

Alfredo DiCostanzo

Associate Professor

Appointment 25% Teaching, 70% Extension, 5% Service

Research Area Beef Cattle Nutrition and Management

Appointment History 1999-present Associate Professor
1993- 1999 Assistant Professor

Graduate Program Affiliations

Animal Sciences – Senior Member

Professional and Honorary Societies

Member, American Society of Animal Science

Member, American Registry of Professional Animal Scientists

Five Most Significant Publications

Dahlen, C.R., C.M. Zehnder, K.A. Hachmeister, M.E. Dikeman, A. DiCostanzo, G.C. Lamb, L.R. Miller, and H. Chester-Jones. 2004. Effects of including malting industry byproducts in feedlot diets on performance and beef quality. *Prof. Anim. Sci.* (accepted for publication).

Malting byproducts, including bio-solids derived from steeping grain and washing processing lines, can provide a significant contribution to feeding up to 250,000 finishing cattle in the Upper Midwest. When one considers that the value of these byproducts is currently low, or actually negative, as is the case of bio-solids, the significance of these findings is tremendous.

DiCostanzo, A. 2003. Use of corn distillers' grains in feedlot cattle diets. MN Cattle Feeder Day Rep. B-493.

Data obtained from studies reported in university research reports and refereed journals were pooled to study effects of wet and dry distillers' grains and condensed distillers' solubles on feedlot performance and carcass traits. Results from this compilation led to determination of optimum inclusion levels for each of these feeds.

DiCostanzo, A. and C.R. Dahlen. 2003. Making breeding decisions based on production goals. In: Proc. 3rd Annual Florida Cow/Calf Seminars. University of Florida. IFAS. pp 1-10.

This publication geared to producers and allied industry representatives focuses on genetic, nutrition and management factors that determine quality grade of carcasses, and how cow-calf, cattle feeders, and packers contribute to or detract from these. Impact of marketing under formula or grid contracts on decisions to purchase bulls, and apply crossbreeding schemes are discussed.

DiCostanzo, A. and C.M. Zehnder. 2000. Estimation of protein requirements of feedlot steers. *Prof. Anim. Sci.* 15:11-123.

Up to the time of this publication, feedlot nutritionists and researchers believed that use of aggressive implant strategies in feedlot steers increased protein requirements. Compilation of research data conducted for this publication led to the discovery that metabolizable protein requirements of feedlot cattle implanted with trenbolone acetate actually are lower than those of

steer implanted with less aggressive growth promotants. Since that time, protein requirements for feedlot cattle can be fine-tuned to feed approximately 1,250 g crude protein/head/day throughout the feeding period.

Zehnder, C.M., A. DiCostanzo, K. Thate, R. Gilland, M.J. Murphy, and T.r. Halbach. 2000. Health and environmental implications of using composted household and yard waste in a cattle feedlot. *J. Anim. Sci.* 78:495-503.

Composted municipal solid waste can either be applied as fertilizer or as ground filler. However, because of accumulation of municipal solid waste is increasing, alternative uses needed to be investigated. This study clearly demonstrated that composted municipal solid waste can be effectively used as bedding material without detrimental effects on performance or health of yearling cattle. Furthermore, there was no indication of accumulation of regulated elements beyond action level concentrations.

Refereed Journal Publications and Book Chapters (Last Five Years)

Authored or co-authored 4 papers in a peer-reviewed journal.

Dahlen, C.R., C.M. Zehnder, K.A. Hachmeister, M.E. Dikeman, **A. DiCostanzo**, G.C. Lamb, L.R. Miller, and H. Chester-Jones. 2004. Effects of including malting industry byproducts in feedlot diets on performance and beef quality. *Prof. Anim. Sci.* (accepted for publication).

DiCostanzo, A. and C.M. Zehnder. 2000. Estimation of protein requirements of feedlot steers. *Prof. Anim. Sci.* 15:11-123.

Zehnder, C.M., **A. DiCostanzo**, K. Thate, R. Gilland, M.J. Murphy, and T.r. Halbach. 2000. Health and environmental implications of using composted household and yard waste in a cattle feedlot. *J. Anim. Sci.* 78:495-503.

Dahlen, C.R., G.C. Lamb, C.M. Zehnder, L.R. Miller, and **A. DiCostanzo**. 2003. Fixed-time artificial insemination in peripubertal, lightweight replacement heifers after estrous synchronization with PGF_{2α} and GnRH. *Theriogenology* 59:1827-1838.

Awards

Nominated for Extension Outstanding Service Award, 2000

Outstanding Teacher Award, COAFES Student Board, 2000

Proceedings and Invited Lectures

DiCostanzo, A. and C.R. Dahlen. 2003. Making breeding decisions based on production goals. *In: Proc. 3rd Annual Florida Cow/Calf Seminars.* University of Florida. IFAS. pp. 1-10.

Miller, L.R., W.A. Head, N.C. Hansen, C.R. Dahlen, and **A. DiCostanzo**. 2001. The impact of dietary protein manipulation on feedlot nitrogen balance. *In: Proc. 2nd International Nitrogen Conf.* Bolger Conference Center, Potomac, MD.

Funding (Last Five Years) – \$91,172

Camas Inc. Ongoing gifts. \$60,925.

Iowa Corn Promotion Board. Feeding distillers dried grains. D. Roeber (PI). 2003-05. \$25,628.

Mille Lacs Meadows Ranch Inc. Gift. 2003. \$1,380.

Rahr Malting. Gift. 2001-03. \$19,576.

Balchem. Gift. 2002. \$7,291.

Roche Vitamins. Gift. 1999. \$2,000.

Dissertations and Theses (Last Five Years)

Name	Program	Degree	Thesis Title
James M. Cassady	Animal Sciences	M.S.	Initial body composition modulates reproductive response of heifers to nutritional manipulation.
Carl R. Dahlen	Animal Sciences	M.S.	Alternative management strategies in beef production systems.
Lance R. Miller	Animal Sciences	M.S.	Effects of protein supplementation on performance and nitrogen balance in cattle and sheep feedlots.
Darren G. Standorf	Animal Sciences	M.S.	Evaluation of alternative protein supplements in beef cattle diets.
Chad M. Zehnder	Animal Sciences	Ph.D.	Evaluation of alfalfa leaf meal as a protein source in beef cattle diets.

Graduate Students and Post-doctoral Supervision - Current Advisees

Nicolas Di Lorenzo (co-advise)	M.S.	Animal Sciences
Jamie E. Larson (co-advise)	M.S.	Animal Sciences
Kevin N. Thielen (co-advise)	M.S.	Animal Sciences

Courses Taught (Last Five Years)

Designator	Name	Credits	% Effort	Term	Year
AnSc 4403	Ruminant Nutrition	3	17%	Spring	2000-2004
AnSc 4603	Beef Production Systems Mgmt	4	80%	Spring	2000-2004
AnSc 4613	Advanced Beef Production Sys Mgmt	2	100%	Spring	2000-2004
AnSc 8311	Animal Bioenergetics	3	33%	Fall	2001
AnSc 8312	Protein Metabolism	4	33%	Fall	2002

Service

Advisor, Grazing Lands Conservation Initiative, Nat. Res. Conservation Srv. Initiative
 Reviewer, Prof. Animal Sci.
 Editorial Board, Journal of Animal Science
 Editorial Board, Journal of Animal Science
 Member, Minnesota Nutrition Conference Committee
 Member, Graduate Student Paper Competition – Midwest Section ADSA/ASAS

Service to National and Regional Research Committees

Member, NCR-206 – Nutrition and Management of Feedlot Cattle to Optimize Performance, Carcass Value and Environmental Compatibility
 Member, NCR-185 – Optimizing Nutrient Intake by Feedlot Cattle for Growth, Retail Product and Environmental Concerns

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), Chair, Advisory Board**

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**

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.

Serving Minnesota Beef Stakeholders and Consumers through Beef Education

- **Minnesota Cattle Feeder Days (MCFD), Coordinator**

Audience: Beef cattle producers, feedlot operators, and industry representatives (professional cattle feeders in the state representing ~200,000 head)

Goal: Producer education focusing on economic and management strategies to enhance sustainability and profitability of beef feedlot operations.

- **Minnesota Beef Cow/Calf Days, Contributor**

Audience: Beef cow-calf producers and beef cattle industry representatives

Goal: Cow-calf producer education focusing on nutrition, reproduction, quality assurance and management of cow herds across the state.

- **Self-Education Beef Course Series, Contributor**
Audience: Part-time or small beef producers from MN, WI, OH, ND, SD, and other neighboring states (over 2,500 participants since 1997)
Goal: Provide beef cattle management education for improved sustainability and profitability to producers who are unable to take advantage of traditional outreach opportunities.
- **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, Member, planning group**
Audience: Beef cattle producers
Goal: Support the immediate needs of cattlemen in the form of day-long workshops.
- **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 Assured Feeder Calf Sales**
Audience: MN beef cow-calf producers
Goal: Enhance marketing options for beef cow-calf producers, facilitate feedback among the various sectors of the beef industry, promote the application of beef QA practices to increase the appeal of NW MN feeder cattle, promote profitability and growth of the MN beef industry.
- **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.
- **Cow Herd Appraisal of Performance Software (CHAPS), Co-Coordinator**
Audience: Beef cattle producers and others interested in using CHAPS software
Goal: Software package designed to summarize and benchmark production performance of cow-calf enterprises. Participants receive annual reports of performance productivity that compare their herd against a state-based benchmark.

Extension Programs for Non-traditional Audiences

- **Twin Cities Farm Adventures Summer Day Camp (1999, 2000, 2001)**
Audience: Children (grades K through 8) with an interest in learning about agriculture
Goal: Introduce children to MN farm animals and plants with fun, hands-on activities, increase awareness and understanding of agriculture among the general public, and increase interest in careers in agriculture by youth.

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.
- The Minnesota Cattle Feeder Report. Proceedings and updates on beef research at the U of MN. Published and distributed to MCFD participants. A 2003 commemorative CD containing articles since 1993, was produced (10-yr anniversary of MCFD) under the direction of Dr. A. DiCostanzo.
- A set of standards of quality was developed for the Minnesota Beef Quality Assured Feeder Calf Sales program in collaboration with a group of industry representatives.
- 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.
- Home study course lessons were developed for each of the six topics in the Self-Education Beef Course Series. The lessons are available on-line as well as in print.
- Curriculum developed for the Twin City Farm Adventures summer day camp. 3 program levels: Farm Hand, introductory; Ag Explorers, 2nd-4th grades; and Ag Adventurers, 4th -8th graders. In 2000, 4 new topics were added: agronomy, soils, insects, and weather.
- WINTERING COW: An Excel spreadsheet to balance winter beef cow rations, and evaluate winter feeding programs on annual cow cost and calf break-even price. A first of its type, this program has been well received by U.S. and Canadian producers, allied industry professionals, and extension personnel.

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 Cattle Feeder Days, annually, 4 locations in MN.
- Minnesota Beef Quality Assured Feeder Calf Sales, over 200 meetings each year.
- Twin City Farm Adventures (2001) offered eight 1-week summer day camp sessions.
- Tri-State Beef Days (2000), Dubuque, IA and Spring Grove, MN. Two presentations at both locations.

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 and Extension Reports (14):

DiCostanzo, A. 2003. Use of byproducts to meet the nutritional needs of the cowherd. 2003 MN Beef Cow/Calf Rep. pp. 13-27.

DiCostanzo, A. 2003. Use of corn distillers' grains in feedlot cattle diets. 2003 MN Cattle Feeder Rep. B-493.

Lamb, G.C., D.R. Brown, R. Wasson, J.E. Larson, C.R. Dahlen, and **A. DiCostanzo.** 2003. Preliminary Report: Effect of trace mineral nutrition on follicular response, ovulation, and embryo production in superovulated Angus heifers. 2003 MN Beef Cow/Calf Rep. pp. 88-93.

- DiCostanzo, A.** 2002. Feeding and managing calves according to market endpoint. 2002 MN Beef Cow/Calf Rep. pp. 59-71.
- DiCostanzo, A., D. Putnam, A. Cansler, and R. Gilland.** 2002. Report of Progress: Effects of feeding protected choline on performance and carcass characteristics of feedlot cattle reared under commercial conditions. 2002 MN Cattle Feeders Rep. B-489.
- DiCostanzo, A., and C.R. Dahlen.** 2001. From the grid to the breed. 2001 MN Beef Cow/Calf Rep. pp. 39-50.
- DiCostanzo, A., L.R. Miller, and W.A. Head.** 2001. Fate of nitrogen in ruminant feeding operations. Proc. 62nd MN Nutrition Conf. and MN Corn Growers Association Technical Symposium. Bloomington, MN. September 11-12, 2001. pp. 169-181.
- DiCostanzo, A.** 2000. Economics of making vs buying hay. Proc. 25th Annual MN Forage Conf. Hinckley, MN. January 11-12, 2000.
- DiCostanzo, A.** 2000. Evaluating cow-calf nutrition: Where to start? 2000 MN Beef Cow/Calf Rep. pp. 25-31.
- DiCostanzo, A.** 2000. Feedlot management techniques. Tri-State Beef Days. Dubuque, IA and Spring Grove, MN.
- DiCostanzo, A.** 2000. Out of season calving patterns. Tri-State Beef Days. Dubuque, IA and Spring Grove, MN.
- DiCostanzo, A., and C.R. Dahlen.** 2000. Grid pricing as a fed cattle marketing strategy. 2000 MN Cattle Feeder Rep. B-470.
- Head, W.A. Jr., H. Chester-Jones, **A. DiCostanzo,** and D.G. Johnson. 2000. Supplementing grazing livestock. Proc. MN Nutrition Conf. p. 114.
- DiCostanzo, A., C.M. Zehnder, J.M. Akayezu, M.A. Jorgensen, J. M. Cassady, D.M. Allen, D.G. Standorf, J.G. Linn, H. Jung, L.J. Smith, G.C. Lamb, D. Johnson, H. Chester-Jones, and G. Robinson.** 1999. Use of alfalfa leaf meal in ruminant diets. Proc. 60th MN Nutrition Conf. and IPC Technical Symposium. Bloomington, MN.

Research articles published in Extension publications (23):

- Chester-Jones, H., R. Hall, B. Perry, D. Ziegler, J. Linn, and **A. DiCostanzo.** 2003. Effects of early calf nutrition on Holstein steer performance and carcass effects of early calf nutrition on Holstein steer performance and carcass characteristics. 2003 MN Cattle Feeder Rep. B-494.
- Dahlen, C.R., L. J. Smith, N. Di Lorenzo, and **A. DiCostanzo.** 2003. Effects of polyclonal antibody preparations against *Streptococcus bovis* and *fusobacterium necrophorum* on performance and carcass characteristics of steers fed high-grain diets. 2003 MN Cattle Feeder Rep. B-495.
- Lamb, G.C., D.R. Brown, R. Wasson, J. Larson, C. Dahlen, and **A. DiCostanzo.** 2003. Preliminary report: Effect of trace mineral nutrition on follicular response, ovulation, and embryo production in superovulated Angus heifers. 2003 MN Beef Cow/Calf Rep. pp. 94-100.
- Dahlen, C.R., G.C. Lamb, B. Lindsay, **A. DiCostanzo,** D.R. Brown, R. Spell, and L.R. Miller. 2002. Pregnancy rates in recipients after receiving either two identical demi-embryos or a single embryo. 2002 MN Beef Cow/Calf Rep. pp. 95-99.
- Dahlen, C.R., G.C. Lamb, L.R. Smith, **A. DiCostanzo,** R. Ethington, and T. Durham. 2002. Forage sources for finishing diets containing wet corn gluten feed. 2002 MN Cattle Feeders Rep. B-488.
- Dahlen, C.R., K. Hachmeister, C.M. Zehnder, M. Dikeman, G.C. Lamb, L.R. Miller, H. Chester-Jones, and **A. DiCostanzo.** 2001. Influence of feeding malting industry byproducts to feedlot cattle on longissimus muscle sensory traits and tenderness. 2001 MN Cattle Feeder Rep. B-482.
- Dahlen, C.R., A.F. Kayser, L.R. Miller, G.C. Lamb, L.R. Smith, and **A. DiCostanzo.** 2001. Effects of lowering dietary CP content on steer performance and carcass characteristics. 2001 MN Cattle Feeder Rep. B-483.

- Dahlen, C.R., G.C. Lamb, C.M. Zehnder, L.R. Miller, and **A. DiCostanzo**. 2001. Fixed-time insemination in peripuberal, lightweight replacement heifers synchronized with PGF_{2α} and GnRH. MN Beef Cow/Calf Rep. pp. 81-86.
- DiCostanzo, A.**, L.R. Miller, and W.A. Head. 2001. The nitrogen cycle in ruminant feeding operations. 2001 MN Cattle Feeder Rep. B-480.
- Lamb, G.C., J.S. Stevenson, C.R. Dahlen, C.M. Zehnder, L.R. Miller, and **A. DiCostanzo**. 2001. Resetting of follicular waves for resynchronization of repeat estrus and AI in suckled beef cows after previous synchronization of ovulation and timed insemination. 2001 MN Beef Cow/Calf Rep. pp. 65-73.
- Miller, L.R., **A. DiCostanzo**, C.M. Zehnder, G.C. Lamb, and L. Smith. 2001. Effects of two protein supplementation systems on performance and nitrogen output of feedlot steers. 2001 MN Cattle Feeder Rep. B-481.
- Miller, L.R., W.A. Head, N.C. Hansen, C.R. Dahlen, and **A. DiCostanzo**. 2001. The impact of dietary protein manipulation on feedlot nitrogen balance. 2001 MN Cattle Feeder Rep. B-479.
- Dahlen, C.R., C.M. Zehnder, D. Ziegler, **A. DiCostanzo**, L.R. Miller, H. Chester-Jones, G.C. Lamb, and D. Westlund. 2000. Utilization of malting industry byproducts in feedlot diets. 2000 MN Cattle Feeder Rep. B-473.
- Lamb, G.C., L.R. Miller, C.M. Zehnder, J.M. Cassady, and **A. DiCostanzo**. 2000. Fixed-time insemination versus insemination after estrus in replacement beef heifers. 2000 MN Beef Cow/Calf Rep. pp. 63-70.
- Miller, L.R., **A. DiCostanzo**, C.M. Zehnder, G.C. Lamb, and L.R. Smith. 2000. Effects of two protein supplementation systems on performance and carcass characteristics of feedlot steers. 2000 MN Cattle Feeder Rep. B-474.
- Miller, L.R., C.M. Zehnder, G.C. Lamb, **A. DiCostanzo**, and A. Miron. 2000. Evaluation of alfalfa leaf meal in creep feed supplements. 2000 MN Beef Cow/Calf Rep. pp. 74-76.
- Standorf, D.G., M. Encinias, **A. DiCostanzo**, G.C. Lamb, G. Lardy, and A. Miron. 2000. Alfalfa leaf meal in late gestation beef cow diets. 2000 MN Beef Cow/Calf Rep. pp. 77-81.
- Brown, D.R., J.B. Hall, **A. DiCostanzo**, and J. Cassady. 1999. Comparison of estrous syn-chronization system in postpartum beef cows. 1999 MN Beef Cow/Calf Rep. pp.53-55.
- Cassady, J.M., J.E. Wheaton, **A. DiCostanzo**, G.C. Lamb, and B.E. Seguin. 1999. Estrous synchronization in beef heifers using MGA and prostaglandin F_{2α} or GnRH and prosta-glandin F_{2α}. 1999 MN Beef Cow/Calf Rep. pp. 40-45.
- DiCostanzo, A.** 1999. Minnesota Carcass Merit Program: Another tool to improve your enterprise bottom line. 1999 MN Cattle Feeder Rep. B-466.
- DiCostanzo, A.**, and C.M. Zehnder. 1999. Estimation of protein requirements of feedlot steers. 1999 MN Cattle Feeder Rep. B-465.
- Standorf, D.G., **A. DiCostanzo**, C.M. Zehnder, G.C. Lamb, and A. Miron. 1999. Effects of alfalfa leaf meal in finishing steer diets on liver abscess incidence. 1999 MN Cattle Feeder Rep. B-467.
- Zehnder, C.M., J.M. Hall, D.B. Brown, and **A. DiCostanzo**. 1999. Alfalfa leaf meal in wintering beef cow diets. 1999 MN Beef Cow/Calf Rep. pp. 34-39.

Popular press:

- DiCostanzo, A.** 1999. The Minnesota Carcass Merit Program: Another tool to improve your enterprise bottom line. *Minnesota-Wisconsin Beef Producer*.