small ruminants should possess individual or group/lot ID for interstate movement by July 2005. All animals of the remaining species/industries identified above are to be in similar compliance by July 2006. These standards will apply to all animals within the represented industries regardless of their intended use as seed stock, commercial, pets, or other personal uses.

USDA will be implementing the selected animal ID system at regional levels for one or more selected species, continuing communication and education efforts, addressing regulatory needs, and working with Congress on any needed legislation. Animal ID work is expected to begin with the cattle industry because of concerns about preventing the spread of Mad-Cow Disease. Work may also begin with other major food animals such as hogs, sheep, and poultry.

Other Sources of Information on the NAIS

The primary source for current information is located at www.usaip.info. This is an interactive website that provides details on the development of the plan as well as specific information directed at the segments of the livestock industry involved in the ID effort. USDA/APHIS also has information at their website, <http://www.aphis.usda.gov/vs/highlights/section3/section3-10.html>.

Complete List of Fact Sheets in this Series

WEMC FS#1-04: “The National Animal Identification System (NAIS): Basics, Blueprint, Timelines and Processes.” By: C. Wilson Gray, University of Idaho

WEMC FS#2-04 “Benefits and Costs Associated With An Animal Identification System for Cattle in the United States.” By: DeeVon Bailey, Utah State University

WEMC FS#3-04 “Animal ID: Opportunities for Value-Added Marketing and Production Efficiencies.” By: Kynda R. Curtis, University of Nevada

WEMC FS#4-04 “The National Animal Identification System and Country-of-Origin Labeling: How Are They Related?” By: Wendy J. Umberger, Colorado State University

WEMC FS#5-04 “Animal Identification: Confidentiality of Information.” By: Michael Roberts and Doug O’Brien, National Agricultural Law Center and the University of Arkansas Law School

WEMC FS#6-04 “Animal Identification: Liability Exposure and Risk Management.” By: Michael Roberts and Doug O’Brien, National Agricultural Law Center and the University of Arkansas Law School

WEMC FS#7-04 “Some Issues Related to Beef Traceability: Transforming Cattle into Beef in the U.S.” By: James G. Robb and Erica L. Rosa, Livestock Marketing Information Center



WEMC FS#8-04 “Potential Benefits of Production Information to Cattle Producers.” By: Ruby Ward, Utah State University

WEMC FS#9-04 “Effects of Animal Identification on Cattle Market Structure.” By: Darrell R. Mark, University of Nebraska-Lincoln

WEMC FS#10-04 “Challenges of Animal Identification in the West.” By: Russell Tronstad, University of Arizona

WEMC FS#11-04 “Working with Animal Identification Technology Providers.” By: Michael Coe, Global Animal Management Inc.

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Glossary of Important Terms

American Identification Number

The American Identification Number was adopted in 1998 by the Council on Dairy Cattle Breeding to facilitate the development of national programs that not only enhance genetic progress but also animal disease control and eradication. The number is defined as a 12 character field prefixed with “USA.” The American ID number, as an alphanumeric field, cannot be encoded in the ISO transponder. The American Identification Numbering system will be phased out (or merged with) the U.S. Animal Identification Number as it is implemented.

Animals

Consists of those species shown in the species field name listed in section III.A.3.

Breeding Cattle

Sexually intact cattle of either sex, with the exception of veal calves and heifers moving directly to a terminal feedlot.

Check Digit

A decimal (or alphanumeric) digit added to a number for the purpose of detecting the errors humans typically make on data entry.

Country code

A three-digit numeric code representing the name of a country in accordance with ISO 3166.

Electronic Identification (EID)

An identification method that utilizes electronic technology including, but not limited to, bar codes, 2-D symbology, and radio frequency.

US Group/Lot Identification Number

The identification number used to uniquely identify a “unit of animals” of the same species managed together as one group throughout the pre-harvest production chain.

Individual Animal Identification

A means of identification that provides the capability to differentiate one animal from another. Official individual animal identification uses methods that meet the definition of official identification.

Identification Methods

A means of identifying an animal, including ear tags, brands, breed registry certificates, etc.

Intrastate Movement

Movement that does not cross a state line and does not meet criteria for entering interstate commerce.

Intrastate Commerce

Movement that involves commingling or change of ownership but does not cross a state line or meet criteria for entering interstate commerce.

ISO

International Organization of Standards.

ISO Transponder

An RFID device that transmits its transponder code according to ISO 11784/11785 when activated by an ISO transceiver. It is also a device that has been evaluated and approved for conforming to these standards by the International Committee on Animal Recording

ISO Transceiver (Reader)

Transceiver that reads at least both ISO FDX-B and ISO HDX transponders as defined in ISO 11784/11785.





National Animal Identification System (NAIS)

The animal identification plan for the United States. Through collaboration of industry and government NAIS provides the infrastructure to support animal disease surveillance, monitoring, control, and eradication. Earlier references may be to the U.S. Animal Identification Plan (USAIP).

National Identification System

An identification system that, through established standards and defined data elements, enables for the compatibility of systems while providing the efficient availability of agreed-to information across each segment of the industry.

National Premises Identification System

A means of uniquely identifying a premises and associating it with agreed-to information on an information system, including contact information when communication to the premises is necessary.

Non-producer Participant

A person or entity who will engage in the NAIS in one or more designated roles, which in many instances will require that they provide data to the national identification database. Such entities include USAIN Manager, USAIN Tag Distributor, Animal Health Official, Diagnostic Laboratory, etc.

Official Identification Device

An identification device approved by the USDA/APHIS for use in the NAIS. Official identification devices carry the U.S. Shield and meet the established standards.

Official Identification

A method of identification defined in the CFR that is acceptable when the NAIS requires the identification of an animal or group/lot of animals.

Official Identification Numbers

Numbering systems recognized in the CFR, alpha-numeric national uniform ear tagging systems, or valid premises identification numbers that are used in conjunction with the producer's livestock production numbering system. The NAIS directs the establishment of the U.S. Animal Identification Number as the sole, official identification number over an agreed-to period of time.

Premises

A location as determined by the State Animal Health Official or Area Veterinarian in charge of consultation with the producer or operator of an entity who participates in animal production or commerce. The incorporation of premises in the NAIS provides the ability to determine the location where an animal(s) was for a given duration.

Radio Frequency Identification (RFID)

RFID is an ID device that utilizes radio frequency technology. The RFID device or method of identification includes ear tags, bolus, implants (inject), and tag attachments (transponders applied during the tagging process).

Transponder code

Code as programmed in the transponder and defined in ISO 11784 (Table 1) and ISO 11785.





U.S. Animal Identification Number (USAIN)

The U.S. Animal Identification Number (USAIN) will evolve into the sole national numbering system for the official identification of individual animals in the United States. The format contains 15 digits with the first three being the country code (840 for the United States). The USAIN follows the ISO Standard for Radio Frequency of Animals and can thus be encoded in an ISO transponder or printed on a visual tag.

USAIN Distributor

A person or entity authorized to distribute USAIN Tags.

USAIN Manager

A person or entity certified by USDA/APHIS to receive U.S. Animal Identification Numbers. Additionally, they oversee the distribution of USAIN Tags with the animal numbers allocated to them in accordance with the prescribed requirements.

Note: USAIN managers can be tag manufacturers who sell identification devices directly to a producer or through their distributor. In some cases, other entities such as state departments of agriculture, breed associations, DHIA, service providers, veterinarian clinics, etc., will be ID tag distributors who will be USAIN managers and perform the function referred to as an ID tag distributor.

U.S. Premises Identification Number

The official premises identification number for the United States. The number is nationally unique and has no meaning itself. The premises number is associated with an address or legal land description. The field specification for the Premises Identification Number is seven characters (right most character is a check digit).

USAIN Tag

Official identification devices that have the U.S. Animal Identification Number (USAIN) printed or encoded on the identification device (normally a visible ear tag or an RFID tag attachment). Only official identification devices may carry the U.S. Shield.

Verifiable (Mandatory) Identification

A state and/or federal identification requirement defining which livestock must be identified according to established protocols.

Write Once Read Many (WORM)

Distinguishing a transponder that can be partly or totally programmed once by the user and thereafter only read.

