

PROCEEDINGS

2011

22nd ANNUAL FLORIDA RUMINANT NUTRITION SYMPOSIUM

**February 1 & 2, 2011
Best Western Gateway Grand Hotel
Gainesville, Florida**

**Department of Animal Sciences
University of Florida
Institute of Food and Agricultural Sciences
Gainesville, Florida 32611**

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22nd ANNUAL FLORIDA RUMINANT NUTRITION SYMPOSIUM
Best Western Gateway Grand Hotel, Gainesville, FL
Department of Animal Sciences
University of Florida, IFAS

Tuesday, February 1, 2011—*Pre Conference Symposium (Sponsored by Arm & Hammer Animal Nutrition)*

- 8:45AM Program Introduction — **Dr. Elliot Block**—Arm & Hammer Animal Nutrition
- 9:00AM Increasing Efficiency of Nutrient Use to Enhance Profit and Environmental Stewardship — **Dr. Mike VandeHaar**, Michigan State University
- 10:00AM Measuring Feeding Efficiency, Why & How on the Back of a Napkin — **Dr. Robert Fry**, Atlantic Dairy Management Services
- 11:00AM On Farm Examples of Improving Profitability through Increasing Efficiency of Nutrient Use — **Dr. Elliot Block**, Arm & Hammer Animal Nutrition
- 11:45AM Buffet Lunch

Tuesday, February 1, 2011

- 9:00AM Registration (until 5:30PM)
- 11:45AM Buffet Lunch
- 1:00PM Welcome — **Dr. Geoffrey Dahl**, University of Florida
- 1:10PM Nutritional Implications to Altering the Dry Period Length — **Dr. Ric Grummer**, University of Wisconsin
- 1:50PM Revisiting Negative Dietary Cation-Anion Difference Balancing for Parturient Cows and its Impact on Hypocalcaemia and Performance — **Dr. Elliot Block**, Arm & Hammer
- 2:30PM Balancing the Acute Phase Response during the Transition Period: Impacts on Performance and Health — **Dr. Barry Bradford**, Kansas State University
- 3:10PM Refreshment Break
- 3:40PM Liquid Feeds and Sugars in Diets for Dairy Cattle — **Dr. Jeffrey Firkins**, Ohio State University
- 4:20PM Manipulation of the Dietary N-Fractions to Improve Ruminal Microbial Synthesis and Yield — **Dr. Glen Broderick**, (USDA—ARS Wisconsin)
- 5:00PM Welcome Reception

Wednesday, February 2, 2011

- 6:30AM Breakfast
- 8:00AM Mechanisms of Acid Absorption in the Rumen and Impacts on Subacute Rumen Acidosis — **Dr. Gregory Penner**, University of Saskatchewan
- 8:40AM The Impact of Improving NDF Digestibility of Corn Silage on Dairy Cow Performance — **Dr. Masahito Oba**, University of Alberta
- 9:20AM Manipulation of the Rumen Microbial Environment to Improve Performance of Beef Cattle — **Dr. Nicholas DiLorenzo**, University of Florida
- 10:00AM Refreshment Break
- 10:30AM Maternal Plane of Nutrition and Impact on the Offspring — **Dr. Joel Caton**, North Dakota State
- 11:10AM Strategic Supplementation of Beef Cows to Correct for Nutritional Imbalances — **Dr. Matt Hersom**, University of Florida
- 11:50AM Ruminant Nutrition Symposium Adjourn

Additional copies of these proceedings are available at \$15 per copy. Make checks payable to: Florida Ruminant Nutrition Symposium.

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Symposium Speakers

Guest

Elliot Block, Arm & Hammer Animal Nutrition, Princeton, NJ
Barry Bradford, Kansas State University, Manhattan, KS
Glen Broderick, USDA Forage Center/Nutrition, Madison, WI
Joel Caton, North Dakota State University, Fargo, ND
Jeffrey Firkins, The Ohio State University, Columbus, OH
Ric Grummer, University of Wisconsin, Madison, WI
Robert Fry, Atlantic Dairy Management Services, Chestertown, MD
Masahito Oba, University of Alberta, Agric. Food & Nutri. Sci., Canada
Gregory Penner, University of Saskatchewan, Canada
Mike VandeHaar, Michigan State University, East Lansing, MI

University of Florida Department of Animal Sciences

Nicolas DiLorenzo, Professor
Matthew Hersom, Professor

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22nd Annual Florida Ruminant Nutrition Symposium

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Dr. Elliot Block grew up in Brooklyn, NY, and went to Cornell University to complete his B.S. degree in Animal Science. He then went on to complete his MS in Animal Nutrition with a minor in Physiology and his PhD in Animal Nutrition with a minor in Biochemistry at Penn State University. Elliot then joined the faculty at McGill University in Montreal, Quebec where he was a full professor in the Department of Animal Science. His major research focus was Dairy Nutrition and Physiology. Elliot's research interests have been in the areas of DCAD balancing, fatty acid nutrition, physiological effects of rBST, and nutritional effects on mammary development. In 1999, Elliot left

academics to work as Senior Technology Manager with the Arm & Hammer Animal Nutrition Group.



Dr. Mike VandeHaar received his AB degree in biology from Dordt College, Iowa, in 1981, the MS and PhD degrees in Nutritional Physiology from the Department of Animal Sciences at Iowa State University, in 1984 and 1987, respectively. He then moved to the University of North Carolina at Chapel Hill where he completed a postdoctorate training in pediatric endocrinology in 1988. He then joined the faculty of the Department of Animal Sciences at Michigan State University where he is a professor of dairy cattle nutrition and metabolism. The goals of his research program are to improve the efficiency with which dairy cows convert feed to milk and to understand key factors that control mammary gland development in heifers to optimize lactation performance.



Dr. Robert C. Fry, DVM, after graduating from the University of Georgia, College of Veterinary Medicine in 1977, Dr. Fry began a bovine veterinary practice on the Delmarva Peninsula. His career interest has always centered on production and health issues of dairy cows. In 1994, after many years of working in traditional dairy operations, he was convinced that a healthy alternative was to manage and feed cows with the principles of *Managed Intensive Grazing*. To that extent Dr. Fry has become a partner in a grazing, seasonal breeding Jersey herd in Kennedyville, Maryland and Sikeston, Missouri. He continues to practice veterinary medicine and provides nutritional consulting services to dairy herds in the Northeast US.



Dr. Ric Grummer obtained his BS degree in Dairy Science at the University of Wisconsin, Madison (1977) and his MS (1980) and PhD (1984) degrees in Dairy Science at the University of Illinois, Urbana-Champaign. After a brief postdoctoral appointment at the University of Illinois, he started as an Assistant Professor in Department of Dairy Science at the University of Wisconsin-Madison in the fall of 1984. Since that time, he progressed to the rank of Professor and served as Chairman of the Department of Dairy Science from 2004 to 2010. In September of 2010, he joined Balchem Corporation as Ruminant Technical Manager. In that role, he provides technical service and research and development support and assists in expanding the global market for Balchem's animal health products.

Dr. Grummer has published over 100 peer-reviewed journal articles and 9 book chapters in the area of dairy cattle nutrition with particular emphasis on transition dairy cows and metabolic diseases. He has lectured on these topics in 17 foreign countries. He was a member of the National Research Council Subcommittee on Dairy Cattle Nutrition that was responsible for writing the Seventh Revised Edition (2001) of Nutrient Requirements of Dairy Cattle. In 2002, the Institute of Scientific Information (ISI) named him a Highly Cited Researcher. He has received numerous other awards including the American Feed Industry Award (1994), Nutrition Professionals Applied Nutrition Award (2004), and Fellow (2010) from the American Dairy Science Association.



Dr. Barry Bradford completed dual bachelor's degrees at Iowa State University and a doctorate in animal nutrition at Michigan State University. In 2006, he began his current position as an assistant professor at Kansas State University. Bradford oversees an active research program focused on alternative feedstuffs, transition cow health, and physiological regulation of carbohydrate and lipid metabolism. In addition, he teaches over 150 students per year in several undergraduate and graduate courses in nutrition and physiology.



Dr. Jeffrey Firkins received his BS in Animal Science in 1981 and his MS in Ruminant Nutrition in 1983 from the University of Illinois. He received his PhD in Ruminant Nutrition from the University of Illinois in 1987. Firkins have been employed with The Ohio State University from 1987 to present. His research activities are mainly prioritized in three different areas: 1) improving the efficiency of microbial protein synthesis to enhance the conversion of dietary protein into milk protein; 2) studying the interactions of physical, chemical, and microbiological processes related to fiber degradation and passage in the rumen to improve the efficiency of fiber and starch utilization in dairy cattle; and 3) improving the quantitative prediction of protein and carbohydrate digestion and metabolism in dairy cattle. He collaborates and leads research in other projects related to carbohydrate metabolism in human nutrition and the efficient usage of protein, fat, and carbohydrate sources in ruminant nutrition.



Dr. Glen A. Broderick conducts dairy cattle nutrition research at the US Dairy Forage Research Center of the USDA-ARS. He received a BS in Dairy Science (1967), plus an MS (1970) and PhD (1972) as a joint major in Biochemistry and Dairy Science, all from the University of Wisconsin-Madison. Glen served as an assistant and associate professor in Animal Science at Texas A&M University in College Station from 1972 to 1980. In January 1981, he returned to Madison to begin work at the Forage Center. Glen has enjoyed a joint appointment as professor in the Department of Dairy Science of the University of Wisconsin since 1983. His research has focused on protein nutrition of the lactating dairy cow for most of his career and is now directed toward enhancing

utilization of feed nitrogen for milk production with emphasis on integrated nutrient management on the dairy farm. This work has involved developing strategies to minimize dietary crude protein without losing milk or protein yield, identifying factors influencing microbial protein formation in the rumen, and perfecting in vitro methods for quantifying ruminal protein degradation. In addition to service on graduate committees at Wisconsin and other universities, and on editorial boards for several journals, Glen has presented a number of invited papers at national and international meetings. He also did sabbatical leaves at the Rowett Research Institute in Aberdeen, Scotland (1985-6) and the Swedish Agricultural University in Uppsala (1997-8).



Dr. Greg Penner is an Assistant Professor in Ruminant Nutrition at the University of Saskatchewan. He completed his Bachelors and Masters Degrees at the University of Saskatchewan, and his PhD at the University of Alberta. Dr. Penner's research focuses on ruminal acidosis and ruminal epithelial function including absorptive, metabolic, and barrier function. He is the co-inventor of 2 novel systems that can be used to continuously measure ruminal pH in large and small ruminants. Dr. Penner has published 24 refereed scientific articles and 12 papers in conference proceedings.



Dr. Masahito Oba received his Ph.D. from Michigan State University in 2002. He is currently employed as an Associate Professor of Dairy Nutrition at the University of Alberta.

Research interests are feed evaluation, forage and byproduct utilization, rumen acidosis, and feed intake regulation.

He has published more than 50 research papers on peer-reviewed journals. He was the recipient of the 2009 Cargill Animal Nutrition Young Scientist Award.



Dr. Nicolas DiLorenzo received his degree in Agricultural Engineering from the Universidad Nacional de La Plata, Argentina, in 2002. He moved to the U.S. in 2002 to pursue graduate studies at the University of Minnesota, where he obtained his Master degree in 2004 and his PhD in 2008, both in Animal Science with emphasis in beef nutrition. From July of 2008 to July of 2010 DiLorenzo worked as a postdoctoral Research Associate at Texas Tech University in Lubbock, TX, conducting research in the area of feedlot nutrition and management under the supervision of Dr. Mike Galyean. In August of 2010 he joined the University of Florida as an Assistant Professor in

Animal Sciences at the North Florida Research and Education Center in Marianna. His primary research interests are in the area of beef cattle nutrition, with the objective of improving the efficiency of use of forage resources minimizing the environmental impact. His research projects involve ruminal metabolism and fermentation, emissions of greenhouse gases, and nutrient excretion in cattle systems.



Dr. Joel Caton received his B.S. from New Mexico State University in 1981, M.S. from University of Missouri, Columbia in 1983, Ph.D. from New Mexico State University in 1987 and Post Doctoral, University of Missouri in 1988. He is currently employed as a Professor at North Dakota State University.

Research Interests: Ruminant Nutrition and Digestive Physiology with specific focus areas to include 1. Maternal Nutrition 2. Growth, development, and function of the gastrointestinal tract 3. Protein metabolism in ruminant livestock 4. Forage utilization by ruminants 5. Trace mineral metabolism in livestock 6. Strategic supplementation 7. Co-Product utilization.



Dr. Matthew Hersom received his Ph.D. in Animal Nutrition from Oklahoma State University in 2002. Dr. Hersom was a Post Doctoral Research Fellow at Oklahoma State University from 2002-2003. He is currently an Associate Professor at the University of Florida since 2004.

His general research focus is to investigate optimum feeding strategies for forage fed beef cattle. The areas of investigation include feedstuff evaluation, by-product utilization, supplement characteristics, and feeding frequency. Cooperative work examines the interaction of nutrition and reproduction. Specific areas include: 1) effect of supplementation strategies on cow reproductive performance, 2) heifer development through the use of different feedstuffs and feeding management.