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Lessons Learned from the Canadian Cattle Industry: National Animal Identification and The Mad Cow

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Abstract

Canada implemented a national cattle identification system led and developed by the industry. Initially a voluntary program beginning in July 2001, it became mandatory in July 2002 and achieved 92-95 percent compliance by that fall. The system was low cost to initiate and operate and only requires that animals be tagged before leaving the farm of origin and the tags are read when the animal dies or is exported. The national ID system did not protect Canadian cattle from a sole case of BSE, or Mad Cow Disease, found in the spring of 2002, but it did help speed and lend confidence to the investigation. While the ID system was the objective of the study, the team also report on how markets and an industry behave in a crisis.

Keywords: animal identification, traceability, BSE.

LESSONS LEARNED FROM THE CANADIAN CATTLE INDUSTRY: NATIONAL ANIMAL IDENTIFICATION AND THE MAD COW

Introduction

A team from the Iowa Beef Center at Iowa State University visited Ontario in early April and Alberta in late June 2003. The purpose of the trips was to study the Canadian cattle identification system that was initiated in July 2001 and became mandatory in July 2002. The contrast between the visits in April and June was particularly interesting, given that a single case of bovine spongiform encephalopathy (BSE, also referred to as “mad cow disease”) was disclosed on May 20.

The Iowa State University (ISU) research team included Daryl Strohbehn and Dan Loy, professors in the Department of Animal Science with expertise in cattle production and beef quality; Reg Clause, extension specialist in quality management systems and value-added agriculture and a trained International Organization for Standardization (ISO) lead assessor; and John Lawrence, extension livestock economist. The team met with the Canadian Cattle Identification Agency (CCIA), extension specialists, a consulting veterinarian, and several cattle producers. The group also visited an auction market and toured Cargill’s High River, Alberta, packing plant. In addition to tours of six producer farms in Ontario and five feedlots in Alberta, the team participated in informal discussions with twelve to fifteen additional feedlot owners who were also members of the Alberta Cattle Feeder’s Association board of directors.

The Canadian national cattle identification system played a major role in the BSE investigation and, according to the people we visited, performed as designed. The Canadian identification system has been in place for two years and was tested under fire during the BSE investigation. CCIA is considering changes to the system based on lessons learned from the BSE case. This information is important to the U.S. livestock

industry as it creates a national animal identification program and prepares to implement Country of Origin Labeling.

Although the primary focus of the study trip was the Canadian cattle identification system, we had the opportunity to learn about other aspects of the Canadian cattle industry, including environmental management and marketing. In addition to learning about the Canadian identification system and its adoption and use, the team learned about an industry in turmoil following the discovery of a single cow with BSE and the sudden loss of exports that had accounted for 50 percent of Canadian beef demand.

Canadian Cattle Identification Program

The study team met with Julie Stitt (general manager and administrator) and Heather Rabin of CCIA. The impetus for national cattle identification in Canada began in 1997 in recognition of the problem with BSE in Europe, a Canadian BSE case in 1993 originating from Europe, and growing concerns about foot-and-mouth disease. Cattle identification in Canada declined from approximately 95 percent during the Brucellosis eradication program to about 10 percent shortly after the end of the program. The Canadian industry and government saw identification as an animal health issue. The cattle association in each province passed a resolution supporting a national identification system and brought the resolution to the Canadian Cattlemen's Association (CCA).

CCIA was formed as a not-for-profit corporation in 1998. It is a wholly owned and separate branch of CCA and has its own directors and staff. CCA has representation on CCIA's board. The federal government has a non-voting position on CCIA's board. At the outset, CCIA developed a major three-year marketing strategy to implement the program when there was no animal health crisis. A planned phase-in period started July 1, 2001, as a voluntary program and became a requirement on July 1, 2002. CCIA was careful not to use the word "mandatory" during the information phase, even though the system is mandatory. In November 2002, the Canadian Food Inspection Agency (CFIA) reported a 92 to 99 percent compliance level of cattle at most auction markets. One auction market manager said he felt there was no reason not to comply and that most producers were tagging their cattle or paying the auction market to tag them upon arrival.

The responsibility of enforcement lies with the CFIA, which employs over 100 inspectors to monitor auction markets and packing plants for CCIA tag compliance. Enforcement by CFIA has included education, followed by warnings to violators. Where non-compliance persists, monetary penalties can be issued. It was reported that the penalty for having more than 5 percent missing tags in a group is \$250, although the penalty is reduced to \$150 if it is paid within an allotted time (all dollar amounts are in Canadian dollars unless otherwise noted). There is also a \$1,000 fine for willfully clipping out official CCIA tags. It was pointed out that 95 percent compliance is essentially 100 percent compliance in small groups (cull cows and small herds selling calves). Prosecution is an option if the violation is flagrant or poses a significant animal health or food safety risk. Initially, resistance to the identification program was strong, particularly from auction markets and many cow-calf operators. Feedlots and major cattle producers appreciated the need for such a system and were supportive.

From the beginning, CCIA has been an industry/government partnership. The cattle industry owns and directs the program and the database. The federal government enforces participation and can access the data for animal health or food safety investigations. The national cattle identification legislation was signed at the same time as a national gun registration law. The two were often compared and viewed by some as increased government interference. (Although CCIA is not a government agency, it is seen as such by many people.) Two years later, 95 percent of cattle (27 million head) are registered, at a cost of \$4 million. Only 60 percent of guns are registered and at a much higher cost. A recent news editorial pointed out the success of the identification program as an industry-led initiative versus a government mandate.

Stitt reported that it cost CCIA \$4 million to develop and initiate the database. The initial funding was provided by the federal government. The database to manage the identification system was developed according to CCIA specifications and was put out for competitive bids. CCIA owns the software and contracts with QC Data (the company that developed the database) for programming and server support. QC Data specializes in creating databases for the oil and gas industries and in health and pharmaceuticals traceback services. CCIA contracts with QC Data for additional services, upgrades, or special products.

CCIA started with two staff people and currently employs six who primarily follow up on reporting errors. Stitt claims that overhead costs in the system are \$0.02 to \$0.03 per head. CCIA collects an administrative fee of \$0.20 per tag. CCIA does not set the price for the tag. The market, through competition, determines the price at which retailers sell the tags to producers. CCIA receives \$0.05 when the tag number is issued to the manufacturer and \$0.15 when the tag is sold. As a not-for-profit corporation, CCIA uses the excess funds to build an operating surplus and for research and development. Research currently is centered on radio frequency identification tags (RFID) and readers, which are expected to reduce errors.

How It Works

CCIA tags are available from 1,500 retailers (mostly veterinarian offices and feed stores) across Canada. CCIA provides software, to report tag sales, and some training to the retailers. CCIA is in the process of adding a regulation for retailers and distributors to assure prompt reporting of tag sales. Currently there is up to a 10-day lag in recording purchased tags to the system for retailers not using the Internet software, and the reporting goal is within 24 hours. In most cases, the process is automated at the point of purchase with CCIA software and bar code readers. Producers register their operations and receive a premise identification number (PIN). The database has contact information for producers, including name, address, phone, fax number, and e-mail address. There is no information about the animal or herd. Once the information is in the system, it does not have to be re-entered.

CCIA tracks the party responsible for the tag number in the database at a particular time by recording the date of the following tag “events”:

- CCIA allocates a series of official numbers to a tag manufacturer
- The tag manufacturer makes tags and distributes them to their dealers (retailers)
- The retailers issue tags to producers, who then affix them to their cattle
- Packers, dead-wagon drivers, and export vets retire the tags

Tags are sold in bags of 25. Tag numbers are recorded and assigned to the producer upon purchase. The retailer scans one bar code on the outside of the package that

identifies the individual tag numbers in the bag, rather than scanning each tag. Bar codes on cartons of tags would provide similar information. Retailers transfer data via the Internet or they may enter the information by hand.

CFIA had conducted over 100 tracebacks for animal health purposes prior to May 20, and all worked in a manner of minutes (three minutes or less). The following example of how a traceback works was given in a CCIA newsletter:

A CFIA inspector detects a problem during a post mortem inspection at a packing plant. He states that the tag number is 298278605. CCIA or CFIA enters the necessary passwords to get into the database and requests a tag history for that tag number. Within seconds the screen reports that the tag number had been allocated by CCIA to Ketchum Manufacturing for production purposes on November 16, 2000. On March 20, 2001, the tag was sold through a Ketchum distributor to John Newman. On August 1, 2002, the tag number was retired from the Better Beef Packing plant in Guelph, Ontario. Double clicking on John Newman's name provides his contact information.

Currently, CCIA recognizes 27 visual tags with bar codes and two electronic tags. All the feedlots visited were applying their own management tag in addition to the CCIA tag. Based on the number of tags in some cattle, some cowherds also were applying a tag for their own management purposes. Other producers were writing management information on the CCIA tag.

CCIA participated in the "traceout" portion of the BSE investigation conducted by the CFIA to identify offspring of potentially infected cattle. Calves from the infected herd were traced to a 20,000-head feedlot, and the CCIA system was used to identify only the calves from the source herd. These calves were removed, destroyed, and tested for BSE. Without the traceback system, all cattle in the lot that fit the general description of weight and color would be suspect and would have to be destroyed and tested to be sure the suspected animal was tested.

CCIA firmly believes in moving to a RFID system. There was unanimous agreement on this across feedlots, auction markets, and packers. The producers we talked to were also ready to go to electronic identification. Although the read-rate of the bar code tags was quite high, the tags did require cleaning to be read accurately. Feedlots rubbed the

tag with a wet cloth every time it was read. At the packing plant, one person cut out the tag, dipped it in a sink, rubbed it clean, and read it with a scanner. Bar code tags are being read at a 97 percent rate in the plant. Packers transfer the tag number to a plant tracking system where the information is kept until the carcass reaches the carcass inspection station. CCIA audits plants and retailers for compliance and practices. CCIA software creates and prints export certificates for veterinarians who scan the data on feeder cattle being exported. Some U.S. packers are reporting on slaughter cattle tags from the states.

Using CCIA Tags in Feedlot Management

In visits to five Alberta feedlots ranging in size from 3,000 head to 40,000 head, it was apparent that producers were making use of the CCIA tags for management purposes other than the mandatory identification program. All five feedlots were clients of Feedlot Health Management Service (FHMS), a consulting veterinary service that reaches nearly one-half of the Alberta cattle industry. FHMS has developed feedlot health management software that monitors individual treatments and costs, dosages by weight, and animal withdrawal times. Barcode readers are used to read the CCIA tags and match them with tags placed by the feedlot.

All cattle tags are read at the time of re-implant, approximately 60 days prior to harvest. At that time, CCIA tags are read, and the cattle are weighed and placed in management groups by weight and projected days on feed. A visible color-coded tag is then added to easily identify the cattle according to management group. Feedlot managers uniformly identified problems in reading the barcodes, and most reported the need to manually clean each ear tag to get proper readings each time. The use of RFID was greatly encouraged by each feedlot manager. The simplicity of the system was recommended as well. Most managers see such items as carcass data transfer as secondary in nature and consider whether the value will redeem the added cost. Management uses of a uniform identity system that can be integrated into feedlot decisions can yield a more immediate economic return.

Several producers told us they didn't think a catastrophe could happen to them and that the CCIA program was a good idea but would never be needed. A month after the discovery of BSE, the feedlots were very complimentary of the program. Some referred

to it as a work in progress and that it would evolve, but they had no complaints. The next step in the program, according to the CCIA and some producers, is to read the tag at each ownership transfer. This would be more practical with RFID and would provide a more complete animal history.

Another common comment from feedlot operators is that the CCIA tags are often placed in the implant zone of the ear, making their management more difficult. Feedlots we visited in Ontario did not read the CCIA tags but added their own management tag as needed. One feedlot did replace any lost CCIA tag at re-implant time to avoid the penalty for having more than 5 percent of the cattle missing tags. These producers were generally supportive but did not use the tag other than to meet the requirement.

Two producers we visited viewed the program differently. One producer tags all calves at birth with the CCIA tag. He uses a large CCIA tag and prints his own numbering system on the tag that has the calf's three-digit number and the bull number. He also participates in the Beef Improvement Ontario (BIO) program, which has a special symbol on the tag and is burnt orange in color. The BIO program means that the calf has a prescribed health and management protocol. The tag also has a BIO SQC (Source Qualified Calf) number on the tag, meaning it is traceable to the individual producer's farm through BIO, whereas the CCIA number is confidential. This producer's tag has four numbers: the CCIA nine-digit number and barcode, the BIO SQC four-digit number, and two handwritten numbers for the calf and bull used.

A second cow-calf producer we visited doesn't tag the calves until he vaccinates them and castrates the bulls ahead of weaning. The CCIA tag is the only identification this producer uses. His cows are not tagged at all, and he would like to use a temporary "back tag" for cows that are leaving the farm for slaughter rather than an ear tag because cows are difficult and potentially dangerous to tag. However, this same producer would like to see the tag read whenever the calf is sold to show a change of ownership. He was concerned that problems that occur after he has sold a calf could still trace back to his farm.

The Canadian Cattle Identification System and the Case of BSE

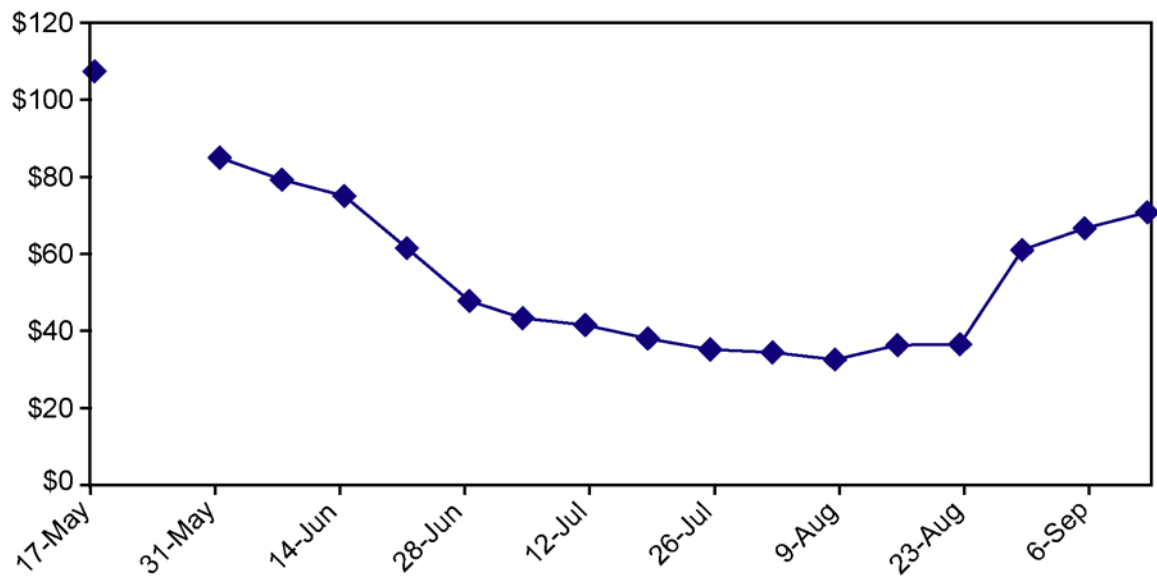
Canada exports approximately one-half of its annual beef production as live cattle or beef. Approximately 80 percent of this beef is exported to the United States. On May 20, 2003, Canadian officials announced that a single cow from a farm in Alberta was diagnosed as having BSE. All beef and cattle exports from Canada immediately stopped. The halt to trade was devastating to the Canadian beef industry and to the economy of Alberta in particular. Alberta is the largest beef-producing province; it has about as many beef cows as Missouri and slightly more fed cattle than Iowa.

Immediately following May 20, weekly cattle slaughter dropped to approximately one-half of the pre-announcement level. Packers were storing beef in cold storage, and feedlots were trying to store cattle by delaying marketing. Feedlots had been current with their marketings in mid-May, but cattle began to get heavy in June when producers couldn't market them. Some producers tried to slow cattle gain, while others marketed cattle at nearly any price to stay on schedule.

Cattle prices on May 19, the day before the BSE announcement, were \$107/cwt. Prices for the first three weeks after the announcement were approximately 20 percent lower, and the week the ISU team was in Alberta, prices had fallen to less than one-half the pre-announcement level. On June 20, prices were around \$48/cwt. There were at least two reasons for the delayed market reaction. First, by the fourth week, some producers had to sell cattle for cash flow reasons and were accepting low bids just to be able to move their inventory. Second, and perhaps more importantly, the Canadian government announced the details of a partial compensation package on June 18 (Wednesday of the fourth week). The federal government had said there would be some type of disaster compensation but had not disclosed the details.

Under the government plan, producers receive partial compensation for a larger-than-expected price decline relative to the U.S. market (see Appendix A). The compensation is retroactive to cattle sold since May 20. Once the compensation package was determined, producers were more willing to sell, and packers lowered their bids, knowing that the government program would make up at least part of the decline.

In response to the market uncertainty and cash flow problems, feedlots significantly reduced feedlot placements. June placements were 88 percent lower than during the same



Note: No market price reported for May 17 through 31 because of BSE crisis.

FIGURE 1. Average Alberta fed cattle prices, May 17 to Sept. 6, 2003, Canadian dollars per 100 pounds liveweight

period in 2002. By the week ending August 8, twelve weeks after the announcement, fed cattle prices in Canada had fallen to around \$32/cwt (see Figure 1). August 8 was also the day the U.S. Department of Agriculture (USDA) announced a phased re-opening of the U.S. border to Canadian beef. Initially, imports are limited to muscle cuts of beef from cattle less than 30 months of age, and plants need an approved segregation plan to assure the age of the cattle. The USDA also initiated rule-making procedures for imports of live cattle in the future. Following the USDA announcement, Canadian cattle prices moved higher but remain below U.S. prices.

Japan, which had commended Canada on their identification system prior to May 20, refuses to open its borders to Canadian beef following the investigation and report by Canadian, U.S., and international officials. Japan has threatened to refuse U.S. beef if there is a chance that Canadian beef may be transshipped through the United States. As a result, the United States did not open its border to Canadian cattle until a procedure to satisfy the Japanese was developed. Thus, the precautions that the CCIA system provided were of little value for exports once there was a case of BSE. However, the identification system was still of value to the Canadians during their investigation and is regularly used in surveillance of other animal diseases.

Summary

The Canadian cattle industry was proactive in developing and implementing a national cattle identification system. They achieved 92 to 95 percent compliance within the first few months of beginning the mandatory program, and the producers visited by the study team were supportive of the CCIA program. The cost to develop and implement the Canadian program was relatively low. CCIA received an initial grant from the federal government of \$4 million and the CCIA collects \$0.20 per tag. Two years after the start of the voluntary phase of the program, CCIA had an operating surplus of \$2 million. The cattle industry owns and controls the database, and the federal government is responsible for enforcing compliance among producers.

The CCIA system was used during the BSE investigation to find offspring from the infected herd, and it worked as designed. Currently, cattle are tagged before they leave the farm of origin and the tags are not read until the cattle are retired from the system by slaughter, export, or death. While the infected cow was born before the identification system was in place, the CCIA's current design would not have tracked the farm-to-farm movement of cattle that are sold but not slaughtered or exported. The CCIA is researching the feasibility of reading the tag number at each change of ownership. Initially, the system used bar codes on visual tags as well as RFID electronic tags. CCIA is researching different manufactures of RFID tags. The agency, most of the producers, and the packer we visited strongly encouraged the move to all RFID tags. However, having the system in place was not enough to overcome concerns of some importing countries, most notably Japan. Despite these trade bans, and with some changes based on the BSE investigation, the identification system has proven to be a valuable tool in the surveillance of BSE and other animal diseases.

The United States currently does not have a national animal identification system, but is moving toward adopting one. Canada, Australia, and the European Union have systems in place. Argentina, Brazil, and Uruguay have begun to implement national identification systems. Canada's experience (with a cattle industry approximately one-sixth the size of the U.S. industry) has brought renewed interest in animal identification in the United States, and some of the groups that were uncertain of the system before are now more supportive. A national working group on animal identification issued its report

in November 2002 and provides a framework for design, development, and implementation. The foundation of these recommendations is to assure and protect animal health, food safety, and market access for U.S. meat products. While an identification system will not prevent a disease, it can help speed containment and sustain or rebuild consumer confidence.

Appendix A

Canada – Alberta Bovine Spongiform Encephalopathy (BSE) Recovery Program Official Alberta Deficiency Payment Scale

Retroactive for sales of slaughter steers, heifers, cows or bulls, veal calves, bison and other eligible ruminants* on or after May 20, 2003. (Applicants from other provinces please refer to your provincial administration to determine the applicable deficiency payment. While the same sliding scale applies to all provinces, the program does employ regional basis calculations for western Canada versus eastern Canada in order to reflect the historic price differentials of these two markets.)

Reference Price	Market Price** as a Percentage of Reference Price	Payment Rate as a Percentage of Market Price Decline	Payment as a Percentage of Reference Price	Producer Return as a Percentage of Reference Price
100%		100		100.00
	95	90	4.50	99.50
	90	90	9.00	99.00
	85	90	13.50	98.50
	80	90	18.00	98.00
	75	90	22.50	97.50
	70	90	27.00	97.00
	65	90	31.50	96.50
	60	90	36.00	96.00
	55	90	40.50	95.50
	50	90	45.00	95.00
	45	0	45.00	90.00
	40	0	45.00	85.00
	35	0	45.00	80.00
	30	0	45.00	75.00
	25	0	45.00	70.00
	20	0	45.00	65.00
	15	0	45.00	60.00
	10	0	45.00	55.00
	5	0	45.00	50.00
	0	0	45.00	45.00

Note: August 1, 2003, version.

* Consult program guidelines for eligibility. ** Weekly Western Canadian plant average. Western Canada is defined as all provinces and territories from Manitoba and west.