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The U.S. Animal Identification Experience

David P. Anderson

Animal identification has been one of the most contentious issues for the last decade in the livestock industry. More specifically, at issue is the idea of a government-sponsored identification system, although it is unclear that an identification system forced on the industry by the market would be any more popular. Rancor over the issue has set livestock groups at odds over the merits of establishing such a framework; it has highlighted differences between species, within species, and by size and scale of agriculture. Given its politically sensitive nature, many groups without a tie to agriculture have been drawn in to lobby on the issue. This article examines the U.S. experience with the development of an animal identification system.

Key Words: animal identification, NAIS

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Animal identification is hardly a new phenomenon; producers have been identifying their animals for many years through the use of brands, ear notches, or other methods. These identification marks have been used to identify ownership or property or by producers for the purposes of identifying individual animals for ranch recordkeeping using ear tags.

In the past, animal identification programs have been implemented as part of eradication programs for specific animal diseases, for example, brucellosis in cattle and scrapie in sheep. In these cases, animals were identified through the use of tags to indicate negative disease, or disease-free, status or that they were tested. As these programs proceeded, more animals were identified and when the disease in question was eradicated, animals were no longer identified as the need for the program faded. These eradication programs cost millions to implement and they largely achieved their purpose, to aid in the eradication of the disease in question. However,

a major failing was that the next time a disease needed to be eradicated, the whole process had to begin again, incurring all the same startup costs each time.

Several events highlighted again the importance of an animal identification program to contain and control animal disease outbreaks. The bovine spongiform encephalopathy (BSE) outbreak in the U.K. and other countries and the foot and mouth disease outbreak in the U.K. were prominent events that highlighted the need for a system that could help animal health officials contain disease outbreaks quicker. Finally, the terrorist attacks of September 11, 2001, raised the fears of bioterrorism attacks directed at the nation's food supply. These prominent events led to the development of a task force to write a proposed plan for an animal identification system in the U.S.

The National Food Animal Identification Task Force (2002) issued a work plan in November 2002 that laid out what would be necessary in an animal identification program. This plan provided direction in the establishment of a national identification system for animal disease management. This point is important in that the development of an animal

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identification system has always been about animal disease control and management and not about a host of other issues like food safety, recordkeeping, country of origin labeling, or consumer demand issues. However, the work plan did point out that those might be logical uses of an identification system. The logical extension of an animal identification system to its importance to people is that some animal diseases are zoonotic, that is, they can be transferred from animals to people.

This work plan laid the groundwork that a national identification system should have the capability to identify any premises an animal has been on within 48 hours of discovering the disease. With this timeframe as a goal, an identification system should include premises identification, individual animal/group/lot identification, and the ability to track the animals after a disease is discovered.

The U.S. Animal Identification Plan (USAIP), released as a draft in 2003, laid out in detail an animal identification plan, a timeline to achieve implementation, and expected costs. Three phases for implementation of an identification system were identified. Phase I was premises identification. Phase II was individual animal identification and group/lot identification. Phase III was the implementation of technology at packing plants, auction barns, and other market segments with the technology necessary to track animals. The USAIP supported identification on bison, cattle, hogs, sheep, goats, horses, camelids, cervids, poultry, and aquaculture.

This plan, importantly, included a recommended timeline for initial implementation. The timeline was very aggressive in terms of quick implementation given that the draft was released in 2003. The USAIP called for:

- All state premises identification in place by July 2004.
- Individual, group/lot identification by February 2005.
- Cattle, hogs, small ruminant identification for movement by July 2005.
- All other species identification by July 2006.

Both plans discussed had significant producer input as reported in the plan's appendices. It was

recognized immediately in the process that any plan would fail without communication and producer involvement in the planning. The draft plan involved private and public officials from the beginning.

The USAIP and the previous draft plan called for mandatory participation. Those involved in the planning of the animal identification system believed that any effective system had to be mandatory. Soon after December 23, 2003, when a Canadian dairy cow in the U.S. was found with BSE, bills were offered in both houses of Congress to establish a mandatory animal identification system (Hagel, 2004; H.R. 3787, 2004). A bill introduced in the Senate supported the adoption of the USAIP, whereas a House bill supported adoption of a different plan. At least one of the bills gave the USDA 90 days to establish a mandatory system.

Almost immediately on release of the USAIP, criticism began. Among those criticisms were:

- It was unrealistic to believe that an ear tag would remain with the animal and remain readable.
- Premises registration would lead to breaches in privacy.
- Any data that were collected would not be private; Freedom of Information Act requests would make private information public.
- The information would be shared with other branches of government to the producer's detriment.
- The program would lead to unreasonable costs and no benefits.
- The program was an unreasonable expansion of government.
- Private industry could implement and maintain the system more efficiently than government.
- What technology would be required? Desire to not lock the program into soon-to-be-obsolete technology.

An additional source of trouble was the timeline itself. Producers saw implementation within a year as unbelievable and unachievable. Because of that unreal timeline, the credibility of the rest of the program was called into

question. Clearly, in the view of many, any group that would publish a plan like that had no understanding of the industry.

Another problem that added to the confusion was an explosion of other ideas for how the data could be used. Ranch recordkeeping, capturing feedlot performance data and breeding stock selection, food traceability, and others were some of the ideas that came up. That only added to the confusion and took the focus off animal disease management.

Many companies sprang up offering computer software to be compatible with a future system. Monthly subscription services to warehouse a producer's data and give it back to them emerged. The perceived opportunity for a quick buck brought firms out of the woodwork to extract money from livestock producers. Together, all of these issues further clouded the animal identification plan in the U.S. When the USAIP evolved into the National Animal Identification System (NAIS), opposition to a mandatory system had solidified.

The NAIS evolved out of the earlier plans detailed here (Gray, 2004; USDA, 2006; USDA, APHIS, 2007a, 2007b, 2007c). The NAIS is a voluntary animal identification and tracking system. It includes the same basic parts as earlier plans, including premises identification, animal identification, and animal tracking in case of a disease outbreak. NAIS remained the current plan for animal identification for the U.S.

Economic Issues

There are a host of economic issues embedded in the animal identification debate. Perhaps the most important is the public good nature of animal identification. In the case of animal identification, all producers would bear the cost of identifying their animals. If a disease outbreak occurred, the benefits of more rapid containment may accrue to others. For some diseases, an area is designated around the outbreak and animals in that area are destroyed. Producers in that area have incurred the costs of identification and the losses of their livestock, whereas others do not lose their livestock and may benefit from higher livestock prices as supplies are reduced. More rapid disease containment could result in

reduced government expenditures benefitting taxpayers and the public.

Animal identification plans also have the problem of certain costs and uncertain benefits. All producers would bear the costs of identification, yet they may never see any benefits. If a disease outbreak never occurred, then there would be no benefits realized. Related to the public good nature of the problem, the uncertain benefits may accrue to someone else. Much of the research on the benefits of animal identification rests on the assumption that a system would reduce the disruption to export markets in the event of a disease outbreak. Trade disruption often has a domestic political dynamic involved that extends and/or exacerbates the problem yielding some uncertain benefits. The benefits of increased exports take an indirect path to individual producers. The direct benefits go to the exporters. Quicker demand recovery makes its way through price transmission between the various production segments to producers, a very indirect path. These benefits may seem quite uncertain to producers.

Another related economic issue is one of the private–public interface, the role of government, and financing a system. A proper role of government has often been thought to include solving market failures like public goods. In agriculture, a proper and accepted, beneficial role of government has been in the role of establishing grades and standards, objective testing services, standard certification, and enforcement. It can be argued that the public would benefit from a system and government could solve the public good nature of the problem.

Producers raised the issue of cost of a system. Given the public good nature of the problem, the public benefits of reduced animal disease impacts, and budget realities at the time, there was the opportunity of public funding for the bulk of the animal identification system. The issue was further complicated by the problem of who was going to control the data, government or private industry, and if the fear that if government paid for the system, then they would control it. The opportunity to educate concerned parties on the public good

nature of the problem and forge a consensus solving the problem was squandered.

Economic benefits from individual animal identification could eventually include the use of the data in managerial decision-making. Identifying each animal and then recording further production information associated with that animal could allow a producer to identify and eliminate the less productive animals from the herd. In cattle, benefits accrue differently at different industry levels. For a cow-calf producer, the most important thing is to have a live calf to sell. It makes very little difference whether the calf, as a finished steer or heifer, grade Choice or Select, or if it has a more efficient rate of gain in a feedlot. The rate of gain makes a significant difference to the cattle feeder. The grade can make a significant difference to the meat packer and the feeder. How these market signals are transmitted (or not transmitted) through the system provides more economic benefits to the use of data for information over time. Yet, few cow-calf producers retain ownership of their cattle all the way through the system to accrue the benefits. This adds to the problem of certain costs and uncertain benefits. These benefits are not a direct result of animal identification, but are a potential extension of the use of the data. Many producers are not equipped to do this and/or are not of a scale to be able to profitably use these data, if they were even available.

From the beginning of these animal identification efforts in the U.S., one of the justifications was the belief that there are great benefits to being able to quickly contain an animal disease outbreak. Part of that evidence has been the value of trade in livestock products. Estimates of U.S. cattle and beef industry losses from the discovery of one cow from Canada in the U.S. with BSE range from \$3.2 to \$4.7 billion.

Approximately 9%, 17%, and 18% of U.S. production of beef, pork, and broilers, respectively, were exported in 2009. On the beef and pork side alone, this amounted to almost \$11 billion. Perhaps more important is that these values continue to increase. The U.S. has been increasing the quantity and value of our meat exports. Not only is the volume of exports increasing, but exports are increasing as a percent

of our production. U.S. livestock producers are more dependent on the world market for the price they receive than ever before. If these trends continue, then the value of an effective animal identification system will likely increase over time as the value of containing disease outbreaks grows.

Forty-six percent of the beef cows are located in the South. The South is a major feeder cattle-producing area that supplies the feedlots of the Plains. With few, or no, feedlots and packing plants in the South, the southern industry is particularly vulnerable to some diseases. The impact of beef trade is an indirect one for cow-calf producers but is felt nonetheless through price. Diseases that could be contained quickly could prevent total loss of feeder cattle markets. The South also had 23% of the hogs and pigs in the U.S. and the largest portion of broiler production.

There have been a number of studies that estimate costs and benefits of animal identification and costs of animal disease outbreaks. However, perhaps, the most significant is the benefit-cost analysis of the NAIS (NAIS Benefit Cost Research Team, 2009). This benefit-cost analysis contains an extensive reference list on the cost of animal diseases and past benefit-cost analyses of animal identification. This report estimates the costs of two types of identification systems. One is a "bookend" system that identifies animals at birth premises and terminates the record at the packing plant. The second type of system includes animal tracking data. Costs for beef cow producers were estimated to range from \$3.92 to \$4.22 per cow for the bookend and full tracking systems, respectively. Hog and poultry costs were significantly lower as a result of the ability to identify by group or lot. Costs were also estimated accounting for adoption rate within the industry.

Expected benefits from an identification system are often put in terms of loss of export market access as a result of an animal disease outbreak. A 50% loss in export market is estimated to cost the cattle industry \$36.47 per head sold. By varying system adoption rates and export market loss avoided, the net annual gain in beef producer surplus was estimated. Net annual gain in producer surplus was negative for scenarios with no loss of export

market avoided. If a system is adopted and you lose export markets anyway, then there is a loss in producer surplus. If the industry can avoid 50% of export market losses, then the net gain in producer surplus was estimated to be as high as \$32.74 per head sold.

One additional line of research looks at the value of time in animal identification. One of the basics requirements of the plans discussed in this article is the ability to track animals in the event of a disease outbreak to quickly contain the disease. Hagerman et al. (2010) examine the value of time in controlling a foot and mouth disease outbreak. The results of this work indicate that the value of time in an outbreak can be estimated to be in the millions of dollars. The more time that elapses, the more costs are incurred. This study does not include the value of exports but focuses solely on the time dimension.

Current Status

By 2009, a number of revised NAIS plans had been published, including changing NAIS from a mandatory to a voluntary system. Opposition had reached a crescendo. Only approximately 35% of U.S. livestock premises had been registered (Clifford, 2009). Increasingly, it became clear that very little progress toward a working system had been made. A House of Representatives Committee on Agriculture's Subcommittee on Livestock, Dairy, and Poultry held a hearing on voluntary NAIS on March 11, 2009. Both the subcommittee chairman Rep. David Scott (D-GA) and House Agriculture Committee Chairman Colin Peterson (D-MN) expressed the opinion that a mandatory system was necessary to contain animal disease outbreaks and limit the economic damage caused by disease outbreaks (Gabbett, 2009).

It was estimated that \$119 million had been spent on voluntary NAIS to that point. Peterson observed "I can't believe that after 5 years we are pretty much in the same place despite the millions of dollars that have been thrown at this system." USDA Chief Veterinary officer Dr. John Clifford said in response to questions that "...we have not been effective in signing premises up, so the current system is not working..." (AgriPulse, 2009).

USDA Listening Sessions

To try to move NAIS forward to some conclusion, the USDA announced a series of listening sessions around the country to again get input in 2009. The USDA held its third listening session on the NAIS in Austin, TX, on May 20, 2009. This author attended the session and the following are a few observations of the meeting (Anderson, 2009). The comments of the listening sessions are important to shed some light on the motivating factors of, particularly, those in opposition to NAIS and features of other potential systems. The views of the groups in support of animal identification systems are generally well known and not detailed here.

General Flavor of the Session

The hotel parking lot was full of trailers with large signs saying "No NAIS" and the like. There were people in the area outside the meeting room passing out anti-NAIS stickers and other handouts protesting the system. Those in support of the NAIS were quiet. The Secretary of Agriculture was to make some introductory comments, electronically, to kick off the meeting, but as USDA's luck would have it, the technology failed and they had to turn the computer off, giving up on the Secretary's comments because of technical difficulties, to the cheers of many in the audience.

General Nature of Comments

The attendees who provided public comments were overwhelmingly against the NAIS system. The main animal agriculture industry groups have long stated their positions on NAIS and those were stated again. Objections from the livestock auction market operators was largely that the technology does not work at the speed of commerce. That speed is necessary to conduct business in an efficient and cost-competitive manner. This has been an important concern from the beginning and various tests had confirmed major shortcomings in the technology necessary to track identification numbers.

Commerce delays at livestock markets represented a large potential cost borne by market operators.

Another objection is that the system will not prevent any disease and is really no better than the system we have today. The NAIS was never supposed to prevent disease, but to help contain and manage disease outbreaks. Some parties objected that the NAIS system will destroy competition and the competitive marketplace for cattle that we have today.

One interesting position taken by some cattle producers was that the information that can go with the animal—origin, age, etc—can generate some premiums in the marketplace. If a producer adopts the technology and uses it for those purposes, premiums will allow them to pay for the additional cost. However, if everyone is forced to participate, then there will be no premium in the market. So, there should not be a mandatory system.

Representatives of industry groups like the pork producers, dairy producers, and some others argued in favor of the system. There were some reservations on the technology, private vs. publicly run databases (publicly meaning government held, not public open access to the data) confidentiality issues, and other long-voiced reservations.

The vast majority of the speakers were not from “commercial” agriculture and they were uniform in their opposition to the NAIS system. The following is an attempt to categorize their comments into the general areas of sustainable/local/organic food, food safety, and antigovernment involvement. It is impossible to do justice to all the comments in such a short space, but hopefully, this creates the spirit of the comments. The comments do bring to mind a number of other issues and some deeper issues as well.

Sustainable Food

Most of these comments centered around the notion that the only safe food is local/organic/sustainable food. The claim was made repeatedly that locally raised, organic food was safe and healthy in contrast to the products of conglomerate, corporate agriculture. They had

the view that corporations would not have to comply with any rules. Many of these speakers do not want to be considered part of the national food supply.

Role of Government

The other large group of speakers was those that believe that NAIS is a large expansion of the powers of government, intrusion into our lives, and the next step toward the elimination of all personal rights, property rights, and freedom. Those in this camp, in general, suggest that NAIS is a government conspiracy to take away liberty. Those would also argue that the NAIS is anti-American. Another running theme in these comments is that NAIS is the product of technology companies and others who are forcing this on citizens to profit.

Language and Terms

In the comments that I have broadly termed “Role of Government,” a couple of language-related issues were broached. The first was premises. Webster’s Dictionary defines premises as 1) a tract of land including its buildings; 2) a building together with its grounds or other appurtenances; or 3) the property forming the subject of a conveyance or bequest. In the NAIS, a premises may be thought of as where the livestock are held or even where the owner of the livestock or the property can be reached in case of a disease situation (United States Animal Identification Plan, 2003). To some listening session speakers, the word has a different meaning. They believe that this term has a legal definition in Europe that is different than property. They purport that premises is used as a way to introduce the term into the mainstream as a first step to taking away private property in the U.S.

The other term that created objections was stakeholder. The argument was that we are people, or Americans, not stakeholders; we should be talked to like people. This is a term that is seen many times in more academic and government writing and just simply means those with a stake in what is going on. I had not heard an objection to this term in the past.

Broader Issues

It is apparent that there are a lot of misconceptions about what NAIS is and what it is not. Hand in hand with the misconceptions is a real lack of knowledge about the goals of the system. This points to the failure of the USDA and those involved in developing NAIS to inform and educate the entire audience.

A number of comments at the meeting started with something like "...I read on the Internet..." "...I don't know if its true, but I read on the Internet..." Before the Internet, the relatively high cost of publishing provided a barrier to a lot of things being published. That barrier is long gone. Any opinion can be published. Because it is on the computer and Internet, someone will believe it with no discernment as to whether it is truly credible.

That leads to the next broader issue and that is an ability to reason. There was expressed at the session an apparent lack of ability to reason through the issue and logically think through the rationale for the NAIS. When the argument is presented that the Holocaust started the same way that NAIS is starting, then there is a problem with people's ability to think logically using simple reasoning to think through the issue at hand.

The last point is one regarding the direction of food production and distribution in the U.S. Food companies and retailers in the U.S. and the world are moving to systems of supply chain management and traceability of products. Reasons for traceability and supply chain management are to more quickly respond to consumers' desires, reduce transaction costs and thereby become more efficient, and reduce or spread out liability and litigation.

The notion that local, organic production does not have food safety issues or animal disease issues is an interesting one. Exotic Newcastle Disease is a poultry disease that was spread in backyard flocks the last time the U.S. had a major outbreak. For a consumer, buying from a local producer may eliminate some supply chain, because you do know who grew your food and where it came from, but that may not mean that it is pathogen-free.

Most of the participants of the SAEA meetings are educators. Some of the opinions

expressed in these sessions may have great implications on how well educators might be doing their jobs. We may have to do some more thinking about how we as economics educators try to educate people.

After a series of listening sessions around the country, the USDA took the comments and went back to the drawing board on NAIS.

Summary

So where is the U.S. today in its ability to have a working animal identification system that can identify premises, animals, and track those animals, after the fact, in the event of a disease outbreak? It is unfair and incorrect to say "nowhere." The U.S. has a voluntary animal identification system with a relatively low participation rate. The general consensus appears to be that the system is ineffective as a result of low participation. The U.S. does have all of the technology in place to perform all the functions necessary to have a working system. The ear tags are readily available. Database software is readily available to maintain a useable database. However, participation is lacking.

Is there fault to be placed for the lack of an effective system? Many USDA, animal health officials, and livestock industry participants put in countless hours to develop the draft plans. From the beginning it was recognized that livestock producers had to be part of the development of any system. It was recognized that communication of the need for a system had to be done successfully for the system to have any chance. Despite the best efforts of many industry participants, the animal identification system was derailed by some producers and others with a variety of reasons and motivations. This dissension remains as a result of a sharp difference of belief from many in the industry on the need for a system. Many industry participants and animal health industry participants believe that a system is necessary for producers to continue to have market access in the event of a disease outbreak.

What does this mean for the livestock and meat industry? Animal identification and traceability are becoming more common. It is

becoming more important in trade and in domestic food service. Through delays in implementation, the U.S. continues to run the risk of lost market access and consumer confidence.

Postscript

In the agricultural appropriations process for 2010, the House did not provide any funds for voluntary animal identification as a result of its perceived failure. The Senate did include an appropriation for continued efforts. In conference, the appropriation was reduced to \$5.3 million. On November 23, 100 groups called on Secretary of Agriculture Vilsack to use the appropriated funds to end NAIS (R-CALF, 2009).

On February 5, 2010, Secretary Vilsack announced, after review of the listening session's transcripts, the end of NAIS and the development of a new approach. The broad framework only applies to animals moving in interstate commerce, is to be administered by states, will use lower-cost technology, and will be implemented through the federal rule-making process.

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