

THIS DNA TEST CAN TRACK BEEF FROM RANCH TO RETAIL

And right to the pan if anybody should want to take it that far

Partners involved in a project to evaluate a new meat identification and traceability system based on DNA analysis expect their results will confirm the value of DNA TraceBack as a marketing tool for Canadian beef at home and abroad.

DNA TraceBack was developed by IdentiGEN of Dublin, Ireland with offices in Lawrence, Kansas.

Jim Hansen, business development officer for beef livestock products with Alberta Agriculture and a member of the department's traceability team, initiated the pilot project in collaboration with IdentiGEN, Prairie Heritage Beef (PHB) and Quality Foods. This came on the heels of wrapping up the retinal scan project reported on in the June/July 2008 issue of *CANADIAN CATTLEMEN*. Like a retinal scan, DNA TraceBack is a biometric identifier. Hansen says the purpose of testing these new biometric tools is to determine whether they could be applied in Canada to add a new level of security to the country's existing traceability system.

How it works

DNA is often referred to as "nature's bar code," so the process begins by DNA profiling live animals. All that's required at the producer end is the use of a DNA sampling eartag, which simultaneously collects a small ear biopsy and identifies it with the tag. The sample is then submitted to the laboratory in Lawrence, where each animal's unique DNA code is entered into the company's database.

After that DNA taken from any tissue on an animal at any point in the supply right through to retail, even after it is cooked, can be sent to the lab to match the DNA and confirm the sample came from this particular animal. Current DNA TraceBack analysis doesn't identify traits, parentage, breed or any specific protocols (organic, natural, kosher, Angus) under which the animals were raised. However, some of these attributes can be integrated as part of the DNA TraceBack program.

An important feature of this sys-

tem is the TraceBack seal that can be attached to meat from sampled animals. "It is a proxy for quality or safety linked to the producers' and processors' affidavit," explains Don Marvin, CEO of IdentiGEN's North American operation. It also assures consumers the beef they are eating was raised according to the protocol listed on the label.

Canadian pilot project

Dennis McKerracher of High River, Alta. is the Canadian connection on IdentiGEN's business advisory board. He says the DNA TraceBack pilot project is the first of its kind (that goes from farm to fork) in Canada. "The beauty of the DNA TraceBack system is that it's not something that's still in research and development and would therefore involve a huge outlay of capital to get up and running. It's proven, it's commercial and, bar none, the lowest-cost platform of its kind in the world," he says.

The first phase of the pilot project involves taking DNA samples from live animals raised by Prairie Heritage Beef (PHB) members for sale in Quality Food stores on Vancouver Island. PHB is an alliance of 14 ranchers in Alberta and Saskatchewan, who raise cattle according to a natural beef protocol. The animals are finished on high-forage rations at Hagel Feeders near Three Hills, Alta., custom processed, then shipped to Quality Foods stores. They've been retailing PHB for nearly a year. Random DNA samples will be taken from the end-product at each of the company's 10 stores and at other points in the supply chain.

The project got underway in October when Hansen collected DNA samples from live animals scheduled to finish out in November and December. When Quality Foods' program manager of meats and delis, Colin Johnston, has been notified that the product coming to him is from animals that have been DNA sampled, he will begin taking DNA samples at the retail end. The people in the value chain will work together for several months so that everyone is comfortable with the flow of things



Don Marvin

before beginning to label the retail packages with the DNA TraceBack seal.

Phase two of the project involves conducting consumer research to gain insight into current consumer understanding of traceability in B.C. Based on the findings, a series of marketing tools centred around the PHB program and DNA TraceBack concept will be developed. Following the launch, consumer surveys will be conducted to gauge response to the DNA TraceBack label.

Part of the project involves obtaining Canadian approval for this label. The USDA verified IdentiGEN's laboratory process and approved the label for use in November of 2007. Hansen expects to have the final report of the pilot project in hand by the fall of 2009.

The potential

The ability to quickly identify animals based on DNA matches has a number of applications throughout the supply chain.

• Beef Identification

Canada's current traceability system follows the tag, not the animals or the meat. If, for example, the Canadian Cattle Identification Agency (CCIA) radio frequency identification (RFID) tag falls out, the identity of the animal

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within the system is lost. "With DNA, we can recapture the animal's identity," explains Hansen. "When an animal goes to the harvesting plant, the CCIA tag is read and recorded and each plant has its own method of following animals within its own system. The DNA project will follow the animal to the plant and right through to individual cuts at the grocery store. If there is any doubt, science will tell us 'yes they match' or 'no they don't'."

• To Return Value

McKerracher, a former hog producer and past-president of the Canadian Livestock Inspection Agency, is thrilled about the prospects for the DNA TraceBack System to extract value for the producer. "This builds off the investment producers are putting into live animal traceability today. The positive work that farmers are doing on the farm with traceability, environmental farm plans, food safety programs and breeding programs, all of which deliver on consumer requests, can now be passed through the chain to the consumer and capture value for producers," he says.

Traceability should not be viewed just as a cost, but as a tool for competitive positioning. In Canada, there is concern about access to markets and competitiveness in markets. "To me, this is about actually building a value chain where all participate as suppliers of high-quality protein for domestic and export markets. This is about putting Canada ahead of the curve," he adds.

Christoph Weder, a beef producer and marketer with PHB, says it's all about transparency. Traceability is important in the premium markets the group is pursuing. PHB does have a system in place to track product through the value chain but he says DNA TraceBack is a measure they would consider implementing if it's what their customers want. The cost would be incorporated into the final cost of their beef. He likens it to a luxury vehicle — consumers are quite willing to pay for the extras they want. DNA TraceBack would be another point of differentiation for PHB's luxury beef.

• Building Consumer Confidence

IdentiGEN's core area of expertise, genetic identification, was developed at the Institute of Genetics at Trinity College Dublin. Marvin says it was at the peak of the BSE crisis in the United Kingdom in 1996 when the scientists working on this new technology realized that it could be useful in restoring consumer confidence in beef. The DNA TraceBack system was commercialized in Europe in 2000, with Superquinn Supermarkets, a leading grocer in Ireland, being the first to adopt it. The Kansas office was opened in May 2007.

"Consumer response to the DNA Traceback label was almost immediate. Beef sales increased by 10 to 11 per cent within the first nine months to a year of its introduction and Superquinn is using the program to this day to convey marketing messages to consumers," he says. European consumer reports show an overwhelming number of consumers

want reliable information about the origin of their foods. IdentiGEN's survey to gauge the mind-set of U. S. consumers revealed that safety and freshness are of greater concern to consumers than price. Two-thirds of the respondents said they would buy more beef if they knew where it came from.

McKerracher adds that, in general, consumers view DNA as something positive, even though they may not understand the ins and outs of the testing procedure itself.

• System Audits

From a grocer's perspective, Johnston says after discussing the program in depth with people at IdentiGEN, he could find absolutely no reason not to participate in the pilot project. Sampling takes only a moment and both he and PHB will get valuable feedback in the printouts of the results.

"The extra little steps we take will make our product better at the end of the day," he adds. "This verifies that the supply system is working. It guarantees that what we're asking for is what we're getting and we can then give a 100 per cent guarantee to our customers that our beef is everything we say it is — natural (no hormones, no antibiotics) Angus beef from Western Canada.

What's really amazing is IdentiGEN's 48-hour turnaround time for DNA samples. He foresees that this could be a very valuable tool for the beef and pork industries on the whole in instances when a trace for food safety or quality reasons becomes necessary.

— Debbie Furber 

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Jaymarandy Mature Female & Bull Sale, Roblin, MB	December 12, 2008
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The Red Coat Angus Advantage Sale, Brandon, MB	December 13, 2008
Legacy Limousin Sale, Saskatoon, SK	December 14, 2008
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Hill 70 Quantock "Barn Burnin" Bull Sale, Lloydminster, SK/AB	February 7, 2009
Progressive Genetics Bull Sale, Innisfail, AB	February 27, 2009

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