



GRASS-FED BEEF FORAGING FOR A NICHE

The word "rare" describes one way of cooking beef. It also describes how often we see good news about beef.

In recent years, a number of cattle producers have been rallying behind a "throw-back" beef production method which they believe offers a number of environmental and health-related benefits.

These producers promote grass-fed beef, that is, beef from cattle raised on a steady diet of forage (grass, legumes and other forage). Up until the emergence of feedlots around World War II, virtually all cattle were raised exclusively on forage.

But since then, most Canadian beef has been grain-finished, which means the ruminant spends a few months eating high energy rations to gain weight prior to heading to the abattoir. Consumers are accustomed to buying this kind of beef in their grocery stores and recognize its bright red meat, and white marbling.

But grass-fed beef, while more auburn in colour, has a range of distinct characteristics beyond just good taste.

"This beef is generally darker in colour, but the fat and marbling level can be consistent with grain-fed beef," said Jim Lintott, president of the Manitoba Grass-Fed Beef Producers Association (MGFBPA). "It's a beef that's healthy for the consumer, healthy for the environment and healthy for the cattle."

Agriculture and Agri-food Canada (AAFC) helped fund a study of grass-fed beef's niche market potential. Results showed that price premiums are possible if marketers communicate ongoing research results regarding health benefits.

In addition to the nutrients associated with conventional beef, grass-fed beef contains higher levels of omega-3 fatty acids¹ and conjugated linoleic acid (CLA)²; both of which are beneficial to health.

Emerging science suggests that CLA may have antioxidant and anticancer properties³. Some preliminary studies have also found that CLA improves blood lipid profiles⁴, which affects such things as heart health, cholesterol and diabetes, and may reduce body fat in animals and humans.

More research is needed to confirm these potential health benefits but initial results are promising.

Dr. Joel Bohemier is a healthcare professional in Winnipeg and an avid promoter of grass-fed beef to his patients.

"I recently presented at a health seminar to over one thousand people where we specifically encouraged people to consume grass-fed beef," said Dr. Bohemier. "It's a key recommendation we make to everyone." Dr. Bohemier emphasizes that science has documented that the fat ratios of omega 6 to omega 3 in grass-fed beef is around 4:1⁵, which is what is recommended by the World Health Organization.

"Burgers can be one of the healthiest foods you eat because they can contain all basic food groups," he said. "But burgers have to be prepared with the right ingredients."

Backgrounding for success

Cattle producers are working with researchers to develop forage systems that keep cattle steadily gaining weight through periods when forage has previously been in short supply.

AAFC researchers Dr. Shannon Scott and Dr. Byron Irvine from Manitoba's Brandon Research Centre are collaborating with Dr. Vern Baron at Alberta's Lacombe Research Centre to build a forage chain that lengthens grazing periods while minimizing down-times in forage availability.

"We've been developing a forage management package," said Dr. Scott. "This would help producers make the most of their resources while helping them minimize costs. We're finalizing tests on forage crops like summer and winter triticale, foxtail millet, sorghum and hairy vetch."

In addition to this research, grass-fed producers are also exploring ways of optimizing their product both before and after slaughter.

"We're developing a way of ensuring beef tenderness before it gets to the market place," said MGFBPA president Jim Lintott. "We're also working to breed better animals that will thrive in our climate and soil composition while producing the best, consistent product."

Although Lintott suggests that older cattle provide better taste, mainly young cattle are used for commercial cuts, and the meat is hung for a period of up to 21 days. "Dry-aging allows the flavour to come out," said Lintott. "It also gives us a leg-up on tenderness." He adds that the amount of marbling is what determines how long carcasses are dry-aged. In addition, certain cuts that dry-age faster, like the flank steak and short ribs, are removed early.

"Customers at farmers' markets often ask us about dry aging," he said. "It's something that educated consumers look for and appreciate."

Lintott finds that heifers finish faster and easier on grass, while steers finish better on grain.

"Heifers keep all of their natural hormones, which might explain why they're more suited to a natural forage diet," he said. "We often keep young bulls on grass for awhile until we castrate them, then they're more suited for grain finishing. But the goal is get animal genetics to a point where steers finish well on grass too."

Animal treatment

Similar to organic or natural beef producers, grass-fed producers tout their beef as being raised without hormones, antibiotics or animal by-products.

Jonathan Bouw farms near Anola, Manitoba. He and his family once operated a 1,000 head feedlot, but have been recently transitioning to organic and grass-fed farming practices.

"Our feedlot confined the animals in a more controlled environment," Bouw explained. "But now our animals move more freely as they make it through to finishing weight."

Bouw recently joined a team of cattle-industry stakeholders on a trip to Argentina, a country famous for its grass-fed beef. There he gained insights into the genetics that go into optimal grass-fed beef production.

"Our breeding herd is mostly Angus animals, which have shorter legs, smaller frames and finer bones," he said. "They also have a greater chest girth, more like a barrelled chest to accommodate larger stomachs and better circulation through the organs." But Bouw notes that smaller animals don't fit into the prevalent mould of the conventional cattle industry.

"Processors are set up to handle larger sized animals," he said. "It's not as economical for them to take these smaller cattle, partially because they produce less meat overall. It's also necessary to segregate our animals so that we can track our beef from beginning to end. And all of this interrupts regular processing."

MGFBPA president Jim Lintott expressed similar concerns over the processing challenges in Canada. "Larger retail grocery stores have a strong preference for beef that is processed in federally inspected plants," said Lintott. "And right now we're too much of a niche product to regularly put our animals through these facilities."

Most Canadian grass-fed beef is currently processed in provincially inspected plants and producers generally market directly to customers or sell to restaurants.

Time will tell if this alternative beef option becomes mainstream.

ⁱ P. French, C. Stanton, F. Lawless, E. G. O'Riordan, F. J. Monahan, P. J. Caffrey, and A. P. Moloney (2000) Fatty acid composition, including conjugated linoleic acid, of intramuscular fat from steers offered grazed grass, grass silage, or concentrate-based diets retrieved on April 30, 2009 from <http://www.csuchico.edu/agr/grassfedbeef/health-benefits/sources/Wood%20JD%20PDF.pdf>

ⁱⁱ Wood JD, Enser M. (1997) Factors influencing fatty acids in meat and the role of antioxidants in improving meat quality retrieved on April 30, 2009 from <http://www.csuchico.edu/agr/grassfedbeef/health-benefits/sources/Wood%20JD%20PDF.pdf>

ⁱⁱⁱ P. French, C. Stanton, F. Lawless, E. G. O'Riordan, F. J. Monahan, P. J. Caffrey, and A. P. Moloney (2000) Fatty acid composition, including conjugated linoleic acid, of intramuscular fat from steers offered grazed grass, grass silage, or concentrate-based diets retrieved on April 30, 2009 from <http://www.csuchico.edu/agr/grassfedbeef/health-benefits/sources/French P 6.pdf>

^{iv} Clement Lp, Ph.D., Joseph A. Scimeca, Ph.D., Henry J. Thompson, Ph.D. (1994) Conjugated linoleic acid. A powerful anticarcinogen from animal fat sources retrieved on April 30, 2009 from <http://www3.interscience.wiley.com/journal/112675492/abstract?CRETRY=1&SRETRY=0>

^v R. Kloss, J. Linscheid, A. Johnson, B. Lawson, K. Edwards, T. Linder, K. Stocker, J. Petite and M. Kern (2005) Effects of conjugated linoleic acid supplementation on blood lipids and adiposity of rats fed diets rich in saturated versus unsaturated fat retrieved on May 4, 2009 from <http://linkinghub.elsevier.com/retrieve/pii/S1043661805000150>

^{vi} Ulf Risérus, MMED, Peter Arner, MD, PHD, Kerstin Brismar, MD, PHD and Bengt Vessby, MD, PHD (2002) Treatment With Dietary trans-10cis-12 Conjugated Linoleic Acid Causes Isomer-Specific Insulin Resistance in Obese Men With the Metabolic Syndrome retrieved on April 30, 2009 from <http://care.diabetesjournals.org/cgi/content/full/25/9/1516>

To learn more about research conducted by AAFC scientists, please visit:

www.agr.gc.ca/scienceandinnovation.com.