

TRACKING CATTLE FROM THE RANCH TO THE PACKER: THE MONTANA BEEF NETWORK AND NATIONAL ID PILOT PROJECT

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ABSTRACT: The Montana Beef Network (MBN) was initiated in 1999 as a cooperative effort with the MT Stockgrowers Association with three objectives: 1) Beef Quality Assurance education, 2) self certification that calves followed a defined health protocol prior to sale and 3) traceability of calves from the ranch to the packing plant with the return of carcass data to the producer. A fourth objective was added during 2004 in cooperation with the MT Department of Livestock to develop ranch premise registration methodology and evaluation of new protocols for traceability of calves using hot iron brands, radio frequency identification tags (RFID), retinal scanning and plastic ear tags for disease traceback. Currently ~1,200 producers are BQA certified and more than 90,000 calves have been tagged with RFID tags or plastic ear tags since 1999. The rate of return on carcass data from the packing plant to the rancher has ranged from a low of 27% in 2002 to a high of 72% in 2004. Incomplete data return continues to be due to individuals who do not want to share feedlot data and calves being sorted into groups which are not RFID. Individual carcass data were collected on approximately 17,000 animals. Average carcass weight was 783 lb, a REA of 12.8 sq in, a back fat of .51 in, calculated YG of 3.1 and a REA/carcass weight ratio of 1.64. Survey data suggest that calves which were BQA-certified received an average \$12/head additional compared to non-certified calves. Approximately 55% of producers responded in 2003 that some form of national animal ID should to be implemented with no agreement as to whether it should be voluntary (31%) or mandatory (30%). With regard to a national disease traceback ID program, the questions that require answers include: 1) where did this animal originate from (state, ranch); 2) who has owned it (cow calf, stocker, feedlot, packer), 3) what other animals was it exposed to (eg. cograzing on public lands, mixing at auction markets, mixing prior to transportation to other states), and 4) can traceback be accomplished within 48 h of a disease confirmation? The ID pilot project is designed to address these questions.

Key Words: Traceability, Cattle, Animal identification

Introduction

What is the national need for this research and extension effort? The beef industry is becoming more consumer-focused and specific quality and consistency targets are being established in all segments of the industry. To satisfy customer concerns over food safety and quality and return additional revenue to cattle producers, a systems network must be in place to ensure that a quality and consistent product is being produced. Central to this networking approach is the exchange of information from the producer to the end user (feedlot, packing plant).

Food safety is an increasingly important issue in the food industry. It is a top five issue of concern for consumers eating beef. A systems approach utilizing individual animal identification and source and process verification will provide the information necessary to track the safety and quality of beef produced in Montana and other states. Although specific

requirements and implications from the cow-calf producer to the retailer are presently unknown, the passage of the country of origin (COOL) labeling legislation may also require some form of source verification and information transfer. Implementation is scheduled for Oct. 2006. Even though this legislation specifically prevents the Secretary of Agriculture from implementing an animal identification program, legislation has been introduced into the US Congress by Congressmen Peterson (D-MN) and Osbourne (R-NE) implement animal identification and tracking within 90d of passage of these bills.

The Montana Beef Network

The Montana Beef Network has three primary objectives; 1) educational programs aimed at meeting beef quality assurance standards, production and marketing goals and providing additional educational programs through interactive-video conferencing, 2) voluntary certification of feeder calves that have met defined management protocols and 3) information feedback from the feedlot and packing plant to the cow-calf producer showing if the feeder calves met industry requirements for quality, consistency, safety and red meat yield.

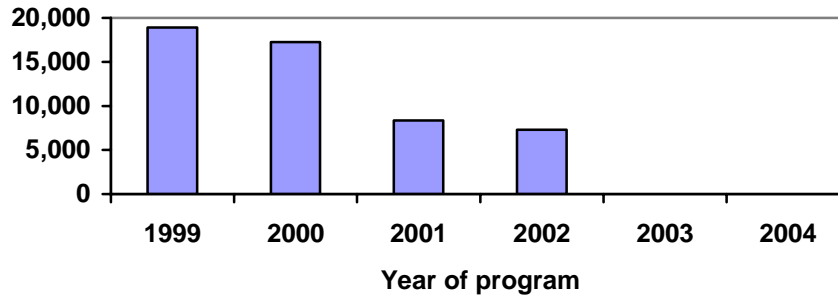
Funding was used to develop and publish training manuals and present over 200 Beef Quality Assurance educational programs in Montana so producers could certify that calves were vaccinated using a standard health management protocol. County agents were trained to provide this educational program to producers at the local level. The training has been presented to over 2000 producers in the state and more than 1100 are certified through the Montana Beef Quality Assurance program. Beef Quality Assurance education is provided to MT producers through an interactive web site (MBN.montana.edu), a textbook, or a CD. The course can be taught either in a self-study format or by county agents or beef specialists. Currently, approximately 1,000 producers have passed the BQA certification course. Additional projects completed under Objective 1 include:

- 1) initiation of a state-wide audit of ranchers to determine value-added practices related to breeding, health management, nutrition and marketing
- 2) one- to two-day short courses were held each year, in which issues pertinent to the beef industry were presented. This program is called Montana Beef University.
- 3) fourteen interactive television short courses aimed at carcass evaluation, genetic management, opportunities for backgrounding calves and marketing options have been presented over the course of the project
- 4) two state-wide television programs were presented and emphasized beef safety and drought management.

The cattle certification and tracking component of the project (objectives 2 and 3) has used electronic identification (RFID) tags for the enrolling producers and to secure the feedlot and carcass data on the calves certified in the program. Approximately 18,000 calves were certified during the first year, 17,000 the second year, 8,000 the third year, and 7,000 the fourth year (Figure 1). The difficulty convincing all the various segments of the beef industry to cooperate has resulted in a less than desirable rate of return of carcass data. This difficulty has caused some producers to drop out of the program until data recovery is improved. Changes were made to the program in 2002 to improve rate of data return through the hiring of an individual to work closely with the feedlots to make certain that we receive carcass data. The

data captured throughout the process is synthesized, presented, and explained to the producer to provide information on how they might modify their breeding and (or) management practices to improve the quality of their product.

Figure 1. Number of cattle enrolled in the Montana Beef Network (1999-2004)



During the winter of 2005, a cooperative project with Certified Angus Beef (Larry Corah) and Colorado State University (Mike King) was implemented to begin to summarize carcass data for the years of 1999 through 2003. The following table (Table 1) summarizes part of these data.

Table 1. Summary of carcass data collected from 1999-2003 for Montana calves enrolled in the Montana Beef Network (Rolfe, et al., 2005, unpublished)

Year	No. of observations for each yr	Yield Grades	Avg. distribution of YG (No. observations)	Quality Grades	Avg. distribution of QG (No. observations)	Selected carcass traits	Mean (Range)
1999	2841	1	4.33 (460)	Avg. Ch or better	35.13 (5998)	Carcass wt, lb	784 (344-1160)
2000	4990	2	33.33 (3543)	Choice -	31.45 (5369)	REA, sq. in	12.82 (7.4-18.4)
2001	1806	3	52.24 (5554)	Select	31.76 (5422)	Backfat, in	.51 (.10-1.52)
2002	2479	4	9.69 (1030)	Standard	1.02 (175)	YG	3.1 (0-6.81)
2003	5190	5	.41 (44)			REA/carcass wt	1.64 (.91-3.34)

Data on 17,306 carcasses were collected. The average carcass weight for calves was 355 kg (784 lb) with a range of 156 to 526 kg (344-1160 lb) while the average YG was 3.1 with a range of 0 to 6.81. While the REA was very acceptable (12.8 sq. in) the ratio of REA to carcass weight (1.64) does appear to suggest the need for slightly more muscling in the calves. Duffey et al. (2004, unpublished) surveyed ranchers in MT to determine how the carcass data was utilized. Table 2 summarizes how the information was used as well as selected rancher responses. The responses suggest that the data was used for information only (37%) or that producers were using the information to change bull genetics (37%). It also appears that ranchers were using the results to make culling selections (21%).

Table 2. Summary of how BQA and non-BQA certified producers utilize carcass data results (Duffey et al., 2004, unpublished)

How do you use carcass information?	BQA certified producers	Non-BQA certified producers
Information only	36	37
To cull cows	22	19
To change bull genetics	37	38
Other, please specify ^a	5	5

^a to market calves, not consistent enough to make management decisions, year to year comparison, ID the marbling cows. feedlot management for grid marketing, we need help.

From an extension programming focus, the survey by Duffey et al. (2004, unpublished) suggested that the three subject areas that need attention include marketing, nutrition and health and consumer issues related to safety, source verification and nutritional value.

Montana Pilot Project for National Animal Identification

Leann Saunders from IMI Global, Inc. suggested that the drivers for a national identification and traceability program include 1) protecting our nation's livestock herds -- preparedness for disease and bioterrorism, 2) promoting consumer confidence -- to assure export-market access and to deliver on brand promise and 3) adding value as a benefit of supply-chain management -- improving ability to capture and evaluate critical information that will improve profitability. Smith and Saunders at the International Livestock Congress in Houston (ILC, 2005) reported that traceability is a truly daunting task because we live in a world with over four billion livestock animals. Traceability of a food consists of development of "an information trail that follows the food product's physical trail. Internationally, the U.S. is lagging behind many countries in developing traceability systems for food -- in general -- and for livestock, poultry and their products -- especially. Table 3 compares several traceability programs in the world.

Table 3. Mandatory vs. voluntary traceability in global beef supply chains

<u>Country or region</u>	<u>Mandatory or voluntary program</u>
EU and Japan:	Mandatory, farm-of-origin to retail, all beef.
Australia and Brazil:	Mandatory only for exported beef, but plans for general and mandatory traceability.
Canada	Mandatory for animals moving away from farm-of-origin.
Argentina	Mandatory only for exported beef and for domestic beef produced in regions where animal diseases still persist.
USA	Voluntary at present

Souza-Monteiro & Caswell (2004) <http://www.umass.edu/resec/workingpapers.htm>.

While the present debate on National Animal ID has been focused on foreign animal disease traceback, Saunders and Smith (2005, International Livestock Congress, Houston) suggested that there are other reasons to consider animal ID and especially traceability. Table 4 summarizes their presentation on this subject.

Table 4. Identification, traceability and verification across the entire complex of the livestock and meat industries (Saunders and Smith, 2005, International Livestock Congress, Houston)

- Ascertain origin and ownership to deter theft and misrepresentation
 - Surveillance, control and eradication of foreign animal diseases
 - Biosecurity protection of the national livestock population
 - Compliance with requirements of our international customers
 - Compliance with Country of Origin Labeling requirements
 - Facilitate value-added and value-based marketing
 - Isolate food safety problems
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The Montana Pilot Project will demonstrate an individual animal identification system by tagging cattle in various management scenarios, collecting data at a variety of cattle movement or change of ownership points, and testing the ability of the system to provide 48-hour traceback at any point in the production chain. Unique characteristics of Montana and its livestock industry offer broad and varied opportunities to implement and test a national identification system. For example, Montana is a brand law state with a 545 mile border with Canada, seven tribal reservations, and nearly 35 million acres of public lands. Montana's livestock industry consists mainly of seedstock and cow-calf producers of a number of different breeds and is the sixth largest cow/calf producing state in the United States. Operations are both large and small with 40% of operations with 100-499 head and 51% with over 500 head. With few feedlots and only small packing facilities in the state, a large majority of Montana's 1.5 million calves are shipped out of state for finishing and processing. It has been estimated that approximately 65% of these calves are shipped to feedlots in Nebraska. There are 14 livestock markets in Montana and they are the second most common method for selling calves in the state behind order buyers. The objectives of this project are to 1) establish premise registration for cattle and sheep producers and 2) track interstate movement of cattle and sheep. Table 5 outlines proposed tracking treatments which will utilize RFID, hot iron brands, retinal scanning and plastic ear tags as methods of animal identification.

Table 5. Examples of disease traceability treatments for cattle which have an original premise location of Montana

<i>Scenario</i>	<i>Original Premise and Management Description</i>	<i>Marketing method from ranch (Backgrounding/ Stocker, Auction Barn, Order Buyer)</i>	<i>Feedlot Phase</i>	<i>Packing Plant</i>
1	Calves born, raised and weaned on ranch.	Shipped directly from ranch to feedlot	Calves finished in feedlot in NE	Calves harvested in CO
2	Calves born, raised and weaned on ranch	Calves shipped to OK to graze wheat pastures	Calves finished in feedlot in IA	Calves harvested in NE
3	Calves born on a ranch, cow-calf pairs commingled on federal grazing land, weaned with several other owners cattle	Calves marketed through an <u>auction barn</u> (Calves may be further commingled with calves from other owners). Calves transported to feedlot	Calves finished in feedlot in midwest	Calves harvested
4	Calves raised on Indian Reservation	Calves sold through an auction market	Calves finished	Calves harvested
5	Tracking of roping calves	Calves from MX, transported to MT and moved between MT, SD and WY	?	?
6	Tracking of cull cows	Majority of cull cows sold through auction barns	Cows sent directly to harvest <u>or</u> Cows sent to feedlot for finishing	Cows harvested
7	Calves purchased and raised in MT	Summer Stocker program in South Dakota	Yearlings transported to feedlot in NE	Yearlings harvested in NE

As the national animal ID program develops, there will be at least three questions raised in regard to numerous systems of traceability. These questions are 1) what should be the depth (eg. how far back and/or forward the relevant information is tracked) , 2) what should be the breadth (eg. the amount of information collected) and 3) how precise (the degree of assurance with which a tracing system can pinpoint a particular food product's movement or characteristics) should specific traceability systems be?