

PROCEEDINGS

2013

24th ANNUAL FLORIDA RUMINANT NUTRITION SYMPOSIUM

**February 5 - 6, 2013
Hilton University of Florida Conference Center
Gainesville, Florida**

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

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24th ANNUAL FLORIDA RUMINANT NUTRITION SYMPOSIUM
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Department of Animal Sciences
University of Florida, IFAS

Tuesday, February 5, 2013—*Pre Conference Symposium (Balchem Animal Nutrition)*

- 9:00AM Program Introduction — **Dr. Dana Putnam** — Balchem
- 9:10AM Considerations for Improving Feed Efficiency in Dairy Cattle — **Dr. Lou Armentano**, University of Wisconsin
- 10:00AM Understanding the Impact of Sub-Clinical Ketosis — **Dr. Garrett Oetzel**, University of Wisconsin
- 10:50AM Choline-A Required Nutrient for Dairy Cattle — **Dr. Ric Grummer**, University of Wisconsin
- 11:45AM Buffet Lunch

Tuesday, February 5, 2013

- 9:00AM Registration (until 5:30PM)
- 11:45AM Buffet Lunch
- 1:00PM Welcome — **Dr. Geoffrey Dahl**, University of Florida
- 1:10PM Establishing the Amino Acid Requirement of Young Calves — **Dr. Richard Zinn**, University of California-Davis
- 1:50PM Preparing the Calf for Feedlot: The Role of Nutrition and Management in the Preweaning Period on Future Health and Performance — **Dr. Robbi Pritchard**, University of Florida
- 2:30PM Enhancing Calf Immunity through Nutrition — **Dr. Michael Ballou**, Texas Tech University
- 3:10PM Refreshment Break
- 3:40PM Enhancing Immunity and Disease Resistance of Dairy Cows Through Nutrition — **Dr. Matt Waldron**, University of Missouri
- 4:20PM The Role of Specific Fatty Acids on Dairy Cattle Performance and Reproduction — **Dr. Jose Santos**, University of Florida
- 5:00PM Welcome Reception

Wednesday, February 6, 2013

- 6:30AM Continental Breakfast
- 8:00AM Nutritional and Management Strategies to Mitigate Animal Air Emissions — **Dr. Alex Hristov**, Pennsylvania State University
- 8:40AM Alternatives to Corn for Dairy Rations — **Dr. Randy Shaver**, University of Wisconsin
- 9:20AM The Importance of Feed Efficiency in the Cow Herd — **Dr. Cliff Lamb**, University of Florida
- 10:00AM Refreshment Break
- 10:30AM Feeding Dairy Cows in Today's Economy — **Dr. Bill Weiss**, The Ohio State University
- 11:10AM The Economics of Profit in California Dairies — **Dr. Luis Rodriguez**, Zinpro Co.
- 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

Lou Armentano, University of Wisconsin, Madison, WI
Michael Ballou, Texas Tech University, Lubbock, TX
Ric Grummer, University of Wisconsin, Madison, WI
Alex Hristov, Pennsylvania State University, University Park, PA
Garrett Oetzel, University of Wisconsin, Madison, WI
Robbi Pritchard, South Dakota State University, Brookings, SD
Luis Rodriguez, Zinpro Corporation
Randy Shaver, University of Wisconsin, Madison, WI
Matthew Waldron, University of Missouri, Columbia, MO
William Weiss, The Ohio State University, Wooster, OH
Richard Zinn, University of California-Davis, El Centro, CA

University of Florida Department of Animal Sciences

Cliff Lamb, Associate Professor
Jose Santos, Professor

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David M. Waagner, Elanco Animal Health, Valdosta, GA

23rd Annual Florida Ruminant Nutrition Symposium

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Dr. Lou Armentano is a professor of Dairy Science at the University of Wisconsin. Fleeing Brooklyn, New York at the not quite ripe age of 16, Lou grabbed his slide rule and headed to Cornell University, paid his \$400 semester tuition, and got started. He graduated in 1975 with a B. S. with distinction in Animal Science. Professor Bob McDowell steered Lou to North Carolina State where Lou could study the use of by-products as feeds for dairy cattle and receive an MSc in Animal Nutrition. Lou's PhD was from Iowa State where the relationship between rumen carbohydrate fermentation and the metabolic processes of cattle was examined at the whole animal level and then worked

as a research post-doc at Virginia Tech working with protein nutrition of dairy cows. Throughout his training he was lucky to be mentored by many talented and dedicated professors, foremost among them three always patient and caring nice guys: Al Rakes, Jerry Young and Carl Polan. Lou joined the Department of Dairy Science at Madison as an Assistant Professor with teaching and research responsibilities in 1983. In addition to a program studying liver metabolism in cattle, Lou has maintained a program addressing use of by-product feedstuffs and their role in providing energy, fiber, protein and fat to dairy cows throughout his career. Lou served 8 years as Chair of the Dairy Science Department. That experience convinced him that being a full professor in Dairy Science at Wisconsin was a pretty good job so he returned to full time teaching and research in 2004. He is still having fun and even trying to do some good.



Dr. Garrett R. (Gary) Oetzel, DVM, MS, is an associate professor in the Food Animal Production Section, Department of Medical Sciences, School of Veterinary Medicine at the University of Wisconsin-Madison. Dr. Oetzel grew up on a beef cow-calf farm in southwestern Ohio. He completed his undergraduate and veterinary medical training at The Ohio State University, receiving his BS in 1978 and DVM in 1981. From Ohio he went to the University of Illinois where he completed an internship, residency, and graduate program. He received his MS degree in Veterinary Clinical Medicine in 1985. Dr. Oetzel then spent three years as an assistant professor at

Colorado State University where he refined his interests in dairy nutrition and dairy production medicine. After one year in private dairy practice in Reedsville, WI, Dr. Oetzel joined the Food Animal Production Medicine Section at the University of Wisconsin-Madison School of Veterinary Medicine in September, 1989. Dr. Oetzel's research interests are in applied dairy nutrition and metabolic diseases such as milk fever, ruminal acidosis, ketosis, and displaced abomasum. He teaches veterinary clinical nutrition to the first- and third-year veterinary medical students and applied dairy nutrition to the fourth-year veterinary medical students. His clinical interests include troubleshooting techniques and the application of herd-based tests for metabolic disease problems in dairy herds.



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. 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. 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. 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. Richard Zinn has held the position of Professor in the Animal Science Department at University of California-Davis since 1981. He has held the position of Interim Director from 2009–present at the UC Desert Research and Extension Center. He received his BSc in Animal Science, Brigham Young University, Provo, UT in 1974; M.S. in Animal Science, Brigham Young University, Provo, UT in 1975 and PhD in Nutrition (Ruminant), University of Kentucky, Lexington, KY in 1978. Postdoctoral - Oklahoma State University,

Stillwater, OK, 1978 – 1981.

Awards that Richard has received include: Grant S. Richard Scholarship (BYU), 1974; Merit Professor (Research), University Autonoma de Baja California, 1996; Catedratico Patrimonial -National Endowment Scholar- (given by CONACYT, Mexico City, Mexico) 1999 and AFIA Ruminant Nutrition Research Award, A.S.A.S., 2000. He has published over 160 peer-reviewed manuscripts, 118 abstracts and over 350 miscellaneous presentations and publications.



Dr. Robbi Pritchard holds the title of Distinguished Professor in the Department of Animal and Range Sciences at South Dakota State University (SDSU) where he has been on the faculty since 1984. He has a research and graduate teaching appointment emphasizing beef cattle nutrition and growth. Dr. Pritchard oversees the activities of the research feedlot and ruminant nutrition labs on campus.

Dr. Pritchard has been acknowledged at SDSU with Graduate School Teacher of the Year, F.O. Butler Foundation Outstanding Researcher, and the Gamma Sigma Delta Research Awards. He currently holds the Larson Award in Beef Cattle Nutrition. Originally from Annawan, IL he received degrees from Black Hawk East Jr. College, Southern Illinois University, and Washington State University, and served as a Postdoctoral Fellow at Texas Tech University.



Dr. Michael Ballou was born and raised in the Central Valley of California. He received his BSc degree from UC Davis in 2002 in Animal Science and PhD in nutritional biology with an emphasis in immunology, also from UC Davis, in 2007. In 2007 he accepted a position as Assistant Professor at Texas Tech University as a nutritional immunologist in the Department of Animal and Food Sciences. His research focuses on (1) understanding how the

innate immune system influences resistance to many infectious diseases and (2) how management, including nutrition, can modulate leukocyte responses. Dr. Ballou has authored or co-authored 27 peer-reviewed journal articles, 1 book chapter, and 61 scientific meeting abstracts.



Dr. Matt Waldron received his BSc degree from Cornell University in 1993 and a MS degree from The University of Tennessee in 1996. He then returned to the northeast US where he worked in the feed industry for Agway Agricultural Products for 3 years before returning to Cornell University to pursue his PhD with Dr. Tom Overton, which he completed in 2004. He remained at Cornell as a postdoctoral research associate in the Department of Animal Science through June 2006 when he joined the faculty at the University of Vermont. In June 2008, Matt moved to the University of Missouri where he is now a faculty member in the Division of Animal Sciences. His research involves studying the effects of nutrition and management on development of infectious diseases and

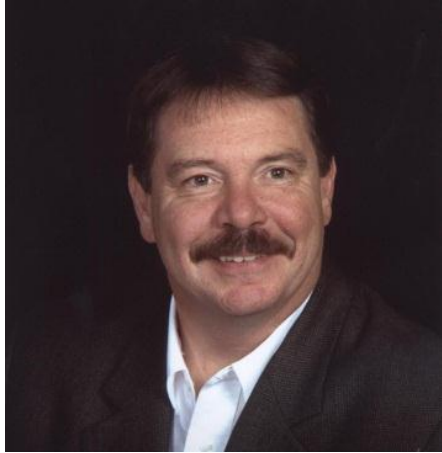
metabolic disorders in dairy cattle. He is also interested in how sickness impacts the nutritional requirements and metabolism of the animal.



Dr. José E.P. Santos is a professor in the Department of Animal Sciences at the University of Florida. He earned the DVM degree from São Paulo State University in Brazil (1992). After working in dairy practice for 1 year, José moved to the University of Arizona to study ruminant nutrition, where he earned the MSc (1995) and PhD (1997) degrees. He completed a clinical residency in Dairy Production Medicine at the University of California, Davis in 2000 and then joined the faculty in the Department of Population Health and Reproduction of the School of Veterinary Medicine where he conducted research and clinics from 2000 to 2007 in Tulare, CA. In 2008, José joined the Department of Animal Sciences at the University of Florida where he is a professor with research and extension responsibilities in dairy cattle nutrition and reproduction. His primary research efforts focus on the interface between nutrition and reproduction and methods to improve lactation performance, health and fertility of dairy cows.



Dr. Alexander N. Hristov is an Associate Professor of Dairy Nutrition with the Department of Animal Science at Penn State University. He received his post-graduate degrees from the Academy of Agricultural Sciences in his native Bulgaria. Hristov's current research interests include improving the efficiency of dietary nitrogen utilization in dairy cows while maintaining animal productivity and mitigating ammonia and greenhouse gas emissions from dairy operations.



Dr. Randy Shaver was born and raised on a western Pennsylvania dairy farm. After completing a BSc degree in Dairy Science at the Pennsylvania State University, Randy received an M.S. degree from the Department of Animal Sciences at the University of Maryland. He then completed his doctorate degree in Dairy Science at the University of Wisconsin-Madison in 1986 after conducting research at UW-Madison and U.S. Dairy Forage Research Center. Randy spent 1986-88 working in industry. Since then he has been on the faculty in the Department of Dairy Science, University of Wisconsin-Madison with a 75% Extension and 25% Research appointment.

His extension and research programs focus on applied nutrition of lactating dairy cattle. Randy has authored or co-authored over 72 peer-review journal publications, 120 scientific abstracts, 95 popular-press articles in industry trade magazines, and 230 newsletter articles, extension handouts or bulletins, and internet publications. He has presented over 475 invited papers at industry conferences in 45 states. Additionally, he has been an invited speaker for dairy producer and feed industry audiences in Argentina, Brazil, Chile, Columbia, Czech Republic, Denmark, England, Germany, Italy, Japan, Korea, Mexico, Turkey, and nine provinces in Canada.

Awards that Randy has received include: ADSA Pioneer Hi-Bred Forage Award, ADSA DeLaval Dairy Extension Award, ADSA Nutrition Professionals Applied Dairy Nutrition Award, and UW-Madison CALS Pound Extension Excellence Award.



Dr. Cliff Lamb is currently the Assistant Director and Professor at the University of Florida North Florida Research and Education Center. He graduated with a BSc in Animal Science at Middle Tennessee State University. He received his MSc in 1996 and PhD in 1998 at Kansas State University. In 1998, after completing graduate school, Dr. Lamb became a Beef Specialist/Assistant Professor at the University of Minnesota. He was promoted to Associate Professor in 2003. In 2008, Dr. Lamb moved to the University of Florida where he was promoted to Professor in 2009. His primary research efforts focus on applied reproductive physiology in beef cattle emphasizing efficient management systems for replacement heifers and postpartum cows. In recent years Dr. Lamb has

also performed research in the area of feed efficiency focusing on forage-based diets in beef females. In addition to research and extension, Dr. Lamb is responsible for administration of the research facilities at the University of Florida North Florida Research and Education Center in Marianna.



Dr. William P. Weiss is a professor of dairy cattle nutrition in the Department of Animal Sciences at The Ohio State University. He received his BSc and MSc degree in Animal Sciences and Animal Nutrition from Purdue University in 1980 and 1981, respectively, and the PhD degree in dairy cattle nutrition from The Ohio State University in 1985. His research has focused on various aspects of dairy cattle nutrition including energetics, mineral nutrition, forage conservation, and the role of antioxidant minerals and vitamins on immune responses of cattle and mastitis resistance. Bill has received

numerous awards, among them the American Feed Industry Association Dairy Nutrition Research Award, the Pioneer Forage Research Award, the Nutrition Professionals Applied Dairy Research Award, all from the American Dairy Science Association and the Senior Researcher Award from the Ohio Agricultural Research and Development Center.



Dr. Luis Rodriguez is the California Account Manager for Zinpro Corporation with responsibility for sales and technical customer support in the California animal industry. He received his BSc in Animal Science from the Ezequiel Zamora University (Venezuela). He worked for 5 years managing large dairy conventional and grazing herds in Venezuela. He received a MSc in Dairy Nutrition from Virginia Tech working under Dr. Charles Stallings and his PhD in Dairy Nutrition from Michigan State University working under Dr. David Beede. He has worked in the USA and the international dairy and beef industries for the past 15 years. He is a member of the American Dairy Science Association and a Diplomat for American College of Animal Nutrition (ARPAS). He resides with his family in Elk Grove, CA.