



Animal Identification and Traceability: Overview and Issues

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Summary

Animal identification (ID) refers to keeping records on individual farm animals or groups of farm animals so that they can be easily tracked from their birth through the marketing chain. Historically, animal ID was used to indicate ownership and prevent theft, but the reasons for identifying and tracking animals have evolved to include rapid response to animal health and/or food safety concerns. As such, traceability is limited specifically to movements from the animal's point of birth to its slaughter and processing location.

On February 5, 2010, Secretary of Agriculture Tom Vilsack announced that USDA was revising its approach to achieving a national capability for animal disease traceability. The previous plan, called the National Animal Identification System (NAIS), first proposed in 2002, was being abandoned. In its place USDA proposed a new approach—Animal Disease Traceability—that will allow individual states and tribal nations to choose their own degree of within-state animal identification and traceability for livestock populations. The within-state programs are intended to be implemented by the states and tribal nations, not the federal government. As such, any data collection and storage would be done by state, not federal, authorities. The flexibility is intended to allow each state or tribal nation to respond to its own producer needs and interests.

However, under the proposed revision USDA will require that all animals moving in interstate commerce have a form of ID that allows traceability back to their originating state or tribal nation. The Secretary of Agriculture derives the authority to regulate interstate movement of farm-raised livestock from Section 10406 of the Animal Health Protection Act (P.L. 107-171, Subtitle E; 7 U.S.C. 8305).

The larger program governing traceability of interstate animal movements and coordination between different states and tribal nations will be implemented in federal regulations through the federal rulemaking process. Since the February announcement, USDA has held a series of public meetings for animal health officials and producers to provide opportunities for discussion and feedback. USDA expects to issue a proposed rule in April 2011, and a final rule could be released 12 to 15 months later.

Since 2004, USDA had spent \$150 million trying to get NAIS up and running. Since 2008, key committee leaders in Congress had expressed frustration with the slow pace of NAIS implementation and, as a result, had reduced annual funding appropriations for the program. USDA's decision to revise NAIS was made after a series of 15 listening sessions across the country in 2009, and after receiving thousands of comments concerning NAIS. While the poultry and pork industries have endorsed a mandatory national animal ID program in general, certain portions of the U.S. cattle industry have shown strong resistance to what they perceive as a costly government intrusion in their private affairs. Participation in the initial phase of NAIS, premises registration, reflected this same degree of interest, as very high percentages of eligible premises were registered for most major animal species—poultry (95%), sheep (95%), swine (80%), goats (60%), and horses (50%)—with the exception of cattle (18%). USDA stated that such a low participation rate for cattle rendered NAIS ineffective as a tool for controlling animal disease, and that a much higher participation rate would be necessary to respond effectively to an animal disease outbreak. Under the new proposal, USDA anticipates much higher participation rates.

Lawmakers in the 112th Congress will continue to monitor USDA's work on animal ID and traceability, and could propose legislation aimed at shaping its scope, design, and pace of implementation, as well as possible federal financial support of state-level programs.

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Introduction

This report provides a summary of current developments in the U.S. Department of Agriculture's (USDA's) effort to establish a national animal traceability capacity with the intended goal of being able to rapidly identify and respond to an animal disease outbreak. National animal identification and traceability appear to have substantial economic value, yet federal proposals have proven controversial among certain segments of the U.S. cattle industry. This report provides background on animal ID and traceability in general, and the development of the current U.S. system of animal ID and traceability in particular. In addition, it reviews the claims and counter-claims of proponents and opponents of a national animal ID system, and describes many of the unresolved issues related to program development. Finally, two appendixes offer a brief chronology of the development of the U.S. National Animal Identification System (NAIS) and its successor program, and a brief description of the major international organizations involved in setting standards and rules for animal health and trade in animal products, along with summary descriptions of animal ID and traceability programs found in other major livestock producer and consumer countries.

Most Recent Developments

USDA Adopts New Approach to Animal Disease Traceability

On February 5, 2010, Secretary of Agriculture Tom Vilsack announced that USDA was substantially revising its approach to achieving a national capability for animal disease traceability.¹ The previous plan, called the National Animal Identification System (NAIS), first proposed in 2002, was being abandoned. In its place USDA proposed a new approach—Animal Disease Traceability—that will allow individual states and tribal nations to choose their own degree of within-state animal identification (ID) and traceability for livestock populations.² The flexibility is intended to allow each state to respond to its own producer needs and interests.

However, under the new Animal Disease Traceability framework, USDA will require that all animals moving in interstate commerce have a form of ID that allows traceability back to its originating state. The Secretary of Agriculture derives the authority to regulate interstate movement of farm-raised livestock from Section 10406 of the Animal Health Protection Act (P.L. 107-171, Subtitle E; 7 U.S.C. 8305).

Initial Steps for Animal Disease Traceability

In the six months after the February announcement, USDA began collaboratively building on its framework with animal health officials from states and tribal nations. USDA established a Traceability Regulation Working Group from state, tribal nation, and Animal and Plant Health Inspection Service (APHIS) officials. The working group is responsible for synthesizing feedback and making recommendations for the content of a proposed rule.

¹ "USDA Announces New Framework for Animal Disease Traceability," USDA news release No. 0053.10, February 5, 2010.

² For more information, see "Animal Disease Traceability," Animal Plant Health and Inspection Service (APHIS), USDA, at <http://www.aphis.usda.gov/traceability/>.

APHIS held a forum on March 18-19, 2010, for animal health officials from state and tribal nations to discuss and provide feedback on the new framework for animal disease traceability. In May, June, and July APHIS held five public meetings around the country to present the framework and gather feedback from animal health officials and producers. Then, on August 13, 2010, USDA released two publications, *Animal Disease Traceability Framework, Overview and Current Thinking*³ and *Animal Disease Traceability Framework, Update and Preliminary Content of the Proposed Rule*,⁴ which outline USDA's current recommendations that could be incorporated in a proposed rule. APHIS then held three more follow-up public industry forums to provide further opportunities for animal health officials and producers to discuss and give feedback on the framework.

Highlights of Current Thinking on Traceability

USDA's traceability framework is still developing, but one of the key underlying principles of the framework is that managing a traceability program is the responsibility of states and tribal nations. Under this revised framework, states may choose to have no mandatory animal ID and traceability capability, or to rely on existing ID systems already in place to fight brucellosis, tuberculosis, and other contagious animal diseases, or to develop their own version of a more detailed birth-to-market ID system as originally proposed under NAIS. The within-state programs are intended to be implemented by the states and tribal nations, not the federal government. As such, any data collection and storage would be done by state, not federal, authorities.

The federal rules will apply only to livestock that move in interstate commerce. The rules will require livestock that move interstate have some type of official identification and an Interstate Certificate of Veterinary Inspection (ICVI). Exemptions for identification and ICVI requirements will be defined in the rules. For example, cattle moving directly to slaughter would be exempt. Types of acceptable official identification will be defined in federal regulations through the rulemaking process.

The animal disease traceability capacity of each state and tribal nation will be evaluated according to performance standards that are defined through rulemaking. The Traceability Regulation Working Group, in conjunction with state and tribal animal health officials, will define performance standards that will describe a desired outcome but not the method for achieving the outcome. The method will be left up to the states and tribal nations.

Each state and tribal nation will have detailed traceability cooperative agreements with APHIS that describe the cooperators' objectives. Whatever federal funding is available will be provided through annual cooperative agreements. Although the agriculture appropriations bill for FY2011 is not finalized, no funding is designated for animal traceability in the bill. However, the Senate Committee on Appropriations report indicates that funding could be considered after needs are identified under USDA's new initiative.⁵

³ Animal and Plant Health Inspection Service, USDA, *Animal Disease Traceability Framework, Overview and Current Thinking*, Washington, DC, August 13, 2010, <http://www.aphis.usda.gov/traceability/downloads/Handout%202.pdf>.

⁴ Animal and Plant Health Inspection Service, USDA, *Animal Disease Traceability Framework, Update and Preliminary Content of the Proposed Rule*, August 13, 2010, <http://www.aphis.usda.gov/traceability/downloads/Handout%203.pdf>.

⁵ U.S. Congress, Senate Appropriations, *Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Bill, 2011*, S. 3606, 111th Cong., 2nd sess., S.Rept. 111-221 (Washington: GPO, 2010), p. 34.

The program governing animal disease traceability of interstate animal movements and coordination between different state “identification and traceability programs” will be implemented through federal regulations and the federal rulemaking process. USDA will define animal disease traceability with a new section in Title 9 of the *Code of Federal Regulations*. USDA has indicated that a proposed rule could be published in April 2011 with a 60- to 90-day comment period. According to USDA, once the proposed rule is published, it likely would be 12 to 15 months before the final rule is released.

Overview of Animal Disease Costs

Major outbreaks of harmful animal diseases—including avian influenza (AI), foot and mouth disease (FMD), and bovine spongiform encephalopathy (BSE, or mad cow disease)—have led to the slaughter of millions of commercial animals and caused billions of dollars in economic damages (**Table 1**). The economic harm from these disease outbreaks first hits the farm enterprise that suffers direct loss of its animals and its livelihood. But it also extends well beyond the farm place to disrupt domestic and international markets, causing losses all along the marketing chain and ultimately hitting consumers.

Table 1. Major International Animal Disease Outbreaks and Their Economic Costs, Selected Incidents Since 1986

Year	Disease	Species	Location	Economic Cost	Resultant Livestock Cull
1986-1988	BSE ^a	Cattle	United Kingdom	~\$6 billion	3.7 million cattle
1997	FMD ^b	Swine	Taiwan	~\$7 billion	3.8 million hogs
1997	Classical swine fever ^c	Swine	Netherlands	\$2.3 billion	12 million hogs
1998	Avian Influenza ^d	Poultry	Hong Kong	na	Entire poultry population of HK
2000	Classical swine fever	Swine	United Kingdom	na	9 million hogs
2001	FMD	Cattle, Sheep, Swine	United Kingdom	\$6.7 billion	10 million cattle, hogs, & sheep
2003-2006	Avian Influenza	Poultry	Asia, Africa, Middle East, Europe	na	~250 million poultry

Source: Compiled by CRS from various sources.

Note: na = not available. This table is not intended to be a comprehensive listing of all outbreaks, but focuses instead on selected incidents relevant to livestock production activities in the United States.

- a. Bovine spongiform encephalopathy (BSE), commonly known as mad cow disease, is a fatal, neurodegenerative disease in cattle that causes a spongy degeneration in the brain and spinal cord. BSE-contaminated meat consumption has been linked to a human variant of Creutzfeldt-Jakob Disease, according to the World Health Organization.
- b. Foot-and-mouth disease (FMD), or hoof-and-mouth disease (*Aphtae epizooticae*), is a highly contagious and sometimes fatal viral disease of cloven-hoofed animals, including domestic animals such as cattle, water buffalo, sheep, goats, and pigs, as well as antelope, bison and other wild bovids, and deer. It is caused by foot-and-mouth disease virus. FMD does not transmit to humans.
- c. Classical swine fever (CSF), or hog cholera is a highly contagious disease of pigs and wild boar.
- d. Avian influenza (H5N1), commonly known as bird flu, refers to influenza caused by viruses adapted to birds. Of greatest concern is highly pathogenic avian influenza (HPAI). Avian influenza (H5N1) can infect and kill humans from bird-to-human contact.

To date, the United States has been fairly fortunate in avoiding a catastrophic animal disease outbreak of the nature of the FMD events that occurred in Taiwan in 1997 or the United Kingdom in 2001. Were a similar FMD outbreak to hit the United States, the economic consequences could be staggering—possibly in the range of \$30 billion to \$100 billion in cost to the U.S. cattle industry alone, according to House Agriculture Committee Chairman Collin Peterson in remarks made at a March 11, 2009, hearing by the subcommittee on Livestock, Dairy, and Poultry to review animal identification systems.⁶

The economic consequences of major animal disease outbreaks that occurred during the 1990s and early 2000s provided the impetus for the development and implementation of animal identification (ID) and traceability systems in many countries.⁷ The motivation and nature of these programs varies across countries, ranging from voluntary programs focused on animal health as in the United States, to mandatory programs focused on both food safety and animal health as in the European Union (EU), Japan, and South Korea (**Figure 1**).⁸ More recently, some major importers of animal products, Japan and South Korea in particular, have begun to discuss the possibility of requiring traceability on imported meat products, which, if undertaken, would add a further dimension—market access—to animal ID and traceability programs.

Any developments that occur in domestic or international markets with respect to animal health, food safety, and import standards have potentially significant economic importance for U.S. livestock industries because the United States is a major producer and exporter of livestock and animal products (**Table 2**). The United States is the world's leading producer of beef and poultry and ranks third in pork production behind China and the EU (see tables in **Appendix B**). With respect to trade in animal products, the United States is the world's leading exporter of pork, the second-leading exporter of poultry (behind Brazil), and the third-leading exporter of beef, while ranking first as the world's leading importer of beef. In addition to these global rankings, U.S. exports of animal products account for substantial portions of total use of domestic production—17% for both pork and poultry, and 6% for beef, in 2007 and 2008.⁹

⁶ Public hearing to review animal identification systems, House Committee on Agriculture's Subcommittee on Livestock, Dairy, and Poultry held a March 11, 2009; <http://agriculture.house.gov/hearings/index.html>.

⁷ For examples of animal disease outbreaks and their impact on international trade see USDA, Economic Research Service (ERS), "Economic Effects of Animal Diseases Linked to Trade Dependency," *Amber Waves*, vol. 4, issue 2 (April 2006); CRS Report R40575, *Potential Farm Sector Effects of 2009 H1N1 "Swine Flu": Questions and Answers*, by Renée Johnson; CRS Report RS21709, *Mad Cow Disease and U.S. Beef Trade*, by Charles E. Hanrahan and Geoffrey S. Becker; or Fawzi A. Taha, *How Highly Pathogenic Avian Influenza (H5N1) Has Affected World Poultry-Meat Trade*, LDP-M-159-02, ERS, USDA, October 2007. For an analysis of the potential economic costs of an FMD outbreak, see Philip L. Paarlberg, Ann H. Sietzinger, John G. Lee, and Kenneth H. Mathews, *Economic Impacts of Foreign Animal Disease*, Econ. Research Report No. 57, ERS, USDA, May 2008.

⁸ International animal ID programs are discussed in **Appendix B** of this report.

⁹ U.S. beef exports accounted for 9% of total disappearance during the five years prior to the discovery of a BSE-infected cow in the U.S. cattle herd in December 2003.

Table 2. U.S. Meat Exports, Ranked by Country of Destination
(average for calendar years 2007 and 2008; \$ millions)

Rank	Beef and Veal			Pork			Poultry		
	Country	Million \$	%	Country	Million \$	%	Country	Million \$	%
1	Mexico	\$774	32%	Japan	\$1,317	38%	Russia	\$798	21%
2	Canada	\$644	27%	Canada	\$508	15%	Mexico	\$531	14%
3	Japan	\$292	12%	Mexico	\$398	12%	Canada	\$426	11%
4	South Korea	\$201	8%	South Korea	\$225	7%	China	\$395	11%
5	Taiwan	\$117	5%	Russia	\$247	7%	EU-27	\$131	4%
6	Vietnam	\$77	3%	China	\$176	5%	Ukraine	\$138	4%
7	EU-27	\$74	3%	Hong Kong	\$160	5%	Cuba	\$109	3%
8	Hong Kong	\$38	2%	EU-27	\$95	3%	Hong Kong	\$74	2%
9	Russia	\$28	1%	Australia	\$80	2%	Taiwan	\$73	2%
10	Dominican Rep.	\$18	1%	Taiwan	\$28	1%	Turkey	\$61	2%
11	U.A.E.	\$17	1%	Philippines	\$30	1%	Angola	\$90	2%
12	Philippines	\$14	1%	Honduras	\$21	1%	Guatemala	\$59	2%
13	Bahamas	\$13	1%	Guatemala	\$12	0%	South Korea	\$52	1%
14	Saudi Arabia	\$11	0%	New Zealand	\$12	0%	Georgia	\$41	1%
15	Jamaica	\$9	0%	Cuba	\$9	0%	Japan	\$40	1%
	Other	\$87	4%	Other	\$118	3%	Other	\$717	19%
	U.S. Total	\$2,413	100%	U.S. Total	\$3,435	100%	U.S. Total	\$3,734	100%

Source: USDA, ERS, FATUS Export Aggregations.

What Is Animal ID?

Animal identification (ID) refers to keeping records on individual farm animals or groups (e.g., flocks or herds) of farm animals so that they can be more easily tracked from their birth through the marketing chain. Historically, animal ID was intended to indicate ownership and prevent thievery. Today, animal identification has been expanded to include information on the animal's origins (e.g., birthplace, parentage, sex, breed, genetics) as well as traceability—the ability to trace an animal product back through the marketing chain to its source, while identifying those other animals or animal products with which it has come into contact.

In essence, a national database of animal ID combined with traceability, accessible via a high-speed computer network, is considered the ideal system to permit quick response to news of an animal disease outbreak or the discovery of tainted food so as to limit threats to human or animal health and to minimize commercial damage. Versions of animal ID systems currently exist in several countries, with differences based primarily on the amount and type of information collected and the extensiveness of the traceability system.

Data Requirements

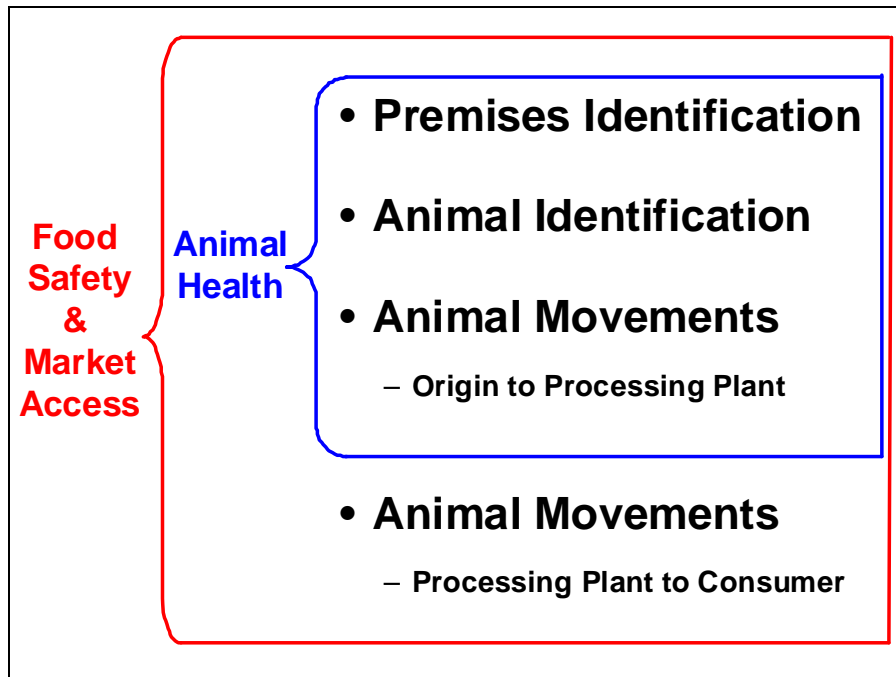
At a minimum, information is collected and stored concerning the animal's place and date of birth, the name and address of the owner, the date and location of movements between the animal's origin and its place of slaughter, and the date and location of slaughter. More elaborate animal ID systems include information on the sex, breed, and parentage of an animal, the names of all feeds and pharmaceuticals used in raising the animal, and the movement of specific animal products from the processing plant to the retail consumer.

Objectives

The reasons for identifying and tracking animals and their products have evolved and include rapid response to animal health and/or food safety concerns, as well as verification of recognized premium commercial production processes as specified on qualifying product labels.

In the United States, the current focus of animal ID is animal health. As such, traceability is limited specifically to movements from the animal's point of birth to its slaughter and processing location. In other countries such as the European Union (EU), Japan, and South Korea, the focus of animal ID is both animal health and food safety (**Figure 1**). As a result, those countries have more comprehensive traceability systems that extend beyond the processing plant and follow animal products (marked with an animal-specific bar code) to the retail consumer.

Figure 1. Animal ID Goals Expand With Level of Traceability



Source: Assembled by CRS.

Increasingly, international buyers of U.S. animal products are demanding better information on those products' history—for example, where and how the animals were raised, how the products were prepared, and what is the nature of the marketing chain the products followed to reach their consumer markets. Traceability responds, in part, to these demands.

Pros and Cons of an Animal ID System

As a national animal ID and traceability system has evolved in the United States, so too have its proponents and critics. This section briefly highlights the potential benefits of a national animal ID and traceability system as cited by its proponents, and the criticisms that have been raised by program opponents.

Proponents' Claimed Benefits¹⁰

Proponents argue that an animal ID and traceability system:

1. **Enhances animal health surveillance and disease eradication.**

According to USDA, animal ID would facilitate early detection of dangerous and costly animal disease outbreaks, while a traceability system would help to identify the source as well as those animal populations that were exposed to the disease, and to contain them via zoning or compartmentalization. Together, USDA claims that a national animal ID and traceability program would likely reduce animal producers' disease testing costs by controlling and/or eradicating animal diseases at both regional and national levels.

2. **Minimizes economic impact of an animal disease outbreak.**

Regionalization or compartmentalization is a disease management tool that contains a disease outbreak to a specific zone, while leaving the remaining areas outside of that zone free of the particular disease and not at risk for international trade restrictions. Rapid identification and compartmentalization of a disease outbreak limits both the spread of commercially harmful diseases and, thereby, the number of animals that would otherwise have to be destroyed or removed from marketing channels. Compartmentalization also facilitates re-establishing international market access and the reopening of lost export markets. The more rapid the response to a disease outbreak, the more limited the economic damage.

3. **Increases domestic marketing opportunities.**

Many farmers and ranchers already keep track of individual animals and how they are being raised, in order to identify and exploit desirable production characteristics—such as “organic” or “grass-fed” or “hormone-free”—that can command substantial price premiums in certain retail markets. Universal bar codes on processed food, including many meats, are widely used by processors and retailers to manage inventories, add value to products, and monitor consumer buying. When consumers seek meat, eggs, or milk from animals raised according to specified organic, humane treatment, or environmental standards, ID and traceability can help firms verify production methods.

Government-coordinated programs also have been established for these purposes. For example, a process verification program operated by USDA's Agricultural Marketing Service (AMS) “provides livestock and meat producers an opportunity to assure customers of their ability to provide consistent quality products by having their written manufacturing processes confirmed

¹⁰ The list of proposed benefits is taken from *Overview Report of the Benefit-Cost Analysis of the National Animal Identification System*, Animal and Plant Health Inspection Service (APHIS), USDA, April 2009, pp. 7-13.

through independent, third party audits,” according to AMS. USDA “Process Verified” suppliers can have marketing claims such as breeds and feeding practices, and so label them, under this voluntary, fee-for-service program.

Other programs employing varying levels and types of traceability include the domestic origin requirement for USDA-purchased commodities used in domestic feeding programs; the national organic certification program, which AMS also oversees; and the mandatory country-of-origin labeling (COOL) program.

4. Provides a valuable management tool for producers.

A traceability program that follows animal products to consumers would provide post-mortem information on cattle with respect to success of various production techniques (e.g., feed types, feed-pasture ratios, or genetics). Similarly, an ID system would be ideally suited for tracking the performance history, along with other relevant criteria, of racing or show animals. It would also increase transparency in the supply chain from producers to consumers; thereby reducing the risk of unfounded liability claims against livestock producers. Finally, an animal ID and traceability program would help producers maintain records on animal movements and health, breed registries, and other marketing activities.

5. Addresses food safety and national security concerns.

Federal and state food safety agencies collaborate with APHIS to protect the food supply from the introduction, through animals, of threats to human health, such as tuberculosis, and foodborne illnesses from bacteria like *Salmonella* and *E. coli* O157:H7.¹¹ Generally, when local health officials can link an illness to a particular product, firms and their regulators have been able to trace that product back to the processor and/or slaughter facility. It has been more difficult to determine which particular animals, herds, or flocks were involved. Some believe that a more rigorous traceback and animal ID system would facilitate food recalls, possibly contain the spread of a foodborne illness, and help authorities stem future incidents.¹² Others, particularly many within the food industry, strongly disagree, countering that such a system would not be based on sound science, and would be technically unworkable and costly.

6. Enhances foreign marketing opportunities for animal products.

In the global marketplace, animal disease programs, aided by traceability systems, are used both to reassure buyers about the health of U.S. animals and to satisfy foreign veterinary and/or food safety requirements. In addition, they assist in assuring credible attributes of animal products with consumers, thus improving opportunities for capturing value-added niche markets by certifying production processes—that is, for export programs that ensure certain aspects of the animal production process such as hormone- or antibiotic-free production.

After BSE appeared in North America in 2003, USDA’s AMS developed an export verification (EV) program for U.S. plants seeking to meet the differing beef import specifications of various

¹¹ For more information see CRS Report RL32521, *Agroterrorism: Threats and Preparedness*, by Jim Monke.

¹² Traceability requirements related to food safety likely would be within the purview of USDA’s Food Safety and Inspection Service (FSIS), which regulates meat and poultry products under, respectively, the Federal Meat Inspection Act (21 U.S.C. 601 *et seq.*) and the Poultry Products Inspection Act (21 U.S.C. 451 *et seq.*). See also CRS Report RL32922, *Meat and Poultry Inspection: Background and Selected Issues*; and CRS Report RS22955, *Country-of-Origin Labeling for Foods*.

countries like Japan, a key foreign market for U.S. beef. AMS establishes the standards that U.S. suppliers must follow if they want to ship beef to these countries, and certifies that the proper procedures are in place. While EV is “voluntary,” it also has become a prerequisite for access to the Japanese, Korean, and other foreign markets.

USDA contends that establishing an internationally recognized system of traceability is likely to enhance the competitiveness of U.S. exports of animals and animal products. In fact, the lack of a standardized, national animal identification system was one factor that prevented the United States from receiving “negligible risk” status (the best status possible under the rating system) for BSE from the World Organization for Animal Health (OIE). Receiving negligible risk status would likely enhance the United States’ ability to compete internationally, but USDA contends that it would also support U.S. domestic price structures, so that all producers—regardless of their interest in international marketing—would benefit when the United States expands its export markets.

7. Enhances animal welfare in response to natural disasters.

In the event of a national disaster, such as a hurricane or major flood, an animal ID system could be used to locate and rescue at-risk animal populations.

Opponents’ Claimed Criticisms

Opponents argue that an animal ID and traceability system:

1. Constitutes an invasion of privacy.

One of the primary concerns cited by opponents or critics of a national animal ID program is that the collection of personal identification information and production methods represents a government invasion of privacy and could potentially result in the public disclosure of proprietary information. These critics claim that personal data held by government authorities is not secure and may ultimately be released to the broader public.

2. Increases costs and technical complexity.

Other critics cite the likelihood of increased producer-level costs of implementation with no guarantee of any market benefit. This concern was at least partially born out by a USDA-funded benefit-cost analysis of animal ID implementation in the United States (discussed in detail in a later section of this report) which found that over 90% of the annual cost of such a program would fall upon the cattle sector.¹³

In addition, the as-yet-unknown technology requirements (e.g., computer hardware/software, record keeping, radio frequency recording, etc.) could potentially increase the complexity of operations and could easily exceed an operator’s capability.

3. Rewards vertical integration at the expense of family farms.

Studies have shown that the cattle industry is expected to bear the brunt of the costs of implementing a national ID program, in large part because each individual animal will have to be

¹³ NAIS Benefit-Cost Research Team, APHIS, USDA, *Benefit-Cost Analysis of The National Animal Identification System*, January 14, 2009; available at the APHIS, NAIS website at <http://animalid.aphis.usda.gov/nais>.

tagged, unlike in the large, vertically integrated pork and poultry industries, where animals are usually raised and moved in lots. Critics claim that this added cost factor would unfairly disadvantage cattle producers in domestic and international meat markets. For small operators who are unable to spread such new costs over large operations, ID costs would likely erode an already thin profit margin.

4. Disadvantages family farms with a lack of market power in price structure.

It has also been argued that, as more tracing requirements are imposed, large retailers and meat packers will exercise market power to shift compliance costs backward to farms and ranches, making it even more difficult for the smaller, independent ones to remain in business.

5. Is objectionable on religious grounds.

Certain religious groups claim that a government program marking individual animals is an apocalyptic sign of the world's end and should therefore be avoided.

6. Other potential reasons for producer push-back.

Although the issue is unstated, some producers are likely concerned that greater transparency at the farm level as a result of more thorough counting and reporting of livestock numbers and sales may increase both income and property tax liabilities, particularly for those producers who previously provided less than full disclosure of animal numbers and farm operations.

Development of a National Animal ID System

At the national level, an animal ID and traceability program emerged and evolved over the years from various state and national animal disease eradication and pest control programs.¹⁴ For example, USDA's Animal and Plant Health Inspection Service (APHIS)—the federal agency that oversees animal health in consultation with state veterinary authorities—directs several programs for animal disease eradication and control that include animal identification components effectively requiring ID and tracking.¹⁵ As part of a brucellosis eradication program, uniquely numbered brucellosis ID tags were routinely attached to animals, noting that they had been vaccinated or tested.¹⁶ The program was successful, and brucellosis has largely been eradicated from U.S. commercial herds; as a result, animal ID became less common as the program wound down.

In addition to ID requirements under selected APHIS programs, certain classes of livestock have long had official identification requirements before entering interstate commerce. For example, the official disease programs for pseudorabies in swine and scrapie in sheep require that both of these species be officially identified before entering interstate commerce.¹⁷ Often state laws or breed association rules require animals of these and other species, like cattle and horses, to be

¹⁴ See **Appendix A** for a brief outline of the historical development of animal ID and traceability in the United States.

¹⁵ For more information, see the APHIS website at <http://www.aphis.usda.gov/>.

¹⁶ Brucellosis is a highly contagious and costly disease mainly affecting cattle, bison, and swine (once common in the United States).

¹⁷ Pseudorabies is a viral disease most prevalent in swine, often causing newborn piglets to die. Scrapie is a fatal, degenerative disease affecting the central nervous system of sheep and goats. For more information, refer to the "Animal Diseases" website of APHIS, USDA at http://www.aphis.usda.gov/animal_health/animal_diseases/.

identified to participate in shows or races. But these various programs are not national in scope and vary in their manner of animal identification, record keeping, and data management.

U.S. animal ID limitations were noted after bovine spongiform encephalopathy (BSE, or mad cow disease) was discovered in the United States (in a Canadian-born dairy cow) in December 2003. A number of trading partners that had quickly closed their borders to U.S. beef reportedly were reluctant to reopen them, due in part to U.S. difficulties in tracing the whereabouts of other cattle that had entered the United States with the BSE-infected cow; similar difficulties arose in determining the whereabouts and/or herd mates of the two later U.S.-born BSE cases.¹⁸

The National Animal Identification System (NAIS) program, first proposed in 2002, attempted to build on and learn from these earlier programs, and, although administered by USDA's APHIS, was based on a state-federal-industry partnership that provided the opportunity for producers not part of a disease program to voluntarily participate in national animal health safeguarding efforts. Certain states have mandated some components of animal identification, such as premises registration; however, at the federal level, NAIS was a voluntary program.¹⁹

USDA's February 5, 2010, decision to replace NAIS with a more flexible, state-based program that mandates traceability only for livestock moving in interstate commerce responds to strong criticism of NAIS from the U.S. cattle sector, in large part because the burden of cost and implementation would fall most heavily on cattle producers.

The following discussion refers primarily to the now-outdated NAIS system, but is useful in that many aspects of NAIS remain highly relevant to the potential implementation of the new, as-yet-unnamed system to take its place.

Species Coverage

NAIS was intended to cover all major commercial livestock and poultry species raised in the United States, including beef and dairy cattle, hogs, sheep, goats, chickens, and turkeys, as well as large animal species raised and kept for sports and/or recreation, most notably horses. This was a new development in the United States, as there has never been a nationwide animal ID system for all animals of any given species.

Household pets were excluded from NAIS. Only animals that enter commerce or that commingle with animals at other premises (like sales barns, state or national fairs, or exhibits) were to be identified. Also, animals that typically are moved in groups—such as hogs and poultry—could be identified as part of their group rather than individually.

USDA's Involvement

Because NAIS was voluntary, and because much of its implementation was to occur at the local and state levels, USDA's involvement was focused on popularizing the program, ensuring that

¹⁸ See CRS Report RL32199, *Bovine Spongiform Encephalopathy (BSE, or "Mad Cow Disease"): Current and Proposed Safeguards*, by Sarah A. Lister and Geoffrey S. Becker.

¹⁹ For example, Michigan (http://www.michigan.gov/mda/0,1607,7-125-48096_48149--,00.html), Indiana (<http://www.in.gov/boah/2328.htm>), and Wisconsin (<http://www.datcp.state.wi.us/premises/index.jsp>).

adequate information was available to all participants (both actual and potential), and addressing the following general issues:

- prioritizing implementation by species/sectors, taking into account where the greatest disease concerns and traceability opportunities exist;
- harmonizing animal ID programs;
- standardizing data elements of disease programs to ensure compatibility;
- integrating automated data capture technology with disease programs;
- partnering with states, tribes, and territories;
- collaborating with industry; and
- advancing ID technologies.

To ensure that NAIS participants and other interested stakeholders had access to pertinent information about the program, USDA published a series of reports that provided participant guidance, technical standards, and implementation strategies. Three reports in particular (described below) provided detailed information about the status of NAIS, how to participate in the program, including the necessary technical details, and the future direction of program implementation.²⁰

NAIS Business Plan²¹

A Business Plan to Advance Animal Disease Traceability detailed recommended strategies and actions to enable existing state and federal regulated and voluntary animal health programs, industry-administered animal health and marketing programs, and various animal identification techniques to work in harmony to enhance animal disease traceability.

NAIS User Guide²²

The NAIS *User Guide*, first published in November 2006, provided guidance to producers and owners of animals, as well as other sectors involved in the animal agricultural industry, on how to participate in NAIS and how participation would benefit them.

NAIS Program Standards and Technical Reference²³

As a supplement to the *User Guide*, the *Program Standards and Technical Reference* document established data standards for NAIS, including:

²⁰ All three reports are available on the NAIS website at <http://animalid.aphis.usda.gov/nais>.

²¹ *A Business Plan to Advance Animal Disease Traceability*, Version 1.0, APHIS, USDA, September 2008.

²² *National Animal Identification System (NAIS)—A User Guide and Additional Information Resource*, Version 2.0, APHIS, USDA, December 2007; hereafter referred to as *NAIS User Guide (2007)*.

²³ *NAIS Program Standards and Technical Reference*, Version 2.2, APHIS, USDA, February 2008.

- the data element formats for premises identification numbers, animal identification numbers, and group/lot identification numbers, needed to ensure compatibility across information systems;
- standards for official identification devices that utilized the animal identification number; and
- information on technology standards published by the International Organization for Standardization (ISO) that were utilized in NAIS.

Use of these standards by states, tribes, industry organizations, identification device manufacturers, and other entities involved in NAIS would help to ensure system effectiveness.

NAIS Goals

The primary goal of NAIS was to protect the commercial interests involved in U.S. agriculture from the potential harm associated with the outbreak of an animal disease. NAIS was not intended to serve as a food safety program per se, although there could be positive public safety effects from its successful implementation.

USDA identified the following specific goals for NAIS:²⁴

- Increase the United States' disease response capabilities.
- Limit the spread of animal diseases.
- Minimize animal losses and economic impact.
- Protect the livelihoods of animal producers.
- Maintain market access.

To accomplish these goals, USDA's long-term goal was to achieve the ability to identify and trace animals of interest within 48 hours of an animal disease problem. To meet this time frame, animal health officials would require rapid access to reliable and complete data on both animal ID and movement history.

NAIS Program Implementation

When a disease outbreak occurs, animal health officials need three key pieces of information in order to contain the outbreak and limit its commercial damage.

- Which animals are involved in a disease outbreak?
- Where are the infected animals currently located?
- What other animals might have been exposed to the disease?

NAIS was designed to meet these three data needs so as to facilitate quick traceback from the point of discovery of an animal disease at any point in its commercial marketing chain back to its original premises, while noting all other animals that came into contact with the diseased animal. To collect the requisite information, NAIS was composed of three sequential components—premises registration, animal identification, and animal tracking.

²⁴ This list is available at http://animalid.aphis.usda.gov/nais/about/nais_components.shtml.

Step 1. Premises Registration²⁵

The first phase of NAIS involved registering the geographic location (i.e., the farm or ranch) where the livestock or poultry were raised, housed, or boarded. To meet USDA's data standards for premises registration, states and tribes had to collect and maintain "at a minimum" the following pieces of information:²⁶

- premises identification number (PIN);
- name of entity;
- contact person for premises;
- mailing address or latitude/longitude coordinates of the premises;
- contact phone number;
- operation type;
- date activated, date retired, and the reason retired (to determine whether animals still exist at the location); and
- alternative phone numbers.

The PIN, a unique seven-digit number permanently assigned to a location, would not change following a change of ownership. A producer or owner could have multiple PINs based on the nature and type of operations (e.g., if a single producer had distinctly different animal production activities taking place at different locations).

Premises were to be registered at one of the state (or tribal) animal health authorities. Premises registration was free and did not require participation in the following two steps. USDA maintained the premises information in a National Premises Information Repository, but declared that it would protect individuals' private information and confidential business information from disclosure.²⁷

According to USDA, premises information would ensure that producers are notified quickly when a disease outbreak or other animal health event might harm their operations. In an emergency, animal health officials would be able to quickly locate at-risk animals and take precise actions to address the situation, minimize hardships, and speed disease eradication efforts as much as possible.

In late 2006, the goal was to have all premises registered by 2009. However, as of September 6, 2009, only about 37% of premises (excluding horses) were registered under the NAIS out of an estimated 1.4 million U.S. animal and poultry operations (**Table 3**). USDA stated that much higher levels of participation would be needed to successfully implement NAIS.

²⁵ For more information on premises registration, see http://animalid.aphis.usda.gov/nais/premises_id/index.shtml.

²⁶ *NAIS User Guide (2007)*, p. 17.

²⁷ *Ibid.*, p. 18.

Table 3. NAIS Premises Registration Statistics, as of September 6, 2009

State	Premises	Premises Registered	Percent
Massachusetts	3,555	8,082	>100.0%
Wisconsin	51,373	62,802	>100.0%
Indiana	34,790	35,200	>100.0%
Idaho	18,754	18,752	100.0%
New York	25,559	22,441	87.8%
Utah	12,460	10,184	81.7%
Michigan	29,011	22,447	77.4%
Pennsylvania	42,302	30,749	72.7%
North Dakota	14,085	8,904	63.2%
Nevada	2,522	1,485	58.9%
Nebraska	30,841	17,606	57.1%
Iowa	47,273	26,741	56.6%
West Virginia	17,670	9,509	53.8%
Illinois	30,046	15,094	50.2%
Delaware	1,553	661	42.6%
Colorado	22,951	8,650	37.7%
North Carolina	36,142	13,491	37.3%
Minnesota	44,193	15,593	35.3%
Alaska	354	117	33.1%
South Carolina	16,120	4,976	30.9%
Tennessee	68,010	20,577	30.3%
Hawaii	1,391	406	29.2%
Virginia	37,673	10,619	28.2%
New Mexico	11,250	3,102	27.6%
Arizona	5,170	1,425	27.6%
Florida	28,731	7,826	27.2%
Alabama	35,538	9,284	26.1%
Kentucky	61,251	15,565	25.4%
Arkansas	37,614	9,501	25.3%
South Dakota	22,356	5,549	24.8%
California	32,500	7,763	23.9%
Mississippi	29,312	6,751	23.0%
Wyoming	8,227	1,840	22.4%
Kansas	39,346	8,430	21.4%
Ohio	48,073	9,995	20.8%
Maryland	7,837	1,559	19.9%
New Jersey	5,315	1,041	19.6%
Missouri	79,018	15,166	19.2%
Texas	187,118	33,022	17.6%
Oklahoma	71,420	12,184	17.1%
Louisiana	19,677	3,307	16.8%
Georgia	35,431	5,108	14.4%
Maine	4,213	444	10.5%
Oregon	28,634	2,877	10.0%
Washington	22,155	2,131	9.6%
Vermont	4,438	389	8.8%
Montana	19,708	1,699	8.6%
Connecticut	2,539	164	6.5%
Rhode Island	504	15	3.0%
New Hampshire	2,277	61	2.7%
Subtotal	1,438,280	531,284	36.9%
Territories & Tribes		1,577	
Grand Total		532,861	

Source: NAIS website, APHIS, USDA.

Note: Includes cattle, goats, poultry, sheep, and swine; does not include horse premises. In cases where participation exceeds 100%, eligible premises were being undercounted.

Step 2. Animal Identification²⁸

The second phase of NAIS involved assigning each individual animal or each specific group of animals a unique number from a uniform numbering system. A group ID is best suited for animals, such as swine or poultry, that are raised in confined lots and move through the production chain as one group.

Animal Identification Number (AIN)

An animal identification number (AIN) is a unique, 15-digit number, where the first three numbers are the country code and the following 12 digits are the animal's unique identifying number.²⁹ The first three numbers of an AIN issued in the United States would always be 840. As a result, tags, radio frequency identification devices, and other ID devices that comply with the 15-digit AIN numbering system are often referred to as 840 devices.

Animal ID under NAIS was accomplished by obtaining USDA-recognized numbering tags or devices from representatives of authorized manufacturers. AIN devices include the traditional visual ear-tag or tattoos that are read by physical viewing, or the radio frequency identification (RFID) tags as well as injectable transponders, which may be read electronically from a moderate distance and without direct line of sight.³⁰ USDA did not designate any specific identification technologies beyond the minimum requirements for official identification described in the *Code of Federal Regulations*.

In recent years, the use of RFID devices and injectable transponders with information that is read by scanners and fed into computer databases is becoming more common, because these devices allow for faster, easier access to ID information. Because they can be read electronically, RFID and electronic transponder devices eliminate the need to approach or restrain animals, thereby reducing stress and increasing the quality of the data obtained.

Some animals did not need to be identified under NAIS, specifically animals whose movement poses a low risk of disease spread or exposure. Such cases include animals that never leave their birth premises (e.g., that die and are buried at their birthplace) or are only moved directly to custom slaughter for personal consumption. However, USDA encouraged all animal owners to register their premises, regardless of the number of animals present, because many animal diseases (such as avian influenza, foot-and-mouth disease, and vesicular stomatitis) can be spread whether an animal leaves its home premises or not.

The person responsible for the care of the animal would choose when to place the ID on the animal. Some producers might want to attach ID devices shortly after birth; others might choose to attach a device later. However, USDA contended that an animal should have an ID attached before it moved from its current premises to another producer's premises, a livestock market, or a feedlot, among other locations. If the animals could not be tagged at their current premises, producers might elect to have their animals tagged at an auction market providing tagging services when they were ready to market their animals. In such cases, when the animals were

²⁸ For more information on animal identification, see http://animalid.aphis.usda.gov/nais/animal_id/index.shtml.

²⁹ *NAIS User Guide (2007)*, p. 22.

³⁰ APHIS provides more information on AIN devices at http://animalid.aphis.usda.gov/nais/naislibrary/documents/guidelines/NAIS_ID_Tag_Web_Listing.pdf.

unloaded, they would be tagged before they were commingled with animals from other premises. In some areas, tagging services are available. Producers who purchase animals (whether from a domestic or foreign source) and bring them into their operation would be expected to maintain the official identification already on the animal—no additional identification or change of identification of those animals would be needed.

Group Identification Number (GIN)

Animals that typically move through the production chain as a group of animals of the same species could be identified by group/lot identification numbers (GINs), rather than individual numbers. This practice is most common in the poultry and pork industries. However, group/lot identification could be an option for other species moving through the production chain as a group. The GIN is a 15-character number consisting of the seven-character PIN; the six-digit date (MMDDYY) that the group or lot of animals was assembled; and a two-digit number (01 to 99) to reflect the count of groups assembled at the same premises on the same day. Since the GIN is “self-generated” by the producer (not assigned by USDA), the GIN of each group would be maintained at the premises by the producer in his or her management records.

The ID would remain with the animal for its lifetime. The uniform numbering system would link each producer’s livestock or poultry flock to the animal’s birthplace or premises of origin. The actual identification protocol is sensitive to the unique qualities of different species groups, and the way they are raised, moved, commingled, and processed.

Step 3. Animal Tracing³¹

The third phase of NAIS involved access to timely, accurate animal movement records in order to quickly locate at-risk animals in the event of a disease outbreak, and to limit the disease to a clearly defined region or compartment. Under this third step, a producer would select one of the NAIS-compliant animal tracking databases (ATDs) maintained by states and private industry (i.e., not the federal government) to which the producer could report the movement of animals shipped from or moved into their premises. Under NAIS, only the minimum, standardized tracing information was necessary for participation. The minimum traceback information included:³²

- the national premises identification number (PIN);
- the animal ID number (AIN) or group ID number (GIN);
- the date of the event; and
- the event itself (e.g., move-in to a new premises or move-out of the current premises).

Other animal-specific data (e.g., age, species, sex) that supported NAIS in traceback situations were also standardized, but were not necessary for participation.

³¹ For more information on animal tracing, see http://animalid.aphis.usda.gov/nais/animal_track/index.shtml.

³² *NAIS User Guide (2007)*, p. 32.

The traceback information would be read and recorded each time that a notable movement between locations occurred.³³ Movements within a production unit for management purposes (e.g., from pasture to pasture) were not considered to impact disease spread, and therefore were not necessary to report relative to NAIS.

The voluntary animal tracing component of NAIS was a public/private partnership. Both industry—through private systems—and states would operate and maintain ATDs, which contain the animal location and movement records that producers report to help safeguard animal health. In other words, the federal government would not maintain the ATDs; states and private entities would. Having states and industry maintain these ATDs was part of USDA's plan to assure confidentiality for participants. On the federal side, USDA would operate a portal system to enable animal health officials to submit requests for information to the administrators of the ATDs when investigating an animal disease event. This system was known as the Animal Trace Processing System (ATPS).

When there was a disease outbreak or other animal health event, the ATDs were designed to provide timely, accurate reports that showed where potentially exposed animals had been and what other animals had come into contact with them. USDA defines retrieval of traceback data within a 48-hour window as optimal for efficient, effective disease containment.

State and federal animal health officials would use the system only in the following situations:³⁴

- an indication (suspect, presumptive positive, etc.) or confirmed positive test for 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 (brucellosis, tuberculosis, etc.).

Issues Concerning NAIS

Low Participation Rates; Slow Implementation Pace

As of September 2008, about 40% of potential premises in the United States (including premises with horses) had been registered (**Table 4**), although there was substantial variation in participation across species and states (**Table 3**). Poultry and sheep registration was estimated at 95%, swine at 80%, goat at 60%, horse at 50%, and cattle at 18%.

³³ For specific examples of reportable and non-reportable animal movement scenarios, see *NAIS User Guide (2007)*, pp. 35-36.

³⁴ *Ibid.*, p. 30.

Table 4. Estimated U.S. Animal Premises, Populations, and Premises Registration Participation Rates by Species

Species	Estimated Animal Population	Estimated Number of Premises	Percent of Premises Registered
Poultry ^a	1,911,625,000	162,800	95%
Sheep ^b	5,747,000	69,000	95%
Swine	67,218,000	65,540	80%
Goat	3,070,000	91,000	60%
Cattle ^c	94,491,000	1,046,000	18%
Subtotal	2,082,151,000	1,438,280	36%
Horse	5,800,000	570,000	50%
Total	2,087,951,000	2,004,340	40%

Source: Estimated total number of premises and total percent registered (excluding horses) is from “Premises Registration Statistics,” NAIS website, APHIS, USDA. Estimated number of premises by species (including horses) is from *A Business Plan to Advance Animal Disease Traceability*, APHIS, USDA, Version 1.0, September 2008. Estimated percent of premises registered by species is compiled by CRS from various APHIS documents.

- a. Poultry populations are from the *Census of Agriculture*, National Agricultural Statistics Service (NASS), USDA, 2002.
- b. Sheep and goat population estimates are from *Sheep and Goats*, NASS, USDA, January 30, 2009.
- c. Cattle population estimates from *Cattle*, NASS, USDA, January 30, 2009.

On September 6, 2009, APHIS reported that 531,284 animal premises (excluding horses) had been registered in one of the available databases (**Table 3**).³⁵ This represents 36.9% of the estimated 1.4 million livestock and poultry farms (with animal product sales of at least \$1,000) in the United States, up slightly from a year earlier.³⁶

To achieve an effective response to an animal disease outbreak, a certain level of participation is necessary. According to USDA, NAIS would have to achieve a “critical mass” level of participation to achieve its long-term goal of 48-hour traceback. USDA estimated that 70% of the animals in a specific species and/or sector would need to be identified and traceable to their premises of origin to achieve the necessary “critical mass.”³⁷ Dr. John Clifford, USDA’s Chief Veterinary Officer for animal health, also cited a participation rate of 70% of the animals in a specific species—that could be both identified and traceable to their premises of origin—as necessary to provide an effective measure of traceability.³⁸ However, Dr. Clifford suggested that a

³⁵ An additional 1,369 premises (not included in the total above) have been registered in U.S. territories and 208 in tribal areas; available at http://animalid.aphis.usda.gov/naais/premises_id/prem_stat_files/NAIS_Prem_Stat_Report.pdf.

³⁶ The *NAIS Business Plan (2008)* breaks this total into an estimated 1.046 million cattle premises, 66,000 hog premises, 163,000 poultry premises, 69,000 sheep premises, and 91,000 goat premises. In addition, the *Business Plan* estimates there are 570,000 premises for horses in the United States.

³⁷ *NAIS Business Plan*, Version 1.0, APHIS, USDA, September 2008, p. 11.

³⁸ Dr. John Clifford, Deputy Administrator for Veterinary Services, APHIS, in testimony given on the National Animal Identification System at a joint hearing for the Committees of Agriculture’s Subcommittee on Livestock, Dairy, and Poultry and the House Committee on Homeland Security’s Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology on May 5, 2009.

much higher participation rate, perhaps as high as 90%, would be necessary to ensure the full benefits of the system.

Some animal ID program supporters have criticized USDA for moving too slowly and/or not setting a clearer path toward universal ID. A July 2007 report by the Government Accountability Office (GAO) concluded that a number of problems had hindered effective implementation of animal ID, such as no prioritization among the nine animal species to be covered to focus on those of greatest disease concern; no plan to integrate NAIS into existing USDA and state animal ID requirements; and no requirement that some types of critical data be provided to the databases, such as species or age.³⁹ USDA's *NAIS Business Plan (2008)* was intended to respond to several of the GAO criticisms.

Others believe that USDA's slow progress has simply reflected the wide differences among producers and other interests over many unresolved issues.

Mandatory or Voluntary?

NAIS was operated as a voluntary program. However, USDA officials expressed concern that participation rates were too low for NAIS to be effective at achieving its 48-hour traceback window. These officials publicly called for Congress to address the low participation rates either by increasing the incentives to participate or by making the program mandatory.⁴⁰

Others, including many state animal health officials, had already made similar requests. The American Veterinary Medical Association (AVMA), which represents more than 78,000 veterinarians across the United States, addressed Congress on its support for mandatory participation in NAIS.⁴¹ At meetings in October 2006, the National Assembly of State Animal Health Officials and the U.S. Animal Health Association's livestock committee each approved a recommendation that, as a step toward a national system, USDA make animal ID mandatory for all U.S. breeding cattle. Consumer advocacy groups also have pressed for a mandatory national system. Among livestock industry groups, the National Pork Producers Council (NPPC),⁴² the National Milk Producers Federation (NMPF),⁴³ and the American Meat Institute (AMI)⁴⁴ announced their support for a mandatory animal identification system. Both the chairman of the House Committee on Agriculture, Collin Peterson, and the chairwoman of the House Committee on Appropriations' Subcommittee on Agriculture, Rosa DeLauro, expressed their interest in seeing NAIS implemented as a mandatory program as a way to avoid devastating losses from virulent diseases.

³⁹ *National Animal Identification System: USDA Needs to Resolve Several Key Implementation Issues to Achieve Rapid and Effective Disease Traceback*, GAO-07-592, July 2007.

⁴⁰ Dr. John Clifford, in remarks made during the question and answer session at the May 5, 2009, hearing mentioned in an earlier footnote.

⁴¹ Testimony of Dr. W. Ron DeHaven, DVM, MBA, Chief Executive Officer, AVMA, at a hearing on NAIS by the House Committee on Agriculture's Subcommittee on Livestock, Dairy, and Poultry, March 11, 2009.

⁴² See the NPPC website position paper on NAIS at <http://www.nppc.org/issues/mais.htm>.

⁴³ Testimony of Dr. Karen Jordan, D.V.M., on behalf of NMPF, at a hearing on NAIS by the House Committee on Agriculture's Subcommittee on Livestock, Dairy, and Poultry, March 11, 2009.

⁴⁴ <http://www.meatami.com/ht/d/ArticleDetails/i/3252>.

In contrast, groups opposed to a mandatory NAIS have been associated primarily with the cattle industry, including the Rancher's-Cattlemen Action Legal Fund (R-CALF),⁴⁵ the National Cattlemen's Beef Association (NCBA),⁴⁶ and the Farm-to-Consumer Legal Defense Fund.⁴⁷ Some opponents reportedly have worked to block mandatory and/or even voluntary programs in various states.⁴⁸ The cattle groups fear that high costs for equipment to carry out the system will favor continued concentration in the industry to the disadvantage of small, independent producers, and they question whether USDA can keep the information confidential. Several members of Congress from districts and states with large cattle industries have echoed the cattle industry's concerns.⁴⁹

There has been some uncertainty over the degree of authority that a U.S. Secretary of Agriculture has in determining by decree whether NAIS would be a voluntary or mandatory program. However, in August 2006, then-Secretary of Agriculture Mike Johanns responded to the growing concerns of the cattle industry by announcing that USDA would continue to implement NAIS as a voluntary program. Proponents of a mandatory NAIS program have argued that, with a change in administration, Secretary Vilsack should have the authority to reverse Secretary Johanns's earlier determination and announce that participation in NAIS would be mandatory for the U.S. livestock industry.

Costs and Who Pays

An animal ID system imposes a variety of costs, such as for tags or other identifying devices and their application, and data systems to track animals. As the extent of traceability increases, so do likely costs. Cost estimates of a national system have varied broadly, and are not directly comparable, a reflection of estimators' differing assumptions and of the varying designs of proposed programs. A related policy question is who should pay—the industry (and ultimately consumers), government, or both? USDA's ideas have called for expenses to be shared (e.g., database costs funded by government and the identifying devices by producers).

It has been argued that, as more tracing requirements are imposed, large retailers and meat packers will exercise market power to shift compliance costs backward to farms and ranches, making it even more difficult for the smaller, independent ones to remain in business. Larger, more vertically integrated operations are more likely to have the resources and scale economies to survive, some have argued. On the other hand, if traceability costs forced big meat plants to reduce line speeds, "smaller plants with slower fabrication speeds may be better equipped to implement traceability to the retail level and may find niche market opportunities."⁵⁰

⁴⁵ http://www.r-calfusa.com/animal_id/animal_id.htm.

⁴⁶ <http://www.beefusa.org/uDocs/animalidleavebehind.pdf>.

⁴⁷ <http://www.ftclfd.org/aa/aa-13feb2009-2.htm>.

⁴⁸ The Farm-to-Consumer Legal Defense Fund, in particular, has taken an active role in blocking any forward momentum in national animal identification. For example, see <http://www.ftclfd.org/aa/aa-13feb2009-2.htm>.

⁴⁹ For examples, see "McCaskill Helps Struggling Independent Producers in Missouri: Measures will increase dairy prices and protect against mandatory national animal identification program," Senator McCaskill press release, August 5, 2009; and "Johnson Shares Concerns of South Dakotans with Ag Secretary," Senator Johnson press release, March 19, 2009.

⁵⁰ "Meat Traceability: Its Effect on Trade," *Iowa Ag Review*, Winter 2002.

On April 29, 2009, APHIS released a study, the *KSU Benefit-Cost Study (2009)*, of the economic benefits and costs of adopting USDA’s NAIS.⁵¹ The research was conducted by economists at Kansas State University in collaboration with researchers from Colorado State University, Michigan State University, and Montana State University. The report represented the researchers’ best estimate of what would result from the adoption of NAIS across multiple species and at varying participation rates. Key study assumptions concerning individual versus group ID tagging included the following: all cattle are individually ID tagged; all swine are group ID tagged, except for cull breeding animals, which require individual ID tagging; and all poultry are uniquely group ID tagged. The results for a 100%-participation scenario are summarized in **Table 5**.

Estimated Costs

The *KSU Benefit-Cost Study (2009)* showed that annual estimated costs for implementing NAIS throughout the livestock (i.e., food animal) industries would be approximately \$228 million (at 2009 prices) for full pre-harvest traceability with 100% participation (**Table 5**). The cost expands to \$304.2 million when horses are included. The cost estimates are less for lower levels of participation and for more limited traceability features. Over 90% of the food animal industry costs for such a system would be associated with the cattle sector, which equates to \$5.97 per animal marketed. This is largely due to the individual animal ID required, whereas swine, sheep, goats, and poultry can often be sufficiently traced using premises and group lot information.

Identification tags and tagging cattle accounted for 75% of the cattle sector’s annual adoption costs. The estimated tag and tagging costs varied among cattle producers from \$3.30 to \$5.22 per animal, depending on current identification practices. In comparison to the cattle industry’s \$5.97 average cost per marketed animal, the average per animal cost for other livestock sectors was \$0.059 per swine, \$1.39 per sheep, \$0.0007 per broiler, \$0.002 per turkey, and \$0.0195 per layer.

Table 5. Estimated Annual Cost Summary of NAIS Implementation by Species
(scenario assumes 100% participation)

Species	Premises Registration	Tags & Tagging	Reading / Tracking	Total Cost	Adoption Cost per Animal	Total Cost per Animal Marketed
	\$1,000				\$ per head	
Cattle	4,474	157,326	47,270	209,070	4.97	5.97
Beef Cow/Calf	3,516	126,277	9,971	139,764	4.22	4.91
Dairy	318	22,288	8,832	31,438	3.43	6.21
Backgrounder	236	3,722	8,115	12,073	0.71	0.71
Feedlot	404	5,038	8,120	13,563	0.51	0.51
Auction Yard	-	-	8,765	8,765	0.23	0.23
Packing Plant	-	-	3,467	3,467	0.10	0.10

⁵¹ The study, hereafter referred to as the *KSU Cost-Benefit Study (2009)*, is available at the APHIS, NAIS, website at <http://animalid.aphis.usda.gov/nais>.

Species	Premises Registration	Tags & Tagging	Reading / Tracking	Total Cost	Adoption Cost per Animal	Total Cost per Animal Marketed
Swine	304	1,437	4,680	6,422	0.06	0.06
Farrow-to-Wean	28	616	905	1,549	0.03	0.02
Farrow-to-Feeder	20	296	520	836	0.03	0.03
Farrow-to-Finish	95	525	1,871	2,492	0.13	0.12
Wean-to-Feeder	24	-	382	407	0.01	0.01
Feeder-to-Finish	138	-	854	991	0.01	0.01
Packers	-	-	147	147	0.00	0.00
Sheep	327	2,091	1,246	3,664	1.07	1.39
All operations	327	2,091	1,214	3,632	1.06	1.06
Packers	-	-	32	32	0.01	0.01
Poultry	644	-	8,469	9,113	0.001	0.001
Layers	456	-	2,036	2,492	0.020	0.020
Broilers	148	-	5,911	6,060	0.001	0.001
Turkeys	39	-	521	560	0.002	0.002
Subtotal	5,750	160,854	61,666	228,269		
Equine	2,690	34,524	38,682	75,896	13.09	na
Total	8,440	195,378	100,348	304,166		

Source: “Benefit-Cost Analysis of The National Animal Identification System,” NAIS Benefit-Cost Research Team, January 14, 2009; hereafter referred to as the *KSU Benefit-Cost Study (2009)*, available at http://animalid.aphis.usda.gov/nais/naislibrary/documents/plans_reports/Benefit_Cost_Analysis_NAIS.pdf

Notes: Some of the per animal costs were derived by CRS from available data. na = not available.

Estimated Benefits

The study also found that the economic benefits from NAIS with 100% participation easily exceeded the costs. Benefits included:

- substantial federal and state government savings in connection with administration of animal disease control and eradication programs due to the reduction in disease outbreaks;
- economic benefits from quickly re-establishing markets following a disease outbreak, plus possible expanded market access in the international marketplace;
- avoidance of significant losses—as great as \$1.32 billion per year over a 10-year period—due mostly to lost export market access; and
- increased consumer demand resulting from higher confidence in food products.

By evaluating the cost-benefit effects over a range of participation levels, the study found that implementation of NAIS would become more cost-effective as participation levels increase, and that NAIS might not be economically viable at lower participation levels.

Liability and Confidentiality of Records

Some producers have been concerned that they would be held liable for contamination or other problems over which they believe they have little control after the animal leaves the farm. On the other hand, documentation of management practices, including animal health programs, can help to protect against liability because it can prove where animals originated and how they were raised. Also at issue is whether producers can and should be protected from public scrutiny of their records. The federal Freedom of Information Act (FOIA) entitles members of the public to obtain records held by federal agencies. Some producers have been concerned, for example, that animal rights extremists might misuse information gained through FOIA, or that the data collection might reveal proprietary information. However, FOIA exempts access to certain types of business information, such as trade secrets, commercial or financial information, or other confidential material that might harm the provider.⁵²

In the 110th Congress, conferees deleted a provision (Sec. 10305) in the Senate-passed version of H.R. 2419, the omnibus 2008 farm bill enacted as P.L. 110-246, that would have required USDA regulations addressing “the protection of trade secrets and other proprietary and/or confidential business information” disclosed due to participation in an animal ID system.

International Traceability Requirements for Meat Imports

A South Korean agriculture official recently reported that his government intends to impose traceability requirements on imported beef as soon as December 2010.⁵³ Currently the EU requires individual identification and traceability for all suppliers, domestic and foreign.⁵⁴

Presently, Japan does not specifically require traceability for imported beef, although imported beef is subject to several other specifications including a 20-month age limitation. The opposition Democratic Party of Japan (DPJ) has declared that, if elected, it will work toward early passage of both an existing “BSE Measures Law” and a “Beef Traceability Law” in order to subject imported beef to the same traceability requirements as domestic beef.⁵⁵ On August 30, 2009, the DPJ won 308 seats in the Japanese Diet. The DPJ hopes to forge a coalition with two minor parties that would give it a two-thirds majority, enabling it to force through legislation.⁵⁶ However, as the DPJ is involved with setting up its new administration and prioritizing its agenda, it is unlikely that the issue of a traceability requirement on imported meat will be addressed as an early priority.

The only top tier beef exporter in the world besides the United States without a traceability system is India, which exports very low-valued canned/cooked beef. According to *CattleFax* analyst Brett Stuart, “While few U.S. producers are willing, or expected, to implement a system voluntarily with little direct benefit, we may be rapidly approaching a future where beef traceability is the price of admission into the global beef world.”⁵⁷

⁵² For more discussion of liability and confidentiality issues, see National Agricultural Law Center, *Animal Identification—An Overview*, at <http://www.nationalaglawcenter.org/readingrooms/animalid/>.

⁵³ Brett Stuart, “S.Korea Traceability Requirement,” *CattleFax Update*, vol. 41, issue 28, July 10, 2009, p. 4.

⁵⁴ *Ibid.*

⁵⁵ “Beef Trade With Japan in Rough Political Waters This Summer,” *Oklahoma Farm Report*, July 15, 2009.

⁵⁶ “Banzai! A landslide victory for the DPJ in Japan,” *The Economist*, August 31, 2009.

⁵⁷ “Beef Trade With Japan in Rough Political Waters This Summer,” *Oklahoma Farm Report*, July 15, 2009.

The WTO's Agreement on the Application of Sanitary and Phytosanitary Measures applies rules to the use of non-tariff trade barriers (e.g., traceability and identification requirements) to restrict market access. The implementation of traceability measures applied to imports must meet two requirements.⁵⁸ First, any traceability requirements must be scientifically justified based on an assessment of risk to human, animal, or plant health. Second, they may be equivalent to, but not more rigorous than, the standards applied to domestic industry.⁵⁹

USDA Listening Sessions

Since early 2004, USDA has committed nearly \$142 million to the development of NAIS, providing many of the funds to states and tribal organizations for research, database systems, and startup of premises registration. Despite the large monetary investment, overall participation in NAIS remained low through 2009 at about 40% of livestock producers, and substantial criticism of the proposed national program resonated from the U.S. cattle sector.

In response to slow growth in NAIS participation rates and to better assess the producer concerns surrounding NAIS implementation, Secretary of Agriculture Tom Vilsack undertook a series of public listening sessions around the country between April 15 and June 30, 2009, to hear from livestock producers and other interested parties concerning their views of the NAIS.⁶⁰

Secretary Vilsack said that he hoped to use the listening sessions to gather feedback and input that would assist him in making decisions about the future direction of animal ID and traceability in the United States. It was the information obtained from these listening sessions, plus the thousands of written comments submitted to USDA, that motivated Secretary Vilsack to announce the abandonment of NAIS in favor of a more flexible, state-based system on February 5, 2010 (as described in this report's introduction).

Congressional Actions

Funding

From FY2004 through FY2009, approximately \$142 million was appropriated for NAIS (**Table 6**). However, since 2008 Congress expressed growing frustration with the slow pace of NAIS implementation relative to the funding outlays. The explanatory language that accompanied the FY2009 USDA appropriation (P.L. 110-161, Division A), explicitly directed APHIS "to make demonstrable progress" to implement the program, and to meet a number of specific objectives (regarding 48-hour traceback ability) that were in the agency's 2008 traceability business plan.

⁵⁸ *The Legal Texts: The Results of the Uruguay Round of Multilateral Trade Negotiations*, WTO, Cambridge University Press©2009.

⁵⁹ Articles 4 and 5, Agreement on the Application of Sanitary and Phytosanitary Measures, *The Legal Texts*, WTO, Cambridge University Press©2009.

⁶⁰ For more information, see "Agriculture Secretary Vilsack Seeks Dialogue with Producers and Stakeholders on National Animal Identification System," USDA News Release No. 0108.09, April 15, 2009; and the NAIS-APHIS website for a listing of the public listening sessions at <http://animalid.aphis.usda.gov/nais/feedback.shtml>.

Table 6. Congressional Funding for NAIS by Fiscal Year

Fiscal Year	Appropriated Funds	Statute
2004	\$18,793,000	CCC Funds ^a
2005	\$33,197,000	P.L. 108-447
2006	\$33,340,000	P.L. 109-97
2007	\$33,107,000	P.L. 110-5
2008	\$ 9,750,000	P.L. 110-161
2009	\$14,500,000	P.L. 111-8
2010	\$ 5,300,000	P.L. 111-80
Sum to date	\$147,987,000	

Source: Compiled by CRS from various statutes as cited.

- a. Commodity Credit Corporation (CCC) funds were disbursed by then-Secretary of Agriculture Veneman using her administrative authority.

In 2009 the Administration proposed increasing the funding for the NAIS slightly to \$14.6 million in FY2010. However, on June 11, 2009, the House Agriculture Appropriations Subcommittee voted to eliminate funding for USDA's NAIS from the FY2010 appropriations bill (H.R. 2997). Subcommittee chairwoman Rosa DeLauro, along with Collin Peterson, chairman of the House Agriculture Committee, both of whom expressed interest in seeing a mandatory animal ID program passed into law, also expressed frustration with the slow pace of national sign-up for NAIS. The full committee's report (H.Rept. 111-181) observed:

After receiving \$142 million in funding since FY2004, APHIS has yet to put into operation an effective system that would provide needed animal health and livestock market benefits. Until USDA finishes its listening sessions and provides details as to how it will implement an effective ID system, continued investments in the current NAIS are unwarranted.⁶¹

The Senate version of H.R. 2997 (originally S. 1406) originally provided for the entire \$14.6 million proposed by the Administration. An amendment to zero out Senate funding for NAIS failed to pass in committee in July; however, another floor amendment (S.Amdt. 2230; introduced by Senators Tester and Enzi) was passed on August 3, 2009, that reduced the FY2010 funding to \$7.3 million. The successful amendment explicitly restricted use of FY2010 funds to ongoing NAIS activities and purposes related to rulemaking for the program. The Senate version of H.R. 2997, as amended, was passed by the full Senate on August 4, 2009. House and Senate differences in NAIS funding for FY2010 were resolved in conference and the final FY2010 funding level for NAIS was set at \$5.3 million. The FY2010 Agriculture appropriations bill was signed into law as P.L. 111-80 by President Obama on October 21, 2009.

Legislative Proposals

USDA has claimed it has existing authority, under the Animal Health Protection Act (7 U.S.C. 8301 *et seq.*), to implement an animal ID program. In the 110th Congress, several bills were proposed (but not adopted) aimed at clarifying USDA's authority or spelling out what type of

⁶¹ H.Rept. 111-181, "Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Bill, 2010," June 23, 2009, p. 24.

program should be established. They included H.R. 1018, prohibiting USDA from carrying out a mandatory program and also seeking to protect the privacy of producer information under a voluntary system; H.R. 2301, establishing an industry-led Livestock Identification Board to manage a national ID system; and S. 1292, requiring USDA to implement a more comprehensive farm-to-consumer animal ID and meat traceability program. H.R. 3485 would have required comprehensive new traceability systems both for USDA-regulated meat and poultry and for other foods regulated by the U.S. Food and Drug Administration (FDA).

In the 111th Congress, the broader food traceability provisions of H.R. 814 (DeGette) and S. 425 (Brown) both include the requirement that FSIS establish, within one year, a system that can trace each animal to any premises in which it was held at any time prior to slaughter, and each carcass, carcass part, or meat/poultry product from slaughter through processing and distribution to the ultimate consumer. The bills also would authorize the Secretary of Agriculture to require records to be maintained and to provide access to them for purposes of traceability.

Traceability provisions have been incorporated into food safety legislation (H.R. 2749) approved by the House and into a bill (S. 510) expected to be the markup vehicle in the Senate, but these provisions would apply to FDA-regulated foods, not to FSIS-regulated meat and poultry products.⁶²

Congressional Hearings

The 111th Congress held two hearings on the national animal ID system (NAIS), both in the House. On March 11, 2009, the House Committee on Agriculture's Subcommittee on Livestock, Dairy, and Poultry held a public hearing to review animal identification systems. Then on May 5, 2009, the House Committee on Agriculture's Subcommittee on Livestock, Dairy, and Poultry held a joint public hearing with the Committee on Homeland Security's Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology to review the National Animal Identification System. Previous Congresses have held public hearings on issues related to animal ID, including animal health and disease matters, as well as bio-security and agro-terrorism.

⁶² For more information, see CRS Report R40443, *Food Safety in the 111th Congress: H.R. 2749 and S. 510*, coordinated by Renée Johnson.

Appendix A. Chronology of NAIS's Development

Early U.S. History

Use of animal ID in the United States dates back at least to the 1800s, when hot iron brands were used throughout the U.S. West to identify ownership and prevent thievery.

1940s

During the 1940s, the APHIS predecessor at USDA initiated an extensive program to identify cattle vaccinated for brucellosis. The official brucellosis vaccination tag and ear tattoo provided USDA with a highly successful animal ID program for cattle for decades. However, since brucellosis has neared eradication in the United States, the system of tagging and ID has been phased out.

1950s-1980s

Individuals associated with animal industries recognized that finding potentially sick or exposed animals early in a disease outbreak was essential to containing the disease quickly. USDA slowly began piecing together plans for a national animal identification system.

1986-1988

Bovine spongiform encephalopathy (BSE) or “mad cow disease”—a fatal neurological disease—is first identified in the United Kingdom’s cattle and dairy herds. BSE is believed to be transmitted mainly by feeding infected cattle parts back to cattle (a practice widespread in the UK at the time). Subsequent testing found BSE to be widespread in the UK’s cattle population and resulted in the slaughter of 3.7 million cattle.

1997

An outbreak of foot and mouth disease (FMD) in swine in Taiwan cost \$6.9 billion in losses and eradication costs, including the slaughter of 3.8 million pigs, and decimated its previously strong pork export market. Similarly, a major outbreak of Classical Swine Fever in the Netherlands resulted in the destruction of 12 million hogs and direct economic losses totaling \$2.3 billion.

2001

An outbreak of FMD in cattle in the United Kingdom ultimately led to the forced slaughter of over 10 million sheep and cattle and cost an estimated \$7.9 billion in losses and eradication costs.

2002

APHIS officials working with the National Institute for Animal Agriculture, the U.S. Animal Health Association, and other organizations helped to draft an early version of an animal ID plan.

2003

The preliminary work plan was expanded by a group of approximately 100 state, federal, and industry representatives—the National Identification Development Team—which produced an initial draft of the U.S. Animal Identification Plan (USAIP).

December 2003

A draft “U.S. Animal Identification Plan (USAIP)” is published calling for recording the movement of individual animals or animal groups in a central database. APHIS’s role was to design an ID numbering system, then allocate numbers to premises (e.g., farms, feedlots, auction barns, processing plants) and to animals or groups of animals. Finally, APHIS was to coordinate the data collection. The work plan envisioned by the USAIP had first called for all states to have an animal premises ID system by July 2004, with farm animals of all major species identified by July 2006. As the draft USAIP was being published in December 2003, the first case of bovine spongiform encephalopathy (BSE or mad cow disease) was detected in the United States.

Among the initiatives USDA quickly announced to shore up confidence in the beef supply was accelerated implementation of a verifiable national animal ID system including action taken by then-Secretary of Agriculture Ann Veneman who used her emergency authority to transfer \$18.8 million of Commodity Credit Corporation (CCC) funds to APHIS for this purpose.

April 27, 2004

Secretary Ann Veneman announced the framework for implementing the National Animal Identification System (NAIS). The outlines of the program have been periodically revised since then in response to changing circumstances and input from industry participants.

May 2005

USDA issued a “Draft Strategic Plan” that included timelines for a mandatory program by January 2009.

August 2005

USDA announced the Draft Program Standards with a new set of “guiding principles.”

April 2006

USDA unveiled a new plan—“Implementation Strategies”—that set a timeline for full implementation by 2009. The plan stated that the program was voluntary with a contingency that USDA would consider regulations that would require participation if voluntary participation levels were not adequate to have an effective program.⁶³

⁶³ Ibid.

August 2006

NAIS program was initially designed with a vision of ultimately transitioning from a voluntary program to a mandatory program. However, in response to various concerns raised by some producers, small farmers, and religious groups, then-Secretary of Agriculture Mike Johanns announces that NAIS would be entirely voluntary at the federal level.

November 2006

USDA distributed a draft “user guide” as “the most current plan for the NAIS [which] replaces all previously published program documents, including the 2005 Draft Strategic Plan and Draft Program Standards and the 2006 Implementation Strategies.” This user guide first identifies the proposed three-step approach—premises registration, animal ID, and traceability—to implementing a national animal ID program. The user guide sought to assure livestock producers that the program would remain voluntary, and that it is bound by law to protect individuals’ private and confidential business information.

December 2007

USDA’s APHIS released the *National Animal Identification System (NAIS)—A User Guide and Additional Information Resource*.⁶⁴

April 2008

USDA’s APHIS released *A Business Plan to Advance Animal Disease Traceability* in draft form. This same report is currently available with a September 2008 date.⁶⁵ The *Business Plan* attempted to further clarify current implementation strategies. It provided benchmarks to guide the NAIS’ progress towards the long-term goal of 48-hour traceback of affected or exposed animals in the event of an animal disease outbreak. One of seven key strategies would be to prioritize species, with the primary commercial food animals in “Tier 1,” along with horses that need a health certificate or test when moved. All other livestock and poultry would be in a lower-priority Tier 2. Another key objective would be to bring 70% of the cattle breeding herd into NAIS by the end of 2009.⁶⁶

January 13, 2009

APHIS published a proposed rule entitled, “Official Animal Identification Numbering System,” (Docket No. APHIS-2007-0096) in the *Federal Register* for comment through March 16, 2009. The proposed rule would establish the seven-character PIN as the standard location identifier.

⁶⁴ Available at <http://animalid.aphis.usda.gov/nais/naislibrary/documents/guidelines/NAIS-UserGuide.pdf>.

⁶⁵ Available at <http://animalid.aphis.usda.gov/nais/naislibrary/plans.shtml>.

⁶⁶ This plan, released in draft form in April 2008 and currently bearing a September 2008 date, is *A Business Plan to Advance Animal Disease Traceability* available at <http://animalid.aphis.usda.gov/nais>.

April 15, 2009 to June 30, 2009

Secretary of Agriculture Tom Vilsack undertook a series of public listening sessions—with a variety of stakeholders representing the full spectrum of views on the NAIS—around the country to gather feedback and input to assist Secretary Vilsack and USDA in making decisions about the future direction of animal identification and traceability in the United States.

April 29, 2009

USDA's APHIS released the results of a comprehensive benefit-cost analysis—*KSU Cost-Benefit Study (2009)*—of the NAIS.

February 5, 2010

Secretary of Agriculture Vilsack announced that USDA was substantially revising its approach to achieving a national capability for animal disease traceability. NAIS was to be replaced with a new approach that will allow individual states (and tribal nations) to choose their own degree of within-state animal identification (ID) and traceability for livestock populations. However, under the proposed revision USDA will require that all animals moving in interstate commerce have a form of ID that allows traceability back to its originating state.

March 2010 Through August 2010

USDA held a series of public meetings on the Animal Disease Traceability framework to provide opportunities for state and tribal nation animal health officials to discuss and provide feedback. APHIS released two documents on August 13 (*Animal Disease Traceability Framework, Overview and Current Thinking* and *Animal Disease Traceability Framework, Update and Preliminary Content of the Proposed Rule*) that described what a proposed rule on traceability might contain.

Appendix B. International Animal ID and Traceability

Organizations and Standards

The United States participates with its trading partners in several important international organizations that are involved in animal health, food safety, and trade in livestock and animal products including the CODEX alimentarius, the World Organization for Animal Health (OIE), and the World Trade Organization (WTO). In addition to U.S. participation in these international organizations, U.S. livestock and animal products are often subject to “export certification” standards imposed by importing countries.

As a member of the WTO, the United States agrees to abide by a set of international trade rules that seek to harmonize participation in international commerce and to provide for a framework for dispute settlement. In contrast, both the CODEX alimentarius and the OIE are designed to recommend scientifically-based standards for food safety and animal health, respectively, but such standards are not international laws; rather, they are intended as guidelines for countries when they are developing their own standards.⁶⁷

World Trade Organization (WTO)

In response to concerns that market access may be limited by use of non-tariff trade barriers, the WTO’s Agreement on the Application of Sanitary and Phytosanitary Measures explicitly restricts the implementation of traceability measures applied to imports to two requirements. First, any traceability requirements must be scientifically justified based on an assessment of risk to human, animal or plant health. Second, they may be equivalent to, but not more rigorous than, the standards applied to domestic industry.⁶⁸

CODEX

The Codex Alimentarius Commission was created in 1963 by two United Nations’ organizations—the Food and Agricultural Organization (FAO) and the World Health Organization (WHO)—to develop food standards, guidelines and related texts such as codes of practice under the Joint FAO/WHO Food Standards Program.⁶⁹ The main purposes of this program are protecting health of the consumers and ensuring fair trade practices in the food trade, and promoting coordination of all food standards work undertaken by international governmental and nongovernmental organizations.

⁶⁷ For more information on the relationship of U.S. participation in both the CODEX and OIE, see CRS Report RL33472, *Sanitary and Phytosanitary (SPS) Concerns in Agricultural Trade*, by Geoffrey S. Becker.

⁶⁸ Articles 4 and 5, Agreement on the Application of Sanitary and Phytosanitary Measures, *The Legal Texts*, WTO, Cambridge University Press©2009.

⁶⁹ For more information refer to the CODEX alimentarius website at <http://www.codexalimentarius.net>.

World Organization for Animal Health (OIE)

Founded in 1924 as the Office International des Epizooties (OIE) and renamed in 2003 as the World Organization for Animal Health, the OIE is an intergovernmental organization responsible for improving animal health worldwide.⁷⁰ In its capacity as a leading international standard-setting organization for animal identification and traceability, the OIE helps its member countries and territories to implement animal identification and traceability systems in order to improve the effectiveness of their policies and activities relating to disease prevention and control, animal production food safety, and certification of exports.

In March 2006, the OIE's Terrestrial Animal Health Standards Commission established a first series of guidelines on identification and traceability on behalf of OIE Members, which democratically adopted them in May 2007 as official OIE standards in the *Terrestrial Animal Health Code*.⁷¹ Chapter four of the OIE's *Terrestrial Code* includes two sections on animal identification and tracing: section 4.1 which defines general principles, and section 4.2 which provides general guidance on the design and implementation of systems.⁷² In April 2008, the Director General of the OIE (Bernard Vallet) called for progressive implementation of animal identification and product traceability systems from the "farm to the fork" be progressively implemented worldwide.⁷³ Under internationally recognized OIE standards, robust animal identification and tracing systems would allow compartmentalization and regionalization of a disease outbreak so that trade could continue for animal products from other parts of the country. The OIE's *Terrestrial Code* includes two sections that deal with compartmentalization: section 4.3 which defines general principles of zoning and compartmentalization, and section 4.4 which discusses application of compartmentalization.⁷⁴

Export Certification

Certification is frequently part of export verification processes imposed by importing countries. In the United States, certification is handled by USDA's Food Safety and Inspection Service (FSIS).⁷⁵ Although each specific country can have its own specific beef importing requirements, certification generally refers to the idea that animal production methods and processing plants comply with the importer's veterinary, animal health, and sanitary standards. This often involves sanitary sampling and plant inspection by the importing country. The OIE contributes to harmonization of international certification standards through its various programs and via the promotion of transparency and reliance on scientific information as a basis for evaluation. Chapter 5 of the OIE's *Terrestrial Code* presents the general obligations related to certification as well as certification procedures.⁷⁶

⁷⁰ More information on the OIE's organization and structure is available at <http://www.oie.int>.

⁷¹ Available at http://www.oie.int/eng/normes/en_mcode.htm.

⁷² Available at http://www.oie.int/eng/normes/en_chapitre_1.4.1.pdf and http://www.oie.int/eng/normes/en_chapitre_1.4.2.pdf.

⁷³ "Animal identification and product traceability from the farm to the fork must be progressively implemented worldwide," Bernard Vallat, July 15, 2008; available at http://www.oie.int/Edito/en_edito_apr08.htm.

⁷⁴ Available at http://www.oie.int/eng/normes/en_chapitre_1.4.3.pdf and http://www.oie.int/eng/normes/en_chapitre_1.4.4.pdf.

⁷⁵ For more information, see "Regulations & Policies: Import Information," Food Safety and Inspection Service (FSIS), USDA, at http://www.fsis.usda.gov/regulations_&_policies/import_information/index.asp.

⁷⁶ Available at http://www.oie.int/eng/normes/en_chapitre_1.5.1.pdf and <http://www.oie.int/eng/normes/> (continued...)

Foreign Animal ID and Traceability Programs

Many of our international trading partners and competitors, including Argentina, Australia, Brazil, Canada, the European Union, Japan, New Zealand, South Korea, and Uruguay, have adopted national animal identification systems with traceability capabilities (**Table B-1**).⁷⁷

Table B-1. Comparison of International Cattle ID and Traceability Programs

Country	Date Begun	Identification				Animal Movement Traceability	Retire Animal Number
		Premises	Individual Animal	Group or Lot	Electronic RFID		
Mandatory							
Argentina	2007	M	M	V	V	M	V
Australia	2002	M	M	V	M	M	M
Canada	2002	V	M	Not Allowed	M	V	M
EU	1997	M	M	V	V	M	M
Japan	2003	M	M	V	V	M	M
South Korea	2004	M	M	V	V	M	M
Uruguay	2006	M	M	V	M	M	M
Voluntary							
Brazil ^a	2001	M/V	M/V	V	V	V	V
Mexico	2003	V	V	V	V	V	V
New Zealand ^b	1999	M/V	M/V	V	V	V	V
United States	2004	V	V	V	V	V	V

Source: The primary sources are M. B. Bowling, D. L. Pendell, D. L. Morris, Y. Yoon, K. Katoh, K. E. Belk, and G. C. Smith, "Review: Identification and Traceability of Cattle in Selected Countries Outside of North America," *The Professional Animal Scientist* 24 (2008): 287-294; *Review of Selected Cattle Identification and Tracing Systems Worldwide*, MAF Biosecurity New Zealand Information Paper No: 2009/03; and New Zealand Ministry of Agriculture and Forestry, February 2009, plus CRS additions from various other source materials.

Notes: M = mandatory; V = voluntary. This is not intended to be a comprehensive list, but focuses on major producer, consumer, and trading nations.

- Brazil's program is mandatory for beef being exported to markets that require origination information such as the EU.
- New Zealand's animal ID program is mandatory for cattle as part of a tuberculosis eradication program.

(...continued)

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⁷⁷ For more information, readers are referred to the following three articles from the volume 24, 2008 issue *The Professional Animal Scientist*. "Review: Identification and Traceability of Cattle in Selected Countries Outside of North America," M.B. Bowling, D.L.Pendell, D.L.Morris, Y.Yoon, K.Katoh, K.E. Belk, and G.C. Smith, pp. 287-294; "Review: Swine Traceability Systems in Selected Countries Outside of North America," J.L.Meisinger, D.L.Pendell, D.L.Morris, K.E. Belk, and G.C. Smith, pp. 295-301; and "Review: Sheep Traceability Systems in Selected Countries Outside of North America," P.D.Bass, D.L.Pendell, D.L.Morris, J.A. Scanga, K.E. Belk, T.G. Field, P.A.S., J.N. Sofos, J.D. Tatum, and G.C. Smith, pp. 302-307.

Canada

The Canadian Cattle Identification Agency (CCIA)⁷⁸ is a federally incorporated, nonprofit, industry-led organization that manages, administers, and develops policy for Canada's national individual identification, tracking, and trace-back system for the Canadian cattle and bison industry. The CCIA is led by a board of directors made up of representatives from several sectors of the Canadian livestock industry.⁷⁹ The government's Canadian Food Inspection Agency (CFIA) is a non-voting board member of the CCIA. Agri-Food and Agriculture Canada (AAFC)—Canada's USDA counterpart—works closely with the CCIA to ensure that funding requirements for development and enhancement initiatives are met.

Animal identification for cattle in Canada was initially a voluntary program when first established in 2001, but was phased into a mandatory program on July 1, 2002. Initially, identification was based on traditional CCIA-approved ear tags. However, in 2003 the Canadian cattle industry committed to transitioning to Radio Frequency Identification (RFID). Since September 1, 2006, all cattle leaving their farm of origin must be tagged with a CCIA-approved RFID tag consisting of a transponder with encoded chip and antenna. According to the CCIA, RFID benefits include exceptional tag retention and readability, increased data integrity, ability to read at a distance without line of sight, and future capabilities of full animal movement tracking.

CCIA executive director Kerry St. Cyr, estimated that, as of March 2009, the nationwide compliance rate for Canadian cattle ID was between 99-100%.⁸⁰ With respect to privacy issues, St. Cyr stated that all personal information associated with ear tag number is securely maintained within the national database and is only accessed by authorized personnel in the event of an animal health issue. CCIA's repository—the Canadian Livestock Traceability System (CLTS)—houses the national ID and traceback systems for a variety of industry and species groups including dairy, beef, bison, sheep, pork, and poultry. The Canadian sheep and hog identification programs gained mandatory status in 2004 and 2008, respectively.

Australia

The National Livestock Identification System (NLIS)⁸¹ is Australia's system for identification and traceability of livestock. NLIS is a permanent whole-of-life system that allows individual animals to be identified electronically and tracked from property of birth to slaughter. A mandatory system for cattle has been in place since July 1, 2005, while a tracing system has been operational for sheep and goats since January 1, 2009. Similar tracing systems are under development for pigs and alpacas.⁸²

⁷⁸ The CCIA official website is at <http://www.canadaid.com/>.

⁷⁹ For a list of industry groups and individual board members, see http://www.canadaid.com/about_us/about_us.html.

⁸⁰ Testimony provided by Mr. Kerry St. Cyr (CCIA executive director) to the House Committee on Agriculture's Subcommittee on Livestock and Horticulture, March 11, 2009; available at <http://agriculture.house.gov/hearings/statements.html>.

⁸¹ The NLIS official website is at <http://lwx.dpi.qld.gov.au/lwx/nlis/pages/externalhome.htm>.

⁸² Testimony provided by Dr. Rob Williams, Agriculture Counselor, Embassy of Australia, Washington, D.C., to the House Committee on Agriculture's Subcommittee on Livestock and Horticulture, March 11, 2009; available at <http://agriculture.house.gov/hearings/statements.html>.

Australia began its animal identification system in the early 1960s in coordination with a national program to eradicate bovine tuberculosis and brucellosis. A mandatory property identification system for cattle was started in 1967 that identified herds in relation to a parcel of land; these were referred to as Property Identification Codes (PICs)—an eight-digit number that identifies the state, region, and specific location of a property—and provided the ability to trace all cattle back to their last property of residence. In the mid-1990s, the established visual-read-only PIC system was converted to an electronic (using Radio Frequency Identification Devices (RFIDs)) whole-of-life individual cattle identification system on the grounds that it was only a matter of time before such a system would be needed to ensure biosecurity, food safety and market access. In 1998, in response to a trading partner, individual identification was made compulsory for producers supplying the European Union (EU) market to provide meat from Hormone Growth Promotant-free cattle. In 1999, the NLIS was introduced.

In a 2004 audit of the NLIS—the National Livestock Tracing Audit—all of the animals identified using NLIS were traced to their property of origin within 24 hours.⁸³ In contrast, only 41% of cattle without NLIS tags were located within 24 hours. In 2005, NLIS expanded to mandatory animal identification for all cattle leaving their property of birth, and all stock movements must be read at points of transfer including saleyards and slaughterhouses.

In Australia, at slaughter each individual animal is assigned a unique ID number that is attached to a bar code. As a result, individual animal ID information is linked not only to live animals, but can also be linked to carcasses, hides, and byproducts of each animal. However, unless specific agreements are reached between producers and harvesting facilities, the animals are generally grouped into lots by harvest date and time, and the individual animal information (carcass data) is not available.

Australia's NLIS is a joint commitment and working partnership between the Australian Government at federal and state levels and Australian industry. However, the Federal government has an overall policy coordination role and supplies funding to underpin the national system. State governments have legal jurisdiction over the movement and health of livestock. The state governments work with industry in joint management committees to develop and implement legislation that underpins the animal identification program. This committee in each state coordinates extension and producer education programs such as demonstration sites, an assistance hotline and industry seminars that assist producers with on-farm use of technology. The state governments have established a registry of PICs, are responsible for ordering of identification devices and have assisted with establishing the reading infrastructure and more recently auditing device performance and monitoring compliance with legislative requirements.

A private industry company, Meat and Livestock Australia (MLA),⁸⁴ currently administers the database for NLIS. As a result, data collected through the NLIS are protected from Australian Freedom of Information (FOI). Privacy and “commercial-in-confidence” provisions of the Australian FOI Act offer additional protection via exemptions for this type of data.

⁸³ *Report of findings from a review of the operation of the National Livestock Identification System*, PricewaterhouseCoopers as prepared for the Australian Department of Agriculture, Fisheries and Forestry, December 22, 2006, p. 18.

⁸⁴ MLA is a producer owned company, working in partnership with industry and government, to achieve a profitable and sustainable red meat and livestock industry. It provides research and development and marketing services to the red meat industry.

European Union

The European Union (EU) explicitly classifies animal identification as part of its “food safety” programs and has mandatory programs in place for the major commercial animal species.⁸⁵ The basic objectives for EU rules on the identification of animals are the localization and tracing of animals for veterinary purposes for the control of infectious diseases. EU species-specific ID systems have evolved over time in response to particular disease events including the outbreaks of classical swine fever in 1997 and foot-and-mouth disease in 2001, as well as the 1997 BSE crisis. As the various animal ID systems evolved within the EU, they have each incorporated trace back and general traceability as a system goal along with animal identification.

In April 1997, in response to the BSE crisis, the Council of the European Union implemented a mandatory system of permanent identification of individual bovine animals enabling reliable traceability from birth to death. All bovine animals were required, by January 1, 2000, to be identified with double ear tags that identify individual animals, a register must be maintained at each animal location (farm, market, etc.), cattle passports to record movements, and a computerized electronic national database includes both ID and tracking information.⁸⁶ On July 17, 2000, an additional regulation was passed that fully implemented and made mandatory the bovine ID and traceability system that is currently in place in the EU.⁸⁷

In addition to tracking animals from birth through harvest, the EU regulations stipulate the labeling of meat products in the following way: (1) a reference number that links the meat product to the animal or animals of origin; (2) identification of the member state where the meat was harvested and processed; and (3) the harvesting or fabrication facility’s approval number(s).⁸⁸ Mandatory food traceability has been a part of the general food law of the EU since January 1, 2005.⁸⁹

Since July 1, 2000, it is compulsory for all equidae moving within the EU to be accompanied by a passport during their movements (on foot and during transport).⁹⁰ A mandatory identification system for porcine animals went into effect on August 28, 2008.⁹¹ Initially adopted in December 2003, the EU’s ID system for ovine and caprine animals was entered into in full force in July 2005.⁹²

⁸⁵ More information on EU individual species identification and trace back programs is available at http://ec.europa.eu/food/animal/identification/index_en.htm.

⁸⁶ Regulation (EC) No. 82/97, 21 April 1997.

⁸⁷ Regulation (EC) No. 1760/2000, 17 July 2000.

⁸⁸ M. B. Bowling, D. L. Pendell, D. L. Morris, Y. Yoon, K. Katoh, K. E. Belk, and G. C. Smith, “Review: Identification and Traceability of Cattle in Selected Countries Outside of North America,” *The Professional Animal Scientist* 24 (2008): 287-294.

⁸⁹ “EU Traceability Guidelines,” USDA Foreign Agricultural Service (FAS), GAIN Report Number E35012, January 21, 2005.

⁹⁰ Commission Decision 2000/68/EC, 22 December 1999.

⁹¹ European Council Directive 2008/71/EC, 15 July 2008.

⁹² Council Regulation (EC) 21/2004 (of 17 December 2003), later amended by Commission Regulation (EC) No 933/2008 (of 23 September 2008).

Japan

Japan has a mandatory bovine ID and traceability system (in place since December 1, 2004) that identifies and tracks individual domestic animals from birth through the production chain until purchased by consumers. Imported beef is presently not subject to the same traceability requirements as domestically produced beef. However, political pressure for such a requirement appears to be building.⁹³

In response to a series of food safety crises in the early 2000s, including the discovery of bovine spongiform encephalopathy (BSE) in Japan's domestic cattle herd and a series of labeling scandals, the Japanese government implemented a series of animal traceability regulations and food safety oversight.⁹⁴ The first phase began in July 2002 when the Law Relating to Special BSE Countermeasures was enacted. As part of this new law, Japan implemented a set of bovine animal traceability and identification laws that required traceability of domestically produced beef from farms to slaughterhouses by December 1, 2003. In the second phase, Japan's Diet passed the Food Safety Basic Law on May 23, 2003, establishing the Food Safety Commission.⁹⁵ Then, in June 2003 the Beef Traceability Law was enacted that required traceability be extended from slaughterhouses to processors, distributors, and retailers by December 1, 2004.⁹⁶ As a result, Japanese retailers and restaurants now display animal identification numbers to allow consumers to reference information about the domestic beef that they buy and eat.

In June 2003, Japan's Ministry of Agriculture, Forestry, and Fisheries (MAFF) also announced a new Japan Agricultural Standard (JAS) program to certify the traceability of imported beef.⁹⁷ To gain certification, exporters must be able to provide all the same information required under the Law Relating to Special BSE Countermeasures—date of birth, sex, breed, name and address of owner, location of fattening, date fattening commenced, and slaughter date—plus the names of all feeds and pharmaceuticals used in producing the animal.

South Korea

South Korea has a mandatory domestic Beef Traceability System (BTS). Initiated in 2004 as a voluntary program, the BTS became mandatory for domestically produced beef in 2009. The BTS requires individual identification and registration in a central database system (known as the Beef Traceability database).⁹⁸ The BTS operates as a whole-of-life traceability system, tracking each individual animal from birth to the consumer. For domestic beef produced under the BTS, Korean consumers can access a range of animal-specific information including the sex, breed, quality

⁹³ "Beef Trade With Japan in Rough Political Waters This Summer," *Oklahoma Farm Report*, Agricultural News, July 15, 2009.

⁹⁴ Roxanne Clemens, "Meat Traceability in Japan," *Iowa Ag Review*, Center for Agricultural and Rural Development (CARD), Iowa State University, fall 2003, pp. 4-5.

⁹⁵ "The Food Safety Basic Law," Food Safety Commission of Japan, available at http://www.fsc.go.jp/sonota/fsb_law1807.pdf.

⁹⁶ "Update: Japan's Beef Traceability Law," USDA, FAS, GAIN Report Number JA4094, December 29, 2004.

⁹⁷ "Meat Traceability in Japan," by Roxanne Clemens, *Iowa Ag Review*, CARD, Iowa State University, Fall 2003, pp. 4-5.

⁹⁸ M. B. Bowling, D. L. Pendell, D. L. Morris, Y. Yoon, K. Katoh, K. E. Belk, and G. C. Smith, "Review: Identification and Traceability of Cattle in Selected Countries Outside of North America," *The Professional Animal Scientist* 24 (2008): 287-294.

grade, location of birth and subsequent premises, owner's personal information, feed administered, medications given, location and date of slaughter, date of inspection, and location of processing.

In July 2009, a South Korean agriculture official reported that the South Korean government intends to impose traceability requirements on imported beef as soon as December 2010.⁹⁹

New Zealand

New Zealand does not have a fully functioning national animal ID system. In August 2004, the Animal Identification and Traceability Working Group (AITWG) was established when industry approached the government to work together to improve animal traceability in New Zealand. In March 2006, an Animal Identification and Traceability Governance Group (AITGG) was established to oversee the development of a new animal ID system under the name NAIT (National Animal Identification and Tracing). As of early 2009, NAIT still exists more as a project under development than as a functioning system.

Currently New Zealand has several partial systems that allow for traceability at herd levels but fail to provide effective traceability for individual animals. In addition, these partial systems leave substantial coverage gaps at the national level. The current focus is on developing traceability for cattle and deer populations. The Ministry of Agriculture and Forestry (MAF) has stated that the addition of other species—whether flock/group or individual identification—to the NAIT system should only be considered once the system is up and running for cattle and deer.¹⁰⁰

New Zealand's existing animal ID systems began under the Bio-security Act of 1993 which provided for two systems of partial bovine animal ID: the Management Information System for Dairy Administration (MINDA) and the National Bovine Tuberculosis Identification Program (NBTIP). MINDA is a voluntary livestock and herd management system that has very high dairy herd participation (97%) in New Zealand. However, MINDA was not designed and does not function well for animal traceability. In contrast, the NBTIP is a mandatory, herd-based system that requires the identification of cattle and deer before movement from their property of origin. In addition to these two systems, several other private and governmental traceability databases are available for producers' use on a voluntary basis. A new mandatory animal identification system for cattle and possibly deer is proposed to be in place by June 2011.¹⁰¹ The inclusion of deer is dependent on confirmation of the in-field performance of radio frequency tags.

Brazil

In 2001, Brazil created the Brazilian Bovine and Buffalo Identification and Certification System (SISBOV, now renamed ERAS) as a farm-level identification system for cattle.¹⁰² In September

⁹⁹ Brett Stuart, "S. Korea Traceability Requirement," *CattleFax Update*, vol. 41, issue 28, July 10, 2009, p. 4.

¹⁰⁰ "Position of Ministry of Agriculture and Forestry (MAF) on NAIT", undated, available at <http://www.maf.govt.nz/mafnet/maf-positon-on-nait.pdf>.

¹⁰¹ "Animal Identification and Tracing – NAIT timeline," MAF, New Zealand, available at <http://www.maf.govt.nz/mafnet/animal-identification-and-tracing.htm>.

¹⁰² M. B. Bowling, D. L. Pendell, D. L. Morris, Y. Yoon, K. Katoh, K. E. Belk, and G. C. Smith, "Review: Identification and Traceability of Cattle in Selected Countries Outside of North America," *The Professional Animal Scientist* 24 (2008): 287-294.

2006, SISBOV was extended to include the entire beef chain rather than just producers. Initially, SISBOV was intended as a mandatory program for identification of individual animals with a target date of 2008 for mandatory national participation; however, Brazil's domestic market had little demand for origination information and Brazilian cattle producers resisted adoption. As a result, SISBOV remains a voluntary program focused primarily on those premises engaged in providing animals to slaughterhouses that supply products destined for foreign markets that require origination information—most notably the EU which was Brazil's largest beef export market at that time and which requires substantial identification and traceability criteria for imported animal products. In addition, instead of identifying individual animals, animal classification has been by group lot under SISBOV. The EU has accepted individual tags for each group of cattle sold to export slaughterhouses.

Since 2003, successive audits of SISBOV conducted by the EU's Food and Veterinary Office (EU/FVO) have found severe shortcomings in Brazil's animal identification and traceability system.¹⁰³ In 2008, the EU imposed a near-total ban on beef imports from Brazil, unless they were sourced from farms that had been approved by Brussels.¹⁰⁴ However, in a report released on August 4, 2009, the EU/FVO suggests that the situation in Brazil was getting worse. Europe has two major concerns: a lack of robust information, and the fear that foot-and-mouth disease could inadvertently enter the EU from Brazil.

Argentina

In 2003, Argentina established a limited mandatory system of animal identification and traceability—the Argentine Animal Health Information System (SGS)¹⁰⁵—directed at animal products destined for the EU.¹⁰⁶ The Argentine system included farm-of-origin information and permits that document cattle movements including whether the animals have been in areas exposed to FMD.¹⁰⁷ However, as in Brazil, Argentina operates its animal identification system primarily for identifying cattle (generally in group lots) destined for export markets.

Starting in 2007, official ID tagging has been required for all calves born after September 2007. The compulsory cattle identification program will facilitate tracking cattle from birth to slaughter; however, the entire Argentine beef herd is not expected to be tagged until 2017.

Because Argentina has traditionally been unable to control disease outbreaks—particularly foot and mouth disease (FMD)—its beef exports to the United States have been primarily restricted to thermo-processed beef (heated to a specific temperature for a specified amount of time).¹⁰⁸ These

¹⁰³ *Review of Selected Cattle Identification and Tracing Systems Worldwide*, MAF Biosecurity New Zealand Information Paper No: 2009/03, prepared by the MAF Biosecurity New Zealand, February 2009; available at <http://www.maf.govt.nz/mafnet/review-cattleident-systems-worldwide.pdf>.

¹⁰⁴ Dan Buglass, "Ban on Brazilian Beef Urged as EU finds Multiple Failings," *TheBeefSite.com*, August 5, 2009.

¹⁰⁵ Sistema de Gestion Sanitaria or SGS in Spanish.

¹⁰⁶ *Review of Selected Cattle Identification and Tracing Systems Worldwide*, MAF Biosecurity New Zealand Information Paper No: 2009/03, prepared by the MAF Biosecurity New Zealand, February 2009; available at <http://www.maf.govt.nz/mafnet/review-cattleident-systems-worldwide.pdf>.

¹⁰⁷ Michael McConnell and Ken Mathews, Jr., "Global Market Opportunities Drive Beef Production Decisions in Argentina and Uruguay," *Amber Waves*, April 2008.

¹⁰⁸ *Ibid.*

export limitations provide ample incentive for Argentina to improve its animal identification and traceability system.¹⁰⁹

Uruguay

Uruguay is very dependent on external markets for selling a large portion of its annual domestic production. An estimate 68% of Uruguay's annual beef production was sold in foreign markets during the 2004-2008 period. As a result, Uruguay has a strong incentive to provide animal identification and traceability information as demanded by foreign buyers; however, it is only since late 2006 that Uruguay has been able to institute a comprehensive national program.

On September 1, 2006, Uruguay's Ministry of Livestock, Agriculture, and Fisheries (MAGyP) implemented a mandatory animal identification system called the National Livestock Information System (SNIG).¹¹⁰ Under SNIG, all individual animals must be identified (i.e., tagged) before six months of age or before they are transported from their property of birth. Two tags are required for all cattle, one highly visible and one electronic, for example, an RFID device. In addition, the appropriate paperwork that tracks cattle from birth to slaughter must accompany each animal. The Uruguayan government plans to have all herds registered and all cattle tagged by 2010. At that point, the government will require traceability be extended, not just to the point of slaughter, but also to all cuts of beef back to specific animals at their farm of origin.

SNIG builds on Uruguay's national premises identification system (DICOSE)—established in 1973—which, for participating producers, provided information on each individual animal in their herds. Private individuals or companies registered within SNIG must be used for movement notification. Termination records are recorded by MAGyP. The SNIG database then includes premises and animal identification, movements, and termination data. SNIG does not yet mandate further traceability to consumers, although this is under consideration. The Uruguayan government currently pays for the ID tags, although it plans to shift the cost to the producers at some point in the future.

Countries Not Implementing Animal ID Programs¹¹¹

Not all countries with large animal populations have ongoing animal ID programs—examples include Bangladesh, India, Indonesia, and Russia. Reasons for the non-existence of animal ID programs in these countries include the following. Many of these countries have large land masses consisting of mainly agrarian populations that are not technologically advanced. Also, several of these countries lack national distribution chains for animal products, instead relying on local production and marketing processes. Alternately, in many poorer countries of the world, consumers are simply unable financially to be overly discriminating in their choice of animal products. As a result, many lower-income consumers are not willing to pay a premium for food that is identified and traceable.

¹⁰⁹ Ibid.

¹¹⁰ M. B. Bowling, D. L. Pendell, D. L. Morris, Y. Yoon, K. Katoh, K. E. Belk, and G. C. Smith, "Review: Identification and Traceability of Cattle in Selected Countries Outside of North America," *The Professional Animal Scientist* 24 (2008): 287-294.

¹¹¹ Ibid.

Table B-2. Comparison of Cattle, Swine, and Poultry Populations by Country
(data for 2007)

Rank	Cattle			Swine			Poultry ^a		
	Country	Million	%	Country	Million	%	Country	Million	%
1	Brazil	200	15%	China	426	46%	China	4,815	26%
2	India	177	13%	EU-27	162	18%	United States	2,322	12%
3	United States	97	7%	United States	62	7%	EU-27	1,448	8%
4	EU-27	90	7%	Brazil	36	4%	Indonesia	1,275	7%
5	China	82	6%	Viet Nam	27	3%	Brazil	1,144	6%
6	Argentina	51	4%	Russian Fed.	16	2%	India	560	3%
7	Ethiopia	43	3%	Mexico	16	2%	Mexico	501	3%
8	Sudan	41	3%	Canada	15	2%	Iran	423	2%
9	Mexico	32	2%	India	14	2%	Russian Fed.	368	2%
10	Pakistan	31	2%	Philippines	13	1%	Turkey	350	2%
11	Australia	28	2%	Japan	10	1%	Japan	289	2%
12	Colombia	27	2%	South Korea	10	1%	Pakistan	263	1%
13	Bangladesh	25	2%	Thailand	8	1%	Thailand	209	1%
14	Russian Fed.	22	2%	Ukraine	8	1%	Bangladesh	207	1%
15	Tanzania	18	1%	Myanmar	7	1%	Malaysia	190	1%
	Other	514	38%	Other	90	10%	Other	4,316	23%
	World Total	1,357	100%	World Total	918	100%	World Total	18,679	100%

Source: Food and Agricultural Organization (FAO), United Nations, FAOSTAT; August 7, 2009. FAO's database includes data for 188 countries.

a. Includes chickens, geese, guinea fowl, and turkeys.

Table B-3. Comparison of Goats and Sheep, and Equidae, Populations by Country
(data for 2007)

Rank	Goats and Sheep			Equidae ^a		
	Country	Million	%	Country	Million	%
1	China	426	22%	China	18	16%
2	India	162	8%	Mexico	13	11%
3	EU-27	62	3%	United States	10	9%
4	Sudan	36	2%	Brazil	8	7%
5	Australia	27	1%	Ethiopia	6	6%
6	Nigeria	16	1%	Pakistan	5	4%
7	Pakistan	16	1%	EU-27	5	4%
8	Iran	15	1%	Argentina	4	4%
9	Bangladesh	14	1%	Colombia	4	3%
10	Ethiopia	13	1%	Egypt	3	3%
11	New Zealand	10	1%	Mongolia	2	2%
12	Turkey	10	1%	Iran	2	2%
13	South Africa	8	0%	Niger	2	2%
14	Mongolia	8	0%	Mali	2	2%
15	Somalia	7	0%	Morocco	2	1%
	Other	1,089	57%	Other	28	25%
	World Total	1,917	100%	World Total	113	100%

Source: FAO, United Nations, FAOSTAT; August 7, 2009. FAO's database includes data for 188 countries.

a. Horses, mules, and donkeys.

Table B-4. Global Beef Production and Trade Rankings by Country

(data are carcass-weight averages for calendar years 2007 and 2008)

Rank	Production			Exports				Imports			
	Country	1,000 mt	% of prod.	Country	1,000 mt	% of Exp.	% of Dom Prod.	Country	1,000 mt	% of Imp.	% of Dom Cons.
1	United States	12,130	21%	Brazil	1,995	26%	22%	United States	1,268	18%	10%
2	Brazil	9,164	16%	Australia	1,404	18%	65%	Russia	1,084	16%	45%
3	EU-27	8,144	14%	United States	753	10%	6%	Japan	673	10%	57%
4	China ^a	6,131	10%	India	652	9%	27%	EU-27	553	8%	6%
5	Argentina	3,225	5%	New Zealand	515	7%	82%	Mexico	406	6%	16%
6	India	2,442	4%	Argentina	478	6%	15%	South Korea	302	4%	57%
7	Mexico	2,216	4%	Canada	476	6%	37%	Venezuela	253	4%	38%
8	Australia	2,166	4%	Uruguay	373	5%	66%	Egypt	249	4%	42%
9	Russia	1,343	2%	Paraguay	214	3%	49%	Canada	236	3%	32%
10	Canada	1,282	2%	EU-27	171	2%	2%	Philippines	156	2%	41%
11	Pakistan	1,105	2%	Colombia	160	2%	19%	Malaysia	146	2%	86%
12	Colombia	830	1%	Vietnam	110	1%	45%	Chile	140	2%	56%
13	So. Africa	679	1%	China	70	1%	1%	China	120	2%	2%
14	New Zealand	626	1%	Mexico	42	1%	2%	Vietnam	115	2%	22%
15	Uruguay	564	1%	Ukraine	37	0%	7%	Taiwan	103	1%	95%
	Other	6,674	11%	Other	158	2%		Other	1,178	17%	
	World	58,718	100%	World	7,604	100%	13%	World	6,978	100%	12%

Source: USDA, Foreign Agricultural Service (FAS), Production, Supply and Demand (PSD) database, August 12, 2009, Data Release.

Notes: Totals include only those countries that make up USDA's official PSD database. This means totals do not encompass total global production, consumption, and trade, but rather the sum of those countries reported in USDA's database, which represents the most important players in the world meat PSD situation. In an attempt to capture these major players, the list of countries reported changes periodically.

a. China includes Hong Kong data.

Table B-5. Global Pork Production and Trade Rankings by Country

(data are carcass-weight averages for calendar years 2007 and 2008)

Rank	Production			Exports				Imports			
	Country	1,000 mt	% of Prod.	Country	1,000 mt	% of Exp.	% of Dom Prod.	Country	1,000 mt	% of Imp.	% of Dom Cons.
1	China ^a	44,639	46%	United States	1,771	31%	17%	Japan	1,239	23%	50%
2	EU-27	22,694	23%	EU-27	1,501	27%	7%	Russia	974	18%	33%
3	United States	10,281	11%	Canada	1,081	19%	57%	China	638	12%	1%
4	Brazil	3,003	3%	Brazil	678	12%	23%	Mexico	493	9%	32%
5	Russia	1,985	2%	China	287	5%	1%	South Korea	439	8%	29%
6	Canada	1,907	2%	Chile	145	3%	28%	United States	408	7%	5%
7	Vietnam	1,841	2%	Mexico	86	2%	7%	Canada	183	3%	18%
8	Japan	1,250	1%	Australia	51	1%	14%	Ukraine	160	3%	22%
9	Philippines	1,218	1%	Vietnam	15	0%	1%	Australia	147	3%	32%
10	Mexico	1,156	1%	South Korea	12	0%	1%	Singapore	94	2%	85%
11	South Korea	1,050	1%	Serbia	5	0%	2%	Croatia	50	1%	46%
12	Taiwan	910	1%	Croatia	3	0%	4%	Angola	50	1%	61%
13	Ukraine	575	1%	Taiwan	3	0%	0%	EU-27	45	1%	0%
14	Chile	511	1%	South Africa	3	0%	0%	Philippines	36	1%	3%
15	Australia	367	0%	Norway	2	0%	1%	New Zealand	36	1%	41%
	Other	3,186	3%	Other	12	0%		Other	533	10%	
	World	96,571	100%	World	5,650	100%	6%	World	5,502	100%	6%

Source: USDA, FAS, PSD data base, August 12, 2009 Data Release

Notes: Totals include only those countries that make up USDA's official PSD database. This means totals do not encompass total global production, consumption, and trade, but rather the sum of those countries reported in USDA's database, which represents the most important players in the world meat PSD situation. In an attempt to capture these major players, the list of countries reported changes periodically.

a. China includes Hong Kong data.

Table B-6. Global Poultry Production and Trade Rankings by Country

(data are ready-to-cook-equivalent averages for calendar years 2007 and 2008)

Rank	Production			Exports				Imports			
	Country	1,000 mt	% of Prod.	Country	1,000 mt	% of Exp.	% of Dom Prod.	Country	1,000 mt	% of Imp.	% of Dom Cons.
1	United States	19,123	26%	Brazil	3,278	38%	29%	Russia	1,268	16%	46%
2	China ^a	11,620	16%	United States	3,196	38%	17%	EU-27	784	10%	8%
3	Brazil	11,153	15%	EU-27	812	10%	8%	Japan	717	9%	37%
4	EU-27	10,215	14%	Thailand	340	4%	29%	China	706	9%	4%
5	Mexico	2,759	4%	China	322	4%	3%	Mexico	625	8%	23%
6	India	2,365	3%	Canada	73	2%	15%	Saudi Arabia	490	6%	47%
7	Russia	1,505	2%	Argentina	145	2%	11%	UAE	264	3%	91%
8	Iran	1,424	2%	Kuwait	65	1%	149%	Venezuela	258	3%	25%
9	Argentina	1,370	2%	Chile	51	1%	10%	South Africa	247	3%	22%
10	Japan	1,259	2%	UAE	30	0%	83%	Vietnam	206	3%	26%
11	Canada	1,184	2%	Australia	26	0%	4%	Ukraine	196	2%	36%
12	Thailand	1,095	1%	Mexico	14	0%	0%	Iraq	194	2%	72%
13	South Africa	1,045	1%	Singapore	12	0%	28%	Kuwait	171	2%	223%
14	Colombia	968	1%	Saudi Arabia	10	0%	2%	Angola	154	2%	95%
15	Malaysia	938	1%	South Korea	8	0%	0%	Cuba	151	2%	93%
	Other	6,916	9%	Other	39	0%		Other	1,438	18%	
	World	74,937	100%	World	8,518	100%	11%	World	7,866	100%	11%

Source: USDA, FAS, PSD data base, August 12, 2009 Data Release

Notes: Totals include only those countries that make up USDA's official PSD database. This means totals do not encompass total global production, consumption, and trade, but rather the sum of those countries reported in USDA's database, which represents the most important players in the world meat PSD situation. In an attempt to capture these major players, the list of countries reported changes periodically.

a. China includes Hong Kong data.

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