

Deborah L. Roeber

Assistant Professor

Appointment 50% Research, 50% Extension

Research Area Pre-Harvest Mgmt for Improved Meat Quality & Safety

Appointment History 2002-present Assistant Professor

Graduate Program Affiliations

Animal Sciences – Member/Advising

Professional and Honorary Societies

Member, National Cattlemen's Beef Association

Member, Minnesota State Cattlemen's Association

Member, American Meat Science Association (AMSA)

Member American Society of Animal Science

Five Most Significant Publications

Roeber, D.L., K.E. Belk, T.E. Engle, T.G. Field, S.R. Koontz, J.A. Scanga, J.D. Tatum, G.L. Mason, D. Van Metre, F.B. Garry, and G.C. Smith. 2003. The effect of vitamin E supplementation on discoloration of injection-site lesions in retail cuts and the greening reaction observed in injection-site lesions in muscles of the chuck. *J. Anim. Sci.* 81:1885-1894.

This publication outlined the beginning of the investigation behind the discoloration of steaks and roasts in case-ready beef products in stores such as Wal-Mart. The publication is significant because this is the first study that recreated the problem and investigated potential causes for the discoloration.

Roeber, D.L., R.C. Cannell, W.R. Wailes, K.E. Belk, J.A. Scanga, J.N. Sofos, G.L. Cowman, and G.C. Smith. 2002. Frequencies of injection-site lesions in muscles from rounds of dairy and beef cow carcasses. *J. Dairy Sci.* 85:532-536.

This publication outlines the importance of proper location of injections in beef and dairy cows. The publication is significant because it documented the difference between placement of injections in beef and dairy cows, and enabled quality assurance programs for beef and dairy producers to pinpoint the exact issue of which each species was dealing.

Roeber, D.L., K.E. Belk, J.D. Tatum, J.W. Wilson, and G.C. Smith. 2001. Effects of three levels of α -tocopheryl acetate supplementation to feedlot cattle on performance of beef cuts during retail display. *J. Anim. Sci.* 79:1814-1820.

This publication outlines the impact of vitamin E supplementation on the case life of retail beef cuts. This is significant because it documented the value behind vitamin E supplementation to retailers and subsequently influenced producers to the potential income benefits to feeding vitamin E for packers.

Roeber, D.L., N.C. Speer, J.G. Gentry, J.D. Tatum, C.D. Smith, J.C. Whittier, G.F. Jones, K.E. Belk, and G.C. Smith. 2001. Feeder cattle health management: Effects on morbidity rates, feedlot performance, carcass characteristics and beef palatability. *Prof. Ani. Sci.* 17:39-44.

This publication outlined the importance of a vaccination program for calves. The publication is significant because it describes the differences in grade and profit/loss in healthy cattle as compared to cattle that visit the hospital/treatment pen throughout the feedlot phase.

Roeber, D.L., R.C. Cannell, K.E. Belk, R.K. Miller, J.D. Tatum, and G.C. Smith. 2000. Implant strategies during feeding: Impact on carcass grades and consumer acceptability. *J. Anim. Sci.* 78:1867-1874.

This publication was the first implant strategy research project that utilized a consumer taste panel to evaluate if implants had a detrimental effect on the tenderness of beef products. The publication is significant because it documented that consumers can detect tenderness differences even within a group of carcasses that a majority grades Choice – or higher.

Refereed Journal Publications and Book Chapters (Last Five Years)

Authored or co-authored the following 12 papers in peer-reviewed journals.

- McKenna, D.R., **D.L. Roeber**, P.K. Bates, T.B. Schmidt, D.S. Hale, D.B. Griffin, J.W. Savell, J.C. Brooks, J.B. Morgan, T.H. Montgomery, K.E. Belk, and G.C. Smith. 2002. National Beef Quality Audit – 2000: Survey of targeted cattle and carcass characteristics related to quality, quantity, and value of fed steers and heifers. *J. Anim. Sci.* 80:1212-1222.
- Roeber, D.L.**, R.C. Cannell, W.R. Wailes, K.E. Belk, J.A. Scanga, J.N. Sofos, G.L. Cowman, and G.C. Smith. 2002. Frequencies of injection-site lesions in muscles from rounds of dairy and beef cow carcasses. *J. Dairy Sci.* 85:532-536.
- Roeber, D.L.**, K.E. Belk, T.E. Engle, T.G. Field, S.R. Koontz, J.A. Scanga, J.D. Tatum, G.L. Mason, D. Van Metre, F.B. Garry, and G.C. Smith. 2002. The effect of Vitamin E supplementation on discoloration of injection-site lesions in retail cuts and the greening reaction observed in injection-site lesions in muscles of the chuck. *J. Anim. Sci.* 81:1855-1894.
- Roeber, D. L.**, D.R. McKenna, P.K. Bates, T.B. Schmidt, K.E. Belk, T.G. Field, J.W. Savell, J.B. Morgan, T.H. Montgomery, and G.C. Smith. 2002. The 2000 National Beef Quality Audit: The views of producers, packers, and merchandisers on current quality characteristics of beef. *P. Anim. Sci.* 18:112-119.
- Wyle, A.M., D.J. Vote, **D.L. Roeber**, R.C. Cannell, K.E. Belk, J.A. Scanga, M. Goldberg, J.D. Tatum, and G.C. Smith. 2002. Effectiveness of using the SmartMV prototype BeefCam system to sort beef carcasses into expected palatability groups. *J. Anim. Sci.* 81:441-448.
- Roeber, D.L.**, K.E. Belk, J.D. Tatum, J.W. Wilson, and G.C. Smith. 2001. Effects of three levels of α -tocopheryl acetate supplementation to feedlot cattle on performance of beef cuts during retail display. *J. Anim. Sci.* 79:1814-1820.
- Roeber, D.L.**, R.C. Cannell, K.E. Belk, J.A. Scanga, G.L. Cowman, and G.C. Smith. 2001. Incidence of injection-site lesions in beef top sirloin butts. *J. Anim. Sci.* 79:2615-2618.
- Roeber, D.L.**, P.D. Mies, C.D. Smith, K.E. Belk, T.G. Field, J.D. Tatum, J.A. Scanga, and G.C. Smith. 2001. National Market Cow and Bull Beef Quality Audit – 1999: A survey of producer related defects in market cows and bulls. *J. Anim. Sci.* 79:658-665.
- Roeber, D.L.**, N.C. Speer, J.G. Gentry, J.D. Tatum, C.D. Smith, J.C. Whittier, G.F. Jones, K.E. Belk, and G.C. Smith. 2001. Feeder cattle health management: Effects on morbidity rates, feedlot performance, carcass characteristics and beef palatability. *Prof. Ani. Sci.* 17:39-44.
- Speer, N.C., C. Young, and **D. Roeber**. 2001. The importance of preventing Bovine Respiratory Disease: A Beef Industry Review. *Bovine Prac.* 189-196.
- Roeber, D.L.**, R.C. Cannell, K.E. Belk, R.K. Miller, J.D. Tatum, and G.C. Smith. 2000. Implant strategies during feeding: Impact on carcass grades and consumer acceptability. *J. Anim. Sci.* 78:1867-1874.
- Roeber, D.L.**, R.C. Cannell, K.E. Belk, J.D. Tatum, and G.C. Smith. 2000. Effects of a unique application of electrical stimulation on tenderness, color and quality attributes of the beef longissimus muscle. *J. Anim. Sci.* 78:1504-1509.

Proceedings and Invited Lectures (11)

- Animal Science 4609. "Preharvest Quality Assurance." 1 lecture (October 2003).
- Animal Science 1511. "Structure and Composition of Animal Tissues." 2 lectures (October 2003).
- Animal Science 1511. "Growth and Development of Carcass Tissues." 1 lecture (October 2003).
- Animal Science Beef Production. "Quality and consistency challenges in the beef industry." 1 lecture (March 2003).
- Animal Science Advanced Beef Production. "Quality and consistency challenges in the beef industry." 1 lecture (March 2003).
- Animal Science Departmental Seminar. "Beef Chain Management for Improved Meat Quality." 1 lecture (September 2003).
- Food Science 4131. "Beef Quality Control." 1 lecture (November 2003).
- Veterinary Feedlot Rotation. "Beef Quality Challenges." 1 lecture (October 2003).
- Veterinary Dairy Biosecurity Rotation. "Injection Site Lesion Demonstration" and "Evaluation of the dairy industry beyond production." 4 lectures (2-April 2003, 2-May 2004).
- Veterinary Public Health Rotation. "The quality and safety challenges in the beef industry." 5 lectures (August 2003, September 2003, October 2003, November 2003, March 2004).
- Colorado State University Integrated Resource Management Course. "Value of Preconditioning Cattle." 1 distance education lecture (February 2003).

Funding (Last Five Years) – \$106,568

- UMN Grad School Grant in Aid.** Impact of feeding distillers grains on sensory traits and color stability of beef. 2004-05. \$26,040.
- CSU/National Sheep Industry Improvement Center.** Sheep safety and quality assurance. 2004-05. \$12,000.
- Minnesota Beef Council.** Evaluation of strategies to remove specified risk materials (SRM), especially dorsal root ganglia, from spinal columns in order to salvage the value of market cow and bull muscle cuts. 2004-05. \$24,250.
- Iowa Corn Promotion Board.** Feeding distillers dried grains. 2003-05. \$25,628.
- Elanco Animal Health.** Carcass Merit Program tenderness evaluation. 2004. \$3,500.
- National Cattlemen's Beef Association, Integrated Resource Management Program.** University of Minnesota Beef Team Educational IRM Web Cast. 2003. \$1,500.
- Pfizer Animal Health.** Integrated Resource Management Web Cast Programming Series. 2003. \$750.
- National Cattlemen's Beef Association, Beef Quality Assurance Program.** Technology enhanced quality assurance educational delivery evaluation. 2002-03. \$8,000.
- National Cattlemen's Beef Association, Beef Quality Assurance Program.** Development of a Beef Carcass Quality 101 producer educational workshop. 2002-03. \$4,900.

Graduate Student and Post-doctoral Supervision - Current Advisees

Rebeka K. Gill M.S. Animal Sciences

Courses Taught (Last Five Years)

Designator	Name	Credits	% Effort	Term	Year
VMED 8195	Pre-Harvest Food Safety and Public Health Aspects of Food Animal Production	1-3	20%	Spring	2004
Public Health Summer Inst.	Global Beef Systems (2-day course)	.5	33%	Summer	2004

Service

Member, Kid's Kick Off Food Safety Event Committee, 2003, 04
 Member, Youth Quality Assurance Committee
 Member, Reciprocal Meats Conference Planning Committee, AMSA
 Member, Next Generation of the Professorate Program
 Lloyd's Registered Quality Assurance ISO 9000 Lead Auditor
 Co-Coordinator, UM Academic Quadrathon Meat Science Section
 Reviewer, *Journal of Dairy Science*, *Journal of Animal Science*
 Judge, National Block & Bridle Annual Award, 2003
 Judge, National Block & Bridle Outstanding Senior, 2003, 04
 Judge, National Block & Bridle Web Pages, 2004
 Ex Officio Member, Minnesota Association of Meat Processors Board of Directors

Extension Activities (Last Five Years)

Program Team Involvement and Goals

The major programs include:

Enhancing and Sustaining Visibility between the MN Beef Industry and the U of MN

- **Beef Education Team, Member**

Audience: MN beef stakeholders, beef cattle producers and consumers

Goals:

- Plan and implement educational programs to address industry issues.
- Educate on economic and management strategies to enhance sustainability of MN beef farms, create value-added opportunities.
- Create research partnerships between the U of MN and producers, the MN Beef Cattle Improvement Association, the MPCA, and the MDA .
- Participate in multi-state, multi-region or national Extension programs.

- **Minnesota Beef Industry Center (MBIC), Member**

Audience: MN beef industry organizations, beef producers, youth and consumers

Goals:

- Provide leadership and support to state beef industry organizations and consumers.
- Coordinate efforts and resources of beef industry and allied organizations.
- Serve as liaison for partnership between the U of MN and the beef industry.
- Garner resources for research and education for beef industry issues.
- Encourage and enhance beef industry and producer education efforts with youth, and consumer and producer audiences.

- **Minnesota State Cattlemen's Association (MSCA) Annual Convention and Tour, Contributor**

Audience: MSCA members and allied industry

Goals:

- Enhance and sustain visibility between the MN beef industry and the U of MN.
- Serve as liaison between the U of MN and cattle producers.
- Receive feedback from MSCA on emerging issues.
- Develop and implement educational programs.

- **Minnesota Beef Expo Educational Program, Contributor/Committee Member**

Audience: Beef cattle producers, youth interested in beef production and management

Goals:

- Provide a unique opportunity for bringing together cattle producers and beef-specific agribusiness in a central location to promote the beef industry.
- Provide an educational program to update producers knowledge and experience in application of new technologies.

- **Minnesota 4-H Beef Program, Contributor, State Fair Show Committee**
Audience: 4-H youth
Goals: Promote interest in the Beef industry and support 4-H beef showmanship competitions.

Serving Minnesota Beef Stakeholders and Consumers through Beef Education

- **Minnesota Agricultural Experiment Station Outreach Programs, Contributor**
Audience: Beef cattle producers
Goal: Enhance coverage and perception of the beef extension effort, provide research and extension materials to producers through field days, allow first-hand experience of management practices in operation at the NCROC.
- **Beef Management Workshops, Contributor**
Audience: Beef cattle producers
Goal: Support the immediate needs of cattlemen in the form of day-long workshops. Present information on beef quality and safety.
- **Beef Cattle Production Seminars, Contributor**
Audience: cow-calf and feedlot producers (45 seminars in '03, over 1,000 producers)
Goal: Provide information on cow-calf and feedlot management issues such as effective uses of the CIDR in AI programs, factors affecting reproductive performance in beef cows, quality assurance, grid marketing, BSE, county-of-origin labeling, meat quality and safety, and the future direction of the beef cattle industry.

Creating Value-Added Opportunities for Minnesota Cattle

- **Minnesota Beef Quality Assurance Program, Contributor**
Audience: MN beef and dairy cattle producers (300 producers enrolled annually)
Goal: Provide an educational program to certify MN beef and dairy producers on the basics of QA, and to help producers implement QA practices on their farms.
- **Minnesota Carcass Merit Program, Contributor**
Audience: Beef cattle producers
Goal: Evaluate genetic and management program impacts on performance of MN-raised beef calves in the feedlot and at harvest.

Product Development (selected materials developed)

- MBIC Center web site. This virtual center of educational resources for cattle producers, provides links to state and federal agencies, industry organizations, and offers direct contact with members of the Beef Education Team.
- Just-In-Time Education: BSE: The Facts of the Washington Case and the Science of BSE and CWD.
- Data obtained the Carcass Merit Program are formatted to create data sets of cattle, which are used to expose students to basic principles of cattle feeding.
- Carcass Merit Program Survey
- Carcass Merit Program promotional material
- Meat Quality and Safety Workshop program and marketing materials
- Training session for Beef Quality Assurance Train-the-Trainer Workshops
- COOL (County-Of-Origin-Labeling) Runnings news

Program Delivery Events

Programs are delivered in a variety of formats including annual programs, workshops (classroom and on-farm), lectures, seminars, and county and regional meetings. Extension education materials are also

presented at ROC field days, cattlemen's tours, the MSCA Annual Convention, the Minnesota Beef Expo and similar events. Some examples include:

- Minnesota Beef Quality Assurance.
- Minnesota Association of Meat Processors Fall Forum.
- Association of Meat Processors Annual Tri-State Convention.
- Minnesota Cattle Feeder Days.
- Minnesota Cow/Calf Days.

Program Evaluation and Measurable Impacts

- More profitable and satisfied beef producers.
- Consumers feel safer and more comfortable about the beef they eat.
- Increased understanding of factors that affect production processes and profitability.
- Enhanced ability to make technical decisions based on economic considerations.

Extension Scholarship

Proceedings (7)

Roeber, D.L. 2004. Current issues, including BSE, and biosecurity concerns affecting beef cattle operations. *In: Proc., Minnesota Cow-Calf Days, University of Minnesota.* pp 1-9.

Roeber, D.L. 2003. Carcass defects and quality marketing management for beef cows. *In: Proc., Minnesota Cow-Calf Days, University of Minnesota.* pp. 1-12.

Roeber, D.L. and W.J. Umberger. 2003. Economic value of preconditioning programs in beef production systems. *In: Proc., Minnesota Cow-Calf Days, University of Minnesota.* pp. 72-80.

Roeber, D.L. 2003. Meat quality and dairy veterinary practice. *In: Proc., Minnesota Dairy Herd Health Conference, University of Minnesota, College of Veterinary Medicine.* pp. 167-184.

Roeber, D.L. 2003. Nutrition and management manipulations to enhance consumer appeal and safety of beef. *In: Proc., Minnesota Nutrition Conference, University of Minnesota, College of Agricultural, Food and Environmental Sciences.*

Smith, G.C., **D.L. Roeber**, K.E. Belk, J.A. Scanga, J.N. Sofos, and G.L. Cowman. 2003. Injection-site lesions in market beef. *In: Conference Notes, 75th Annual Western Veterinary Conference – 2003 (Las Vegas, NV).* 75 (VET-504):1-3.

Roeber, D.L. 2002. Results and implications of the National Beef Quality Audit (B-487). *Proc., Cattle Feeder Report, University of Minnesota.* pp. 35-41.

Popular press:

Roeber, D.L. 2003, 2004. Ask the U. *In: Minnesota Association of Meat Processors monthly newsletter.*

Roeber, D.L. 2003. Adding more dimension to Beef Quality Assurance. *Beef Producer.* December 2002/January 2003. pp. 8-9.

Interview, Fox 9 Nightly News Investigation Team on the quality and safety of door to door meat sales, 2004.

Interview, Austin Local Programming Network on the impact and logistics of Country-of-Origin Labeling, 2003.