

Animal Identification



WEMC FS#13-2006 • Summer 2006

Glynn T. Tonsor, Ph.D.

Assistant Professor
Department of
Agricultural Economics
Michigan State
University
East Lansing, MI
gtonsor@msu.edu

**Ted C. Schroeder,
Ph.D.**

Professor
Department
of Agricultural
Economics
Kansas State
University
Manhattan, KS
tcs@ksu.edu

Lessons for the U.S. Beef Industry Learned from the Australian National Livestock Identification System

Overview

The U.S. beef industry and both national and local regulatory agencies have been struggling to develop a national animal identification system (NAIS) for several years. The discovery of a single cow in the United States in December 2003 infected with BSE heightened awareness of the need for animal identification (ID) and meat traceability in the United States (and subsequent discoveries with difficult traceability furthered these concerns). However, costs, design, ownership, and control concerns associated with animal traceback have made implementation a substantial challenge. Questions many industry participants wonder about include: What are the costs of implementation and operation of an ID system? Who would collect and store animal ID information? Who would have access to such information? How would this information be used? What is the value of such a system? In the mean time, global adoption of animal and meat traceability systems is moving forward at a rapid pace, placing the U.S. beef industry at a competitive disadvantage in international markets.

One animal ID system that has been in place for a relatively long period of time and is continuing to develop is the Australian system. Because the Australian system is one of the more advanced animal ID systems operating in a commercial production environment, we spent time in Australia learning about their industry and their animal ID system. Our primary goal was to gain an understanding of the motivations, evolution, development, advantages, and challenges associated with the Australian animal traceback system. The purpose of this fact sheet is to summarize our findings in order to increase awareness of the livestock ID systems operating in Australia and to present implications we gained from this experience for U.S. livestock industries with emphasis on the beef cattle sector.



History and Development of Animal Identification in Australia

Australia is highly dependent on red meat exports being the second largest beef exporter in the world in 2005 (behind only Brazil). Because of the importance of beef exports to Australia, the country has been progressive in development of animal ID systems. In fact, national ID systems have been evolving since the late 1960s when Australia introduced a campaign to eradicate bovine brucellosis and tuberculosis. At that time, a tail tag system was introduced and it has been used for over 30 years to identify the most recent property of origin for cattle. These tail tags are unique only to a pen or lot of cattle, and not to individual animals.

In 1996, 25 farms in Australia were placed on quarantine following detection of excessive residue levels of Endosulfan (a chemical used to treat *Helicoverpa* in cotton) in their beef cattle. This prompted supplementing the tail tag system with an additional paper-based system referred to as the National Vendor Declaration (NVD) program, now called the National Vendor Declaration and Waybill.¹ Each group of cattle has a NVD completed by the seller prior to each transaction. Among other things, this declaration includes assurances by cattle owners regarding production practices utilized in producing cattle they are selling. For example, the seller completes questions and documentation related to whether cattle have been “treated with hormonal growth

promotant”, how long cattle were owned by the producer, and whether the cattle are still within a withholding period of having been treated with any veterinary drug or chemical. Completing this form is not mandated by Australian legislation, but it is demanded commercially, and therefore, it is widely used. The NVD is a legally binding document, and hence, taken seriously by livestock producers as it can be used for liability recourse in the event of a legal claim by future owners of cattle or beef for which a NVD was completed. The NVD program is conducted using paper copies and to date has not been integrated into the electronic Australian national animal ID system.

Individual Animal Identification in Australia

The most recent update to Australia’s animal ID efforts has occurred with implementation of the National Livestock ID System (NLIS). The NLIS is a permanent whole-of-life individual animal ID system allowing an individual animal to be traced from its property of birth to its slaughter destination. The NLIS has been designed to improve traceability, to enhance food safety, to ensure beef product integrity, to allow and to sustain international market access, and to provide progressive livestock producers with enhanced management opportunities. The NLIS is an advancement of the tail tag and NVD systems and it moves the nation’s traceability systems from primarily herd-based ID to electronic, individual animal

¹ For additional information and a sample copy of the NVD see: <http://www.mla.com.au/TopicHierarchy/Industry-Programs/LivestockQualitySystems/NationalVendorDeclarations/CattleNVDWaybill.htm>.



ID. While initially implemented voluntarily on a state-by-state basis (i.e., each state could choose when to phase-in the NLIS), the NLIS is now a mandatory program in operation throughout Australia. The NLIS requires all calves to have specific, NLIS compliant, Radio Frequency ID (RFID) devices applied prior to calves leaving the property on which they were born. These RFID devices can be either ear tags or rumen bolus/ear tag combinations. Each RFID device contains a microchip encoded with a unique Property ID Code of the property where the animal was born. These devices are ordered, by producers, from companies approved to produce RFID devices compatible with the NLIS.² RFID devices are electronically read as cattle move throughout the production system; in particular, readings are mandated at each cattle transaction. Over time, these readings create a history of each animal's movement, developing a comprehensive, electronic database to facilitate individual animal traceability. A single centralized database, maintained by Meat and Livestock Australia (MLA), a private service organization funded by levies obtained from livestock producers through a check-off from each animal transaction, contains individual animal trace-back records for all cattle in the entire country.

To comply with the NLIS, producers are required to identify each animal with an approved NLIS device. The NLIS offers numerous management opportunities to livestock producers who choose to take advantage of

them. These benefits can include detailed records of medical treatments, animal growth performance data, pasture-performance data, movement of animals, purchase and sale dates, and carcass feedback data. These benefits are realized by those who invest more in information technology and purchase appropriate computer software, RFID reading equipment, weight scales, Internet connection, etc. When the benefits of the NLIS are fully realized, a producer gains a wealth of intensive management information that is being used to improve efficiency and increase profitability. For example, one operation we visited uses individual animal ID in back-grounding stockers to record animal weight gain at frequent intervals when the animals change from one paddock to their next location. As such, real-time individual animal performance and paddock performance are known and associated management decisions are made.

Differences in the Australian and U.S. Beef Industries

Several important underlying differences exist between the Australian and the U.S. cattle and beef industries. As a result, the industries in these respective countries are faced with somewhat unique challenges when considering implementation of a national animal ID system for their country. The U.S. cattle sector is much larger with approximately 800,000 cow-calf farms and a total cattle herd of about 96 million head, compared to 76,000 operations and 26.5 million head in Australia

2 For additional details on how producers obtain RFID devices see: <http://www.agric.nsw.gov.au/reader/nlis-cattle/questions-answers-nlis-nsw.htm#3>.



(USDA/NASS, 2002; MLA, 2004). Feedlots in the United States market approximately 23 million head per year, of which roughly 10% is historically exported (USDA, 2002). In contrast, the Australian feedlot industry has a capacity of less than 1 million head as most of their beef is grass-fed and Australian exports constitute about 67% of their commercial production (MLA, 2004; ALFA, 2003).

Cattle production in the United States involves many more operations than in Australia; consequently, there are substantially more individuals to educate and to inspire when implementing the U.S. NAIS. Furthermore, average cattle farm size is smaller in the United States and the cattle operation is not typically the primary source of family income. Many smaller operations are not strongly driven by industry-wide economic factors such as animal traceability because the viability of their overall business is not impacted as much as is that of larger operations. Livestock producers in Australia have over 30 years of experience with national animal ID systems, compared to a relative lack of experience or exposure for U.S. producers.

Furthermore, the number of cattle that are transacted through feedlots is much higher in the United States and considerable co-mingling of cattle from multiple origins occurs, especially relative to Australia where most cattle are grass-fed and often remain with their herd cohorts until harvest. Thus, the average number of readings that will be required for each animal in the United States will likely be higher than in Australia. The increased readings may require additional equipment, higher

labor costs, etc. On the other hand, the increased frequency of readings should supply a complete, current, and accurate database of transactions providing possible managerial gains that extend even beyond those available to typical Australian producers owning cattle that have been transacted fewer times. Further, with more co-mingling of cattle in the United States, animal traceback without individual animal ID is considerably more difficult than in Australia. As such, co-mingling of animals increases the importance of having an individual animal ID system for animal health and food safety management.

Possibly the biggest difference in the two markets is the higher percentage of Australian beef destined for export markets relative to the United States. This is one of the primary reasons the Australian meat industry has been so progressive in developing its animal ID program. Furthermore, it is one reason that many Australian producers are accepting of the ID systems as they appreciate the importance of world market access to the viability of their businesses. Because exports are a smaller portion of the U.S. market, typical U.S. producers are arguably less aware of changes occurring in world beef markets, possibly resulting in them having less motivation to adopt a national animal ID program.

Implications for the U.S. Animal Identification System

Based on our exposure and current knowledge of the Australian NLIS, we offer five primary recommendations for the U.S. industry to consider as they continue developing the U.S. national animal ID system:



1. Create a mandatory, rather than voluntary, animal ID program.
2. Exert caution to avoid regional differences in the implemented animal ID program.
3. Provide significant education and technological support during developmental and implementation stages.
4. Encourage substantial public *and* private financial investment as there are both public and private benefits and responsibilities associated with animal ID systems.
5. Use compliant and flexible technology to accommodate meat traceability and other advancements as needs and opportunities arise over time.

Each of these five points is discussed in more detail in the subsequent paragraphs.

Mandatory ID, rather than voluntary, was strongly suggested by Australian industry participants we visited with because a voluntary system leaves room for a handful of individuals to negate efforts of more progressive producers who participate in a national ID program. Further, a voluntary ID program would likely result in two distinctive markets, those with ID and those without, which would increase industry costs of trying to deal with and keep cattle and beef from each segment separate. In addition, such a split market would likely reduce overall consumer confidence in the ID system at the expense of overall beef demand. For example, the existence of such a split market would likely add to confusion among consumers regarding whether beef they are purchasing was produced within a system complying with an animal ID program, and if not, whether the product is somehow inferior

or unsafe. It is also important to note that this point applies not only to potential foreign consumers of U.S. beef, but also to domestic consumers.

Concern over regional differences in the Australian system is apparent. Each Australian state was free to choose the exact date of implementing NLIS, with the “national” aspect being that there are national standards of the NLIS program and one database containing all NLIS transaction readings. Applying this to the U.S. situation, we believe the United States would be best served by having one national program for all producers regardless of the location of their production facilities. Furthermore, one entity likely needs to be solely responsible for maintaining the national database containing all transactions. The United States currently does not have an entity similar to the MLA, which is the Australian organization responsible for maintaining the NLIS national database. A centralized database manager offers numerous advantages to multiple databases spread around the country including consistency of data recording and management (including confidentiality assurances), enhanced ability to respond to technical problems in the field, and speed of animal traceback. The Australian system’s database is held by a private checkoff-funded entity (MLA). Whether a private or public (governmental) entity administers a national animal ID system is less important than ensuring that the system is coordinated across regions, quickly accessible, and allows animal tracing to occur in a comprehensive nationally linked system.

In addition to these recommendations, the U.S. NAIS needs to remain as simple as

possible while simultaneously offering sufficient traceback capabilities. Producers need to be provided with adequate educational and support resources during the implementation phase of the NAIS, and government subsidization in implementing the national program should be considered. Keeping the NAIS as simple as possible is important as confusion between “what is required” and “what is possible” can make implementing any new program challenging. Furthermore, the simpler the national program is in its design, the easier it will be to maintain and to build upon. Devoting significant resources to educating those individuals and businesses affected by the NAIS and offering support for technical issues that will arise as producers adopt the program is also essential.

In any animal ID system, the costs associated with not being able to quickly trace an animal have both private and public components. Private benefits are obvious in that traceability allows a firm to quickly identify a problem source and correct the problem without undue risk. Furthermore, once a system is initiated, incremental cost of private firms applying more intense marketing and management activities is lowered. This further justifies the need for private investment. From a public perspective, having rapid traceback helps ensure consumer food safety and welfare. Given that the primary goal of the currently proposed U.S. NAIS is to enhance the ability to monitor and to respond to animal disease issues, it is evident that public benefits stem from the program and hence public investment may be warranted.

Overall meat food safety is enhanced by the existence of sound animal ID systems in an industry; this occurs as such systems can help to rapidly determine the origin of a food safety concern and prevent further contamination or large-scale product condemnation. Furthermore, the social gains of having traceback capabilities may be sufficiently high to justify public support to increase the quality and extent of an animal traceability system beyond what would otherwise be provided by the private sector. Hence, during implementation, U.S. government financial assistance and/or incentives to speed up the adoption of the national program may be desirable. There are both private and public benefits to animal ID and traceability that may justify both private and public investment.

Implementing an animal ID system that is reasonably flexible and compatible with meat traceability is also strongly recommended. Some of the more progressive firms in Australia already have complete meat traceability (through the use of DNA) from the retail shelf all the way back to the property of birth of the animal from which the meat originated. In the United States, the addition of meat traceability may eventually be desired on a national basis as it theoretically could provide a mechanism for retail meat to be rapidly traced all the way back to the farm where the animal was born and to all places the animal resided. While not currently part of the developing U.S. NAIS, the benefits of such a meat traceability system might include enhanced consumer confidence in purchasing beef, better ways to properly deal with animals that have lost their identifying ear tags, and more in-depth ways to





validate production methods used to produce branded beef products labeled with desired food attributes (e.g. natural, organic, produced without hormones or antibiotics, grass-fed).

Conclusions

The global beef market is highly competitive and producers and countries that can demonstrate rapid animal and meat traceability systems have considerable advantages relative to those that are not able to provide this assurance to customers and in managing and responding to animal disease or related outbreaks. Some countries are quite experienced and well ahead of others in development and adoption of various animal and meat traceability systems. The U.S. beef industry is still in early developmental stages of implementing an animal ID system and therefore can learn and benefit from the experiences of earlier initiators such as Australia.

References

- Australian Lot Feeders' Association (ALFA). 2004. "ALFA Survey: Feedlot Numbers Remain Steady." Online. Available at http://www.information.com.au/ALFA/ALFAReports/15_Mar_2003.pdf.
- Meat and Livestock Australia (MLA). 2004. Online. Available at <http://www.mla.com.au/default.htm>.
- Tonsor, G.T. and T.C. Schroeder. 2006. "Livestock Identification: Lessons for the U.S. Beef Industry from the Australian System." *Journal of International Food and Agribusiness Marketing*. Forthcoming, 2006.
- U.S. Department of Agriculture/National Agricultural Statistics Service. 2002. "2001-2002 Statistical Highlights of U.S. Agriculture: Livestock." Online. Available at <http://www.usda.gov/nass/pubs/stathigh/2002/tables/livestock.htm#cofmark>, Accessed July 8, 2004.

