

Review of the National Animal Identification System

Statement of the Farm and Ranch Freedom Alliance to the U.S. Department of Agriculture on May 20, 2009

The Farm and Ranch Freedom Alliance (FARFA) requests that USDA halt implementation of the National Animal Identification System (NAIS). Contrary to its stated purposes, NAIS will not address animal disease or food safety problems. Instead, NAIS imposes crippling costs and paperwork burdens on family farmers, which may lead to loss of these farms, increased consolidation of agriculture, and more reliance on foreign imports. This will ultimately lead to greater disease problems and reduced food security. This Statement will discuss some of the many problems with NAIS, and then suggest alternatives for improvements in animal health, food safety, and food security.

I. The design of NAIS is not scientifically sound

NAIS is based on the premise that we need 48-hour traceback of all animal movements for disease control. FARFA has submitted two Freedom of Information Act requests, the first in November 2006, asking for any scientific studies or analyses supporting the design of NAIS as a disease control program. USDA has failed to provide any scientific basis for the program.

The attempt to track every movement of every animal violates epidemiological and risk-based principles. The susceptibility of animals to disease and the likelihood of transmission differ greatly depending on the species of animal, the disease, and the conditions under which the animals are kept.¹ Some diseases spread in a matter of hours, while others take years. NAIS fails to address the realities of disease or the varying risk levels.

From an animal disease control perspective, pasture-based livestock operations are not the problem. While confinement operations present the ideal conditions for the spread of disease, pastured operations, in which animals are kept in natural conditions on rotating pastures, have a far lower risk of developing or spreading diseases.² For example, in the 2004 outbreak of avian flu in Texas, the disease was found in a 6,600-bird commercial poultry operation; but no infected birds were found in any of the 350 nearby non-commercial flocks that were tested.³

Despite the clear, scientifically documented differences between production systems, NAIS treats small-scale livestock owners as if they were large commercial producers. The backyard poultry owner with 10 chickens free-ranging is considered as much of a threat to animal health as a commercial operation with 10,000 chickens living in a crowded building. The farmer raising sheep or cattle on healthy pastures is treated the same as the feedlot with hundreds of animals crowded into small pens. Indeed, the small-scale producers face even heavier burdens than the large commercial operations because of economies of scale and the way the USDA has defined group or lot numbers. This program is precisely the opposite of what is needed to prevent and control disease.

Increasing tracking of animals cannot improve our ability to address animal disease because tracking is not the weak link in the chain of our animal health system. In 2005, the GAO analyzed the government's provisions for preventing agroterrorism, assessing livestock diseases

in particular. The GAO did *not* identify any deficiencies in current livestock tracking, or recommend that resources be allocated to programs such as NAIS. Rather, the GAO identified multiple deficiencies in other aspects of animal disease programs, including the lack of training for veterinarians in foreign animal diseases, USDA's failure to use rapid diagnostic tools to test animals at the site of an outbreak, USDA's complex decision making process for deploying vaccines, and the decline in agricultural inspections at ports of entry.⁴ The federal government should allocate its resources to these deficiencies.

II. NAIS is cost-prohibitive for small farmers and individuals with a few animals

The costs of complying with NAIS will be unreasonably burdensome for small farmers. A 2006 Kansas State University report found that costs of an RFID-based system are significantly higher for people with smaller herds due to the expense of the electronic infrastructure.⁵ The costs of NAIS go far beyond the tag itself, and include:

- a) premises registration database creation and updates;
- b) tags and related equipment, such as readers, computers, and software;
- c) 24-hour reporting requirements, imposing extensive paperwork burdens;
- d) labor for every stage of the program;
- e) stress on the animals;
- f) qualitative costs, from loss of religious freedoms, privacy, and trust in government; and
- g) enforcement.

NAIS-required tagging and reporting will disproportionately burden sustainable livestock operations and others that manage animals on pasture. Tag losses due to animals getting their tags caught on brush or fences will be higher than in confinement operations. Most small farmers will not qualify for a group identification number because their herds and flocks are comprised of animals from different sources.⁶ If 100 laying hens are pastured in a movable shelter, or 200 sheep are grazed together, and the farmer finds the partial remains of an animal from predator attack, the farmer faces the nearly impossible task of individually identifying all of the remaining chickens or sheep in order to identify and report the one that was lost, as would be required to be compliant with NAIS.⁷

The USDA's recently released cost-benefit analysis contains numerous gaps, false assumptions, and misleading tactics that severely underestimate the costs of NAIS to small farmers, individuals with a few animals, and taxpayers. The study also improperly compares the benefits that will accrue to a small handful of corporations to the costs that will be borne by millions of individuals.

1. **The study manipulates the categorizations to disguise the costs to small farmers, homesteader, and other individuals with a few animals.** For example, in estimating the costs for beef cattle, the study uses six categories, based on the number of cattle on the farm, and estimates the costs for producers in each category.⁸ The first category includes operations that have anywhere from 1 to 49 head of cattle, and encompasses 585,050 operations, or **77% of the total number of operations**. There is no valid statistical reason to create a single category with that many operations, while dividing the

remaining 23% of operations among **six** different categories. Moreover, this approach is **not** consistent with the USDA Census, which separately counts operations with 1-9 head, operations with 10-19 head, and operations with 20-49 head. In other words, the research team had the data available to estimate costs for smaller categories and simply chose not to.

Similarly, the study used four categories for swine, and the first category included all operations with less than 500 head. Based on the USDA 2007 Census, this single category includes 54,885 operations, or **73% of the total number of operations**. The Census separately counted operations with 1-24 head, operations with 25-49 head, operations with 50-99 head, operations with 100-199 head, and operations with 200-499 head. So, again, the research team had the data available to estimate costs for smaller categories and chose not to.

The study used four categories for sheep, and the first category included all operations with less than 100 head, encompassing 64,202 operations, or more than **90% of the total number of operations**. In contrast, the Census divided operations into those 1-24 head and 25-99 head.

Given the USDA's own finding that costs increase as herd size decreases,⁹ the study's choice of categories obscures the real costs to small operations.

2. **The study incorrectly discounts costs for technological infrastructure.** The study acknowledges that NAIS will require extensive technological infrastructure by individuals, including computers, software, and internet access. The study also acknowledges that many small farms do not own computers or have internet access.¹⁰ Yet the study then assumes that the hundreds of thousands of people who will be forced to buy additional technology would have "other uses" for those computers, software, and internet access, and therefore only counts 50% of those costs! While many farms and individuals may have use for such technology, that is obviously not true for everyone, and the entire computerization costs should be allocated to NAIS. Moreover, the study assumed that only 10% of equine premises would need a reader and did not account for the costs of computers, software, or internet for the other 90% of the estimated number of equine premises.¹¹
3. **The study makes assumptions about the use of group identification for sheep and poultry that contradict both the USDA documents and the working group reports.** The study states that poultry operations "would utilize exclusively lot identification systems,"¹² and assumed that lambs moving direct to slaughter would be identified as group/lots."¹³ As a result, the study did not even attempt to quantify the costs for individual identification of poultry or feeder sheep.

This assumption does not reflect reality. Hundreds of thousands of poultry and sheep owners would not be able to use group identification for their animals. The USDA documents state that group or lot identification is available where groups of animals are managed together from birth to death and not commingled with other animals.¹⁴ In practice, this only occurs in the vertically integrated confinement operations, not on small

farms. Indeed, the Poultry Working Group has stated that group/lot identification is “mainly for commercial poultry” and has provided a list of potential methods for individual identification for poultry that do not qualify for group ID.¹⁵ The Sheep Working Group recommends group or lot identification only for feeder sheep in groups of “10 or more animals,”¹⁶ not for all feeder sheep.

According to the USDA Census, there were 135,843 farms with less than 100 laying hens in 2007. These are not vertically integrated confinement operations and would not qualify for group identification. They represent **93%** of the farms with laying hens accounted for in the 2007 census. Further, according to the census, there are 54,889 farms with fewer than 25 head of sheep, and another 21,070 operations with between 25 and 99 head, constituting **91%** of the farms with sheep. Many of these farms would not have 10 head going to slaughter at the same time, and thus would not qualify for group identification. Yet the USDA cost benefit analysis **completely ignored** these small farms with a few head of poultry or sheep.

4. **The study makes unsupported assumptions about many of the costs that will be imposed, and even contradicts itself.**
 - a. The study recognizes that the cost of RFID readers will not be economical for small producers, so it advances the premise that a new business will spring up, to do custom reading.¹⁷ They then assume that there will be custom tag reader businesses within 25 miles of each small farm, even though ranches in the West and Southwest may encompass more than 25 miles of territory each. They also assume that the cost of RFID reading will be comparable to the cost of brand inspections, even though brand inspections do not require expensive equipment, unlike RFID tagging and reading. Based on those fundamentally flawed assumptions, they claim that someone with five head of cattle would pay only \$9.35 (\$1.87/head) to have someone drive out to their farm and electronically read the tags.
 - b. The study also makes unfounded assumptions about the charges for database entries. The study acknowledges that they were not able to get any information on such charges from private companies – the very entities who will be setting the prices that individuals will have to pay under NAIS. The study estimated that database charges would be only 8.5 cents, based solely on data from the Michigan Department of Agriculture, which has received hundreds of thousands of dollars from USDA to require electronic tagging by Michigan farmers.¹⁸ As just one comparison, the Canadian Livestock Records Corporation recently published that its fee is \$5.05 for each electronic registration;¹⁹ that is the fee to the associations, which in turn may charge even higher fees to individuals.
 - c. In the section on costs to horse owners, the study used an informal survey of just ten vets to determine the costs associated with microchipping horses.²⁰ That very limited survey resulted in an average travel cost was \$41.96 plus fuel charges.²¹ Yet, the study then estimates the cost of vet travel at \$29.36, with no fuel charge.²² Not only is the study internally inconsistent, but the survey was wholly inadequate. It is

not uncommon for veterinarians to charge \$100 or more per farm call, depending on the nature of their practice and the geographic location.

5. **The study does not address the massive underestimates of the number of “premises” affected by NAIS, and as a result significantly underestimates the total costs of the program.** All of the cost estimates are based on data from the USDA Census. Yet the USDA Census, by definition, covers only those operations that have \$1,000 or more of agricultural product for sale in the census year. Not only do many people fail to respond to the Census, but hundreds of thousands of hobby animal owners, homesteaders, and micro-farmers are not covered. Yet these people **would** be covered by NAIS. The USDA’s own premises registration statistics reveal the severe undercounting of affected people. While the Census lists only 3,555 “premises” in Massachusetts, the USDA has registered 8,066 premises in that state – **227% of the estimate!**²³ And since the cost-benefit analysis relies on the Census estimates, the estimates of the total costs of NAIS – to both individuals and the government – are fundamentally flawed.
6. **The study improperly justifies the costs that will be imposed on millions of people by looking to the benefits to a handful of companies.** The study weighs the costs of NAIS against the alleged benefits to the export market. Indeed, in identifying the “three key points” from the study, USDA lists the value to the export market and the global marketplace as the key benefits.²⁴ Not only are the alleged benefits based on speculation rather than fact, but this approach is entirely improper. The majority of the costs of NAIS will be borne by individual animal owners, ranging from pet owners to large ranchers. But the export market benefits will accrue almost entirely to a handful of large companies who participate in the export market. In essence, individual rural Americans’ Main Street will be taxed for the benefit of Big Ag’s version of Wall Street.

III. NAIS does not increase food safety

In considering food safety and traceability, it is critical to distinguish between tracking live animals and tracking meat from the slaughterhouse to the consumer. Most food-borne illnesses are from bacteria such as salmonella, e. coli, and campylobacter, or a specific group of viruses called the Norwalk viruses.²⁵ These organisms contaminate food due to poor practices at slaughterhouses or in food handling. NAIS will **not** prevent these problems. And since NAIS tracking ends at slaughter, it will not improve the tracing of contaminated meats in the food chain.

Neither will tagging cattle prevent BSE from occurring or from entering the food supply. In last year’s Hallmark/Westland beef recall, the packing plant’s violation of existing regulations and USDA’s failure to properly inspect the plant, allowed “downer” cows to be slaughtered. In the video from the Humane Society, every time there was a clear shot of a cow’s left ear, one can see a tag.²⁶ Changing the type of tag to a NAIS electronic tag would do nothing to avoid similar problems in the future.

An immediate feed ban, that closes loopholes allowing things such as poultry litter in cattle feed, is the best way to prevent BSE from occurring in the first place. To address the human health risk, we should test cattle entering the food supply, as is done in Japan and Europe.

IV. NAIS will decrease homeland security

A. Increased consolidation threatens food security.

Under the USDA's plans for NAIS, the default requirement is individual identification of each animal. Group identification would be allowed for "animals that typically move through the production chain as a group of animals of the same species ... This practice is most common in the poultry and pork industries."²⁷ In practice, this means that companies who maintain ownership of the animals throughout their lives – as is done in vertically integrated confinement operations – will be relieved of most of the costs and paperwork burdens of NAIS. NAIS therefore creates significant incentives to further consolidate agricultural production.

Increased consolidation of our food supply creates greater risk. The 2005 GAO report on agriculture and terrorism noted that the concentration of our food supply makes it vulnerable to attack: "the highly concentrated breeding and rearing practices of our livestock industry make it a vulnerable target for terrorists because diseases could spread rapidly and be very difficult to contain."²⁸

Moreover, by discriminating against small-scale food production for local consumption and promoting large-scale industrial food production that is intended to be shipped hundreds or thousands of miles, NAIS further increases our dependence on foreign oil.

B. The use of electronic technology and databases create vulnerabilities.

RFID technology is subject to problems that do not exist with traditional identification methods such as branding or tattoos. Depending on the security of the technology used, the microchips can be cloned or infected with computer viruses (which can then be passed to other chips through the scanner).²⁹ In fact, the specific type of RFID to be used in NAIS, the ISO 11784/11785 chip, is designed to be programmed in the field before is applied to animals or even *reprogrammed after application*. This problem with the ISO standard is well known in the technology community and has been debated for years.³⁰ It is impossible to reliably trace an animal if someone can change its identity at any time. Also, the databases will be vulnerable to accidental release of the information as well as hackers.

C. NAIS is not effective in addressing avian or swine flu.

Avian influenza, in particular the highly pathogenic H5N1 virus, is frequently raised as a homeland security issue that weighs in favor of implementing NAIS. The threat, however, comes from large commercial operations, because the density of the birds and the conditions they are kept under provide ideal conditions for the rapid spread and mutation of viruses.

An NGO report indicates that the spread of avian flu, including H5N1, is due to conditions in confinement poultry operations.³¹ A later report states: "Studies indicate that highly pathogenic strains of bird flu evolve when low pathogenic strains of the virus, which circulate harmlessly among wild bird populations, are introduced into high-density poultry flocks. Once bird flu

takes hold in a factory farm, the virus amplifies and spreads beyond the farm through a multitude of channels: trade in birds and eggs, people coming in and out, the elimination of waste, the use of litter in feed, etc.”³² For a domestic example, in the 2002 outbreak of avian influenza in Virginia, “farm equipment, vehicles and personnel” moved among commercial facilities caused transmission of the virus.³³ Even a USDA report found that, out of 45 outbreaks of H5N1 in the country of Laos, 42 of the outbreaks occurred in commercial operations.³⁴

The recent mutation of the H1N1 swine flu virus to a form that is transmissible human-to-human has dominated the headlines. Genetic analysis indicates that the current virus has two ancestors, one of which is a swine virus found in factory farms in North Carolina in the US in 1998.³⁵ Scientists postulate that a human flu virus may have started circulating in U.S. pig farms as early as 1995, but “by mutation or simply by obtaining a critical density, caused disease in pigs and began to spread rapidly through swine herds in North America.”³⁶ The mutated virus emerged in North Carolina, the home of the nation’s largest pig production operation, with some of the densest pig populations in the continent.³⁷ A veterinary pathologist from the University of Minnesota stated the obvious in *Science*: “With a group of 5,000 animals, if a novel virus shows up it will have more opportunity to replicate and potentially spread than in a group of 100 pigs on a small farm.”³⁸

A study published in 2008 in the journal *Zoonoses and Public Health* investigated the relationship between farm size and risk of Eurasian lineage swine flu infection. The researchers concluded that pigs from farms with more than 5,000 “standing pig population” were anywhere from two to nine times as likely to have swine influenza than pigs originating from small farms.³⁹ A recent study of pig farms in North America similarly concluded that “increasing the number of finishers [fattening pigs] by 1000 increased by 4.4 the adjusted odds of a finisher herd being positive” for classic H1N1 swine flu.⁴⁰

As with all of the disease issues, a one-size-fits-all approach of tracking every chicken or pig in the country will not address avian and swine flu. The agency should focus its efforts on the high-risk commercial factory farms and practices that can spread disease, such as feeding poultry litter.

D. NAIS will result in a black market in livestock, leading to greater problems.

The premise that 100% participation is necessary to address disease issues founders on the reality that there will never be full participation. If NAIS is adopted, it is inevitable that some livestock owners – whether for religious or economic reasons, or unwillingness to allow the government intrusion – will not comply. Since they will be acting illegally, they will be far less likely to seek a veterinarian’s help should a disease problem arise. This black market will create disease problems, as evidenced by the outbreak of Exotic Newcastle Disease that occurred in Los Angeles in 2002. The outbreak was started and spread by cockfighting flocks that had been smuggled from Mexico because cockfighting is illegal in California.⁴¹ NAIS will increase the probability of disease outbreaks by undermining the first line of defense: the actions of private individuals and their veterinarians in quickly diagnosing and containing diseases.

V. NAIS cannot succeed because of the many practical barriers to implementation.

NAIS is fundamentally impractical to implement. USDA's plans call for multiple public and private databases, capturing all of the reportable "events" for every animal, with the USDA creating a metadata portal to use for its purposes.⁴² Establishing these databases will be a monumental task. There are almost a hundred million cattle in the U.S., and millions more horses, chickens, sheep, goats, pigs, deer, elk, bison, and other livestock animals. These animals are taken to shows, sold in auction houses, sold in private transactions between individuals, slaughtered, and otherwise moved for myriad reasons. The NAIS reporting and tracking system has myriad potential failure points. Moreover, integrating databases is far from simple. Indeed, despite the emphasis on interagency cooperation since 9/11, the GAO's 2005 report on agriculture and terrorism noted that the federal government still had not integrated its own databases.⁴³

The plans for NAIS assume that all people covered by the NAIS will have computers and web access to report within 24 hours after a reportable event. Based on 2007 Census, however, almost half of farmers do not have internet access. Aside from the costs, some individuals have religious objections to the technology or simply lack the knowledge to use it. Thus, state agriculture departments will have to accept written reports mailed to their agencies or telephone reports that will be transcribed. This creates two more failure points: human error in data input and the untimely recordation of events.

The massive databases themselves pose a barrier to successful traceback. Colorado researchers developed a mock data set and algorithms for using a NAIS-type database for tracing animal movements and the cohorts of diseased animals.⁴⁴ Although the research indicated that traceback of a diseased animal was quite rapid, the tracing of the cohorts (the animals that had come into contact with the diseased animal and then with other animals) took vastly longer, especially if the data was kept in more than one database. Their simulation of 100 million animals with the data held in multiple databases indicated that it could take *more than 39 years* to trace the cohorts.

VI. NAIS poses ethical concerns and conflicts of interest.

The USDA's working groups for the design of NAIS were initially drawn from the working groups established by the National Institute for Animal Agriculture (NIAA). The NIAA is an industry trade organization, and the members of the working groups included many companies who stood to profit directly from the implementation of NAIS, such as tag manufacturers and database management companies. These conflicts of interest permeate the plan and have never been addressed.

Additionally, the use of private databases creates more conflicts of interest and leaves farmers and ranchers vulnerable to the misuse of their confidential information. The recent court decision finding that the NAIS premises registration information is exempt from FOIA does **not** address the potential for misuse of that information by private database managers or by those who obtain the information through illegal means such as hacking the databases.

While NAIS has been promoted by entities that stand to profit from the program, it has been opposed by the majority of small farmers and animal owners who would be subject to its burdens. Together with these comments, FARFA is submitting approximately 2,000 pages of petition signatures of individuals who are opposed to NAIS. These petitions were gathered by individuals all over the country, by placing petitions at feed store counters, in vet clinics, and at county fairs. No one was paid to collect signatures, and these petitions represent a true grassroots response to NAIS.

VII. The invasion of privacy caused by NAIS is not curable.

USDA has asked how it can address privacy and confidentiality concerns with NAIS, but there is no solution to this issue. Requiring individuals to provide information about their land, animals, and daily activities to the government creates an unprecedented level of government intrusion into people's lives. Moreover, once that data is submitted to a database, it is vulnerable. Federal agencies have a track record of both accidental releases of information and vulnerability to hackers.

Requiring individuals to submit information to private companies is not a solution to the problem. Regardless of the laws or regulations, individuals would be vulnerable to the sale and misuse of their information. How could an individual even prove that such misuse had happened, much less be properly compensated? Once collected, people's information will be vulnerable. The only solution is to *not* collect the information in the first place, or to only collect it on a voluntary basis so that individuals can choose whether or not they wish to take these risks.

Alternatives to NAIS

The Farm and Ranch Freedom Alliance strongly urges USDA to stop implementation of the NAIS and focus efforts on these alternatives:

- ◆ Encourage decentralization of the livestock industry to reduce its vulnerability to disease outbreaks.⁴⁵
- ◆ Improve training for veterinarians in recognizing foreign and emerging animal diseases.⁴⁶
- ◆ Increase inspections of animals and agricultural products entering the U.S. or crossing state borders and refuse admittance of animals from countries with known disease problems such as BSE or Foot and Mouth disease.
- ◆ Address problems in the existing disease control programs, including ineffective oversight, improper classifications, and bureaucratic barriers to rapid disease response.
- ◆ Identify high-risk situations and quantify critical factors for livestock diseases of concern, such as the level of contagion, the means of transmission, and the severity of the diseases of concern. Based on the analysis of these factors and of existing programs, develop improvements to existing programs. Limit any such programs to non-electronic means of identification when the animal enters the stream of commerce.

- ◆ Improve enforcement and inspections of large slaughterhouses and food processing facilities, including unannounced spot inspections.
- ◆ Address traceability of meat from the slaughterhouse to the consumer.
- ◆ Increase testing for BSE, or Mad Cow Disease.

We thank you for your consideration.

Sincerely

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Notes

¹ The health problems caused by confinement or industrial management systems have been well documented in the scientific literature. *See, e.g.*, Cravener, T.L., W.B. Roush, and M.M Mashaly, *Broiler Production Under Varying Population Densities*, POULT. SCI. 71(3):427-33 (1992); D. Herenda and O. Jakel, *Poultry Abattoir Survey of Carcass Condemnation for Standard, Vegetarian, and Free Range Chickens*, CAN. VET. J. 35(5):293-6 (1994); T.G. Nagaraja and M.M. Chengappa, *Liver Abscesses in Feedlot Cattle: A Review*, J. ANIM. SCI. 76(1):287-98 (1998); T.G. Nagaraja, M.L. Galyean, and N.A. Cole, *Nutrition and Disease*, VET. CLIN. N. AM. FOOD ANIM. PRAC. 14(2):257-77 (1998); D.H. Tokarnia, J. Dobereiner, P.V. Peixoto, and S.S. Moraes, *Outbreak of Copper Poisoning in Cattle Fed Poultry Litter*, VET. HUM. TOXICOL. 42(2):92-5 (2000)

² *See* Exotic Newcastle Disease, Information from the Texas Animal Health Commission (Apr. 2004) (“In close confinement, such as commercial operations, the disease can spread like wildfire. ... **However, the virus is destroyed rapidly by dehydration and by the ultraviolet rays in sunlight.**”) (emphasis added).

³ News Release, Texas Animal Health Commission (Apr. 1, 2004).

⁴ United States Government Accountability Office, GAO-05-214, Homeland Security: Much is being done to protect agriculture from a terrorist attack, but important challenges remain (Mar. 2005) (hereinafter “GAO Report on Agriculture”) at p.6-7.

⁵ RFID Cost.xls – A spreadsheet to estimate the economic costs of a radio frequency identification (RFID) system, K.C. Dhuyvetter and D. Blasi, Version 7.6.06.

⁶ *See* User Guide (Dec. 2007) at p.24 (Group/Lot identification may be used for animals that “move through the production chain as a group”).

⁷ *See* Program Standards and Technical Reference (Feb. 2008) at p.7 (listing an animal event code for reporting “animal missing”).

⁸ Benefit-Cost Analysis of the National Animal Identification System, NAIS Benefit-Cost Research Team (Jan. 14, 2009) (hereinafter “Cost-Benefit Analysis”) at Table 4.2 & 4.3, page 30.

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- ⁹ Cost-Benefit Analysis, pages 28-29.
- ¹⁰ Cost-Benefit Analysis, pages 24-27.
- ¹¹ Cost-Benefit Analysis, p. 257 (estimating number of premises) and p.330 (discussing reader costs).
- ¹² Cost-Benefit Analysis, pages vi, 8, & 123-124.
- ¹³ Cost-Benefit Analysis, page 102
- ¹⁴ User Guide at 30. *See also* Draft Program Standards, United States Department of Agriculture, Animal and Plant Health Inspection Service (published Apr. 25, 2005) (hereinafter “Draft Program Standards”) at 5-6.
- ¹⁵ Bird Industry Identification Working Group, Update and Recommendations (Aug. 2006) (presentation at the NIAA Animal ID-Info EXPO).
- ¹⁶ Sheep Working Group Report, Executive Summary (Sept. 6, 2006) at page 3.
- ¹⁷ Cost-Benefit Analysis, page 23.
- ¹⁸ Cost-Benefit Analysis, page 26 (discussing the lack of data on database charges) and page 173 (listing Michigan as receiving \$689,825 in cooperative agreement funds).
- ¹⁹ *See* <http://www.clrc.ca/index.shtml> (“(December 8, 2008) The CLRC Board of Directors met in Ottawa on October 20, 2008 to approve the budget for 2009. On behalf of Chairman Bob Airth and the entire Board, we are pleased to advise you that the unit cost will remain unchanged at \$5.05 for 2009. In these turbulent times, the Directors felt that it was very important to maintain the costs at current levels and thus provide a measure of stability for the associations in this area.”)
- ²⁰ Cost-Benefit Analysis at p. 280.
- ²¹ Cost-Benefit Analysis at page 280.
- ²² Cost-Benefit Analysis at page 326.
- ²³ Cost-Benefit Analysis at pages 169 & 171.
- ²⁴ USDA-APHIS FactSheet, National Animal Identification System Benefit-Cost Analysis: Three Key Points (Apr. 2009) (“Three Key Points from the Benefit-Cost Analysis:1. A traceability system like NAIS is essential to timely recovery of export markets after a disease outbreak. 2. Traceability is becoming increasingly important, even necessary, for successful participation in the global marketplace. 3. For the major livestock industries, the costs of NAIS vary depending on the industry’s production practices, which in turn determine the type of traceability methods used.”).
- ²⁵ *See* Centers for Disease Control and Prevention, http://www.cdc.gov/ncidod/dbmd/diseaseinfo/foodborneinfections_g.htm#mostcommon.
- ²⁶ <http://www.youtube.com/watch?v=kaM7Hpu47FY>
- ²⁷ User Guide at p.24.
- ²⁸ GAO Report on Agriculture at p.1.
- ²⁹ *See* Annalee Newitz, *The RFID hacking underground*, WIRED, www.wired.com/wired/archive/14.05/rfid_pr.html; John Markoff, *Study says chips in ID Tags are vulnerable to viruses*, NEW YORK TIMES (Mar. 15, 2006); Rieback, M.R., B. Crispo and A. Tanenbaum, *Is your cat infected with a computer virus?*, Vrije Universiteit Amsterdam, Computer Systems Group.
- ³⁰ In 1998, ISO received a formal petition calling for revisions or suspension of the standards, and identifying multiple flaws in the ISO 11784/85 standard, including the lack of unique ID codes. *See* letter from Gosstandrat of Russia, Committee of Russian Federation for Standardization, Metrology and Certification, to Rudolf Zens, Secretary, SC 19 (Mar. 2, 1998) at <http://www.rfidnews.com/images/3-2-98.gif>. *See also* The Controversial ISO 11784/85 Standard, ISO 11784/85: A Short Discussion, at www.rfidnews.com/iso_11784short.html
- ³¹ Genetic Resources Action International (“GRAIN”), *Fowl Play: The Poultry Industry’s Central Role in the Bird Flu Crisis* (Feb. 2006) (hereinafter “GRAIN Report”).
- ³² Bird Flu Crisis: Small farms are the solution, not the problem, in *Seedling*, GRAIN (July 2006) at p.26 (citing multiple scientific studies from around the world). Although pastured poultry are exposed to wild birds, extensive testing of wild birds has only rarely found bird flu in a highly pathogenic form. “Furthermore, the geographic spread of the disease does not correlate with migratory routes and seasons. The pattern of outbreaks follows major roads and rail routes, not flyways.” *Avian influenza goes global, but don’t blame the birds*, THE LANCET Vol. 6: 185 (Apr. 2006).
- ³³ E-Digest Volume 2, Number 11, *Issues Faced in the 2002 VA AI Outbreak*; paper presented by Dr. Bill Pierson, at the 2002 Poultry Health Conference sponsored by the Ontario Poultry Industry Council.
- ³⁴ GRAIN Report (quoting USDA, *Laos: Poultry and Products—Avian Influenza*, U.S. Department of Agriculture (Mar. 16, 2005)).

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- ³⁵ V Trifonov et al, 2009. The origin of the recent swine influenza A (H1N1) virus infecting humans, EuroSurveillance 14(17) <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19193>; Wuethrich B. 2003. Chasing the fickle swine flu. Science 299:1502-5 <http://birdflubook.org/resources/WUETHRICH1502.pdf>; Zhou NN, Senne DA, Landgraf JS, et al. 1999. Genetic reassortment of avian, swine, and human influenza A viruses in American pigs. Journal of Virology 73:8851-6. <http://birdflubook.org/resources/ZHOU8851.pdf>.
- ³⁶ Webby RJ, Swenson SL, Krauss SL, Gerrish PJ, Goyal SM, and Webster RG. 2000. Evolution of swine H3N2 influenza viruses in the United States. Journal of Virology 74:8243-51.
- ³⁷ Environmental Defense. 2000. Factory hog farming: the big picture. November. http://www.edf.org/documents/2563_FactoryHogFarmingBigPicture.pdf.
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