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The Jackrabbit Dairy Review

Dairy Science

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Winter 2009

# The Jackrabbit Dairy Review

Vikram Mistry

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# THE JACKRABBIT DAIRY REVIEW

Winter 2008-2009

Dairy Science Department, SDM 109, South Dakota State University, Brookings, SD 57007

## Dairy Science Department

### Faculty

Sanjeev Anand, Assistant Professor  
Robert Baer, Professor  
Howard Bonnemann, Instructor/Dairy Plant Manager  
Alvaro Garcia, Associate Professor/Extension Dairy Specialist  
Ashraf Hassan, Associate Professor  
David Henning, Associate Professor Emeritus  
Arnold Hippen, Professor  
Kenneth Kalscheur, Associate Professor  
Matthew Laubach, Manager, Dairy Research & Training Facility/Lecturer  
Lloyd Metzger, Associate Professor, Alfred Chair in Dairy Education  
Vikram Mistry, Professor and Head  
Rajinder Nauth, Adjunct Professor  
John Parsons, Professor and Head Emeritus  
David Schingoethe, Distinguished Professor

### Staff

Malek Abdelqader, Postdoctoral Research Associate  
Jayendra Amamcharla, Postdoctoral Research Associate  
Jill Anderson, Research Assistant  
Ananya Biswas, Microbiologist, State Dairy Lab  
Valerie Denison, Secretary  
Umberto Francesa, Project Assistant  
Akimoto Ichinomiya, Assistant Dairy Plant Manager  
Gary Kirkham, Ag Foreperson/Lead Feed  
Pete Linke, Ag Foreman/Fresh and Sick Cows/Calf Care  
Anne Owens, Secretary  
Jayne Raabe, Senior Secretary  
Huimin Zhang, Research Associate

### Graduate Students

#### Dairy Production

\*Jill Anderson  
Peter Linke  
Kamal Mjoun  
Rosemary Nyoka  
Todd Owens  
Sanjeeva Ranathunga

#### Dairy Manufacturing

\*Mallika Avadhanula  
\*Jenna Buyck  
Akimoto Ichinomiya  
\*Anil Kommineni  
Nirupama Nigam  
Prafulla Salunke  
Himanshu Somni

\*New students in 2008

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## MESSAGE FROM THE DEPARTMENT HEAD

2008 was a unique and very fulfilling year for the Dairy Science Department. Our Strategic Plan for the period 2008-2012 was completed and is being implemented. Under this plan the vision of the department is very simple; "to be a national and international leader in dairy education, research, and Extension". This vision will only be possible through concerted effort by faculty, staff and students. Critical to the success of this plan is the availability of excellent resources. We spent considerable effort during 2008 for envisioning our future and identifying relevant resources. Dairy Plant designs have been completed and we are now in the final stages of fund raising. Another major planning effort was for the remodeling of the Dairy-Micro Building. This building has served us and thus the industry through our graduates for almost 50 years and starting in summer 2009, it will undergo exhaustive remodeling. Through this long-range planning we are setting the stage for our education, research and Extension activities for many more years to come, well beyond the professional lives of most of the current students, staff and faculty. Thus, the impact will be long-term. Our faculty members were recognized at the local and national levels for their activities in teaching, research and outreach. During the fiscal year 2008 our faculty obtained approximately \$580,000 in grants for research. At the end of 2008 there were 24 active research projects. The total award value of these active projects is approximately \$2.5 million that will be spent over the duration of the projects that ranges from 1 to 3 years. These external funds do not include funds provided by generous donors such as for scholarships (\$67,275), Heifers for State (\$9,850), Dairy Plant project (over \$4 million in commitments), judging (\$10,000). Equally impressive is that of the 35 employees in the department, including graduate students, 17 (50%) are paid in part or fully through funds secured from external sources by faculty. Our undergraduate student numbers continue to grow. Furthermore, the list of accomplishments of our faculty, staff and students demonstrates their impressive impact on the industry through service. During fall'08 we enrolled 23 new students from 6 States. Our graduate programs are stable and strong through faculty excellence in research. Employment opportunities for our graduates are excellent at 100%. Eleven companies visited the department during fall'08 and conducted 100 interviews. Industry collaboration through the Jackrabbit Dairy Council and Heifers for State continues to grow and have helped us remain focused in our missions. Assistance of alums to our programs through guest lectures and other activities has been an invaluable component; no fewer than 20 alums participated in such activities. The university is operating under the theme of Achieving National Distinction While Remaining Locally Relevant. We are making strides towards this theme. Please stop in and let us know how we can strengthen our programs to help us continue down this path.



Vikram Mistry

## 2008 GRADUATES

Dairy Science graduates continue to be in demand. Students in 2008 received 1 to 6 job offers and starting salaries of BS students excluding that of those entering graduate school averaged \$45,000 and that of graduate students, \$55,000.

#### B.S. Manufacturing

Tori Boomgaarden, Graduate School, Kansas State Univ.  
Jared DeNoble, Green Meadows Foods, Hull, IA  
Derek Griesse, Saputo Cheese, Lena, WI  
Laura Kennedy, POET, Sioux Falls, SD  
Jonah King, Graduate School, SDSU  
Jake Kregelberg, Davisco Foods, Le Sueur, MN  
Sarah Morrison, Leprino Foods, Allendale, MI  
Stephen Plucker, Valley Queen Cheese, Milbank, SD

Mike Schmit, Saputo Cheese, Waupun, WI  
Wendy Weber, Green Meadows Foods, Hull, IA

#### B.S. Production

Peter Beck, Prairie Gold, Flandreau, SD  
Ryan Tollefsrud, Vet School, Kansas State Univ.

#### M.S.

Keith Christen, Vita Plus, Marshfield, WI  
Colleen Mulrooney, Pennsylvania  
Ashish Pandit, Leprino Foods, Le Moore, CA  
Sanjeeva Ranathunga, SDSU Graduate School

#### Ph.D.

Malek Abdelqader, Post Doc, SDSU  
Benjamin Pamp, Land O' Lakes Purina Mills



## NEW FACULTY AND STAFF



**Abdelqader**



**Amamcharla**



**Francesa**



**Ichinomiya**

### Malek Abdelqader

joined the Dairy Science Department as Post Doctoral Associate in March. Dr. Abdelqader obtained his B.S. in Veterinary Medicine from Jordan University of Science and Technology, M.S. in Ruminant Nutrition from McGill University, Montreal, Canada, and Ph.D. in Dairy Science from SDSU. Dr. Abdelqader's research interests include dietary lipid utilization and its effect on the regulation of milk

fat synthesis and the modification of fatty acid profiles to improve the health benefits of dairy products. Other areas of interest include nutrient

interactions and their influence on ruminal ecosystem and fermentation parameters, and overall animal performance. Dr. Abdelqader is working under the direction of Dr. Kenneth Kalscheur.

**Jayendra Amamcharla** is a Post Doctoral Research Associate in the department. He obtained his B.Tech degree in Dairy Technology from Acharya N. G. Ranga Agricultural University, Hyderabad, India, M.Tech in Dairy Engineering from the National Dairy Research Institute in India, and Ph.D. in Agricultural and Biosystems Engineering from North Dakota State University, Fargo, ND. His work at SDSU will focus on the development of dairy ingredients. Dr. Amamcharla is working under the direction of Dr. Lloyd Metzger.

**Umberto Francesa** began his appointment as Project Assistant in Dairy Extension. He holds a MVZ-UAT, Veterinary Science, Universidad of Tamaulipas, Mexico. In his position will be developing training programs for Spanish speaking employees on dairy farms in the area.

**Akimoto Ichinomiya** was appointed as Assistant Dairy Plant Manager in summer 2008. He is completing his MS in Dairy Science. As Assistant Dairy Plant Manager Akimoto will be responsible for production of products at the dairy plant, and plant cleaning and sanitation and maintenance. He will also coordinate student activities.

## UNDERGRADUATE STUDENTS

### Dairy Production

\*Jessica Becker, Eden Valley, MN  
 Rachael Becker, Eden Valley, MN  
 \*Nicholas Bosma, Harris, IA  
 Holly Bruns, Lafayette, MN  
 Katelyn Crocker, Merrifield, MN  
 \*Monte Hickman, Orange City, IA  
 \*Renae Hinkeldey, Alta, IA  
 Andrea Hoffman, Cleveland, MN  
 James Huffman, McCook, NE  
 \*April Johnson, Heron Lake, MN  
 Heather Jons, Bonesteel, SD  
 Timothy Korver, Alton, IA  
 Gerben (Gary) Landman, White, SD  
 Sara Lopez (Hunt), Elkton, SD  
 \*Mitchell Maher, Nunda, SD  
 \*Valerie Mohr, New Ulm, MN  
 \*Brittany Moorse, Minneota, MN  
 \*Katie Nelson, Rice, MN  
 Craig Niemann, Clear Lake, SD

Brittany Nussbaum, Garretson, SD  
 Stephanie Nussbaum, Garretson, SD  
 Rachel Patrick, Eatonton, GA  
 \*Robert Plaisted, New Woodstock, NY  
 Cody Schlecht, Canby, MN  
 Ashley Schroeder, Castle Rock, MN  
 Eric Schultz, Rollingstone, MN  
 \*Ana Schweer, Watertown, SD  
 Brian Speltz, Plainview, MN  
 John Temme, Wayne, NE  
 Cassey Utke, Brandon, SD  
 Kaitlin Van Eck, Ruthton, MN  
 \*Michelle Vander Linden, Edgerton, MN  
 \*Jennifer Vander Wal, Pipestone, MN  
 Bradley Vansanten, Luverne, MN  
 Abigail Wirt, Lewiston, MN  
 \*Kade Zeman, Owatonna, MN

### Dairy Manufacturing

Jared DeNoble, Hills, MN  
 Jordan Dorneman, Milbank, SD  
 Kara Gutormson, Maddock, ND  
 Rebecca Hanson, Brandon, SD  
 Jonah King, Volga, SD  
 \*Angela Klaers, Wabasso, MN  
 \*Taylor Lais, Brandon, SD  
 \*Sietse (Steve) Landman, White, SD  
 Melissa Lax, Sleepy Eye, MN  
 \*Eric McNeel, Blackfoot, ID  
 \*Ashley Metzger, Rock Rapids, IA  
 Sarah Morrison, Florence, SD  
 Kathryn Norling, Beresford, SD  
 \*Justin Ochsner, New London, MN  
 Molly Paterson, Marshall, MN  
 Morgan Petersen, Cokato, MN  
 Isaac Randall, Dell Rapids, SD  
 \*Luke Rensink, Freeman, SD  
 \*Wylie Scalise, Bondsville, MA

Michael Schmit, Howard, SD  
 Tricia Schuller, Alcester, SD  
 Emily Stephenson, Rapid City, SD  
 Nicole Stevens, Pipestone, MN  
 Wendy Weber, Sioux Falls, SD  
 \*Derek Wendt, Prairie Home, MO  
 Cory Zelfel, Kennard, NE

### Dairy Prod/Manuf Double Majors

Kimberly Allen, Page, NE  
 Jessica Berg, Baltic, SD  
 Michael Dunn, Vale, SD  
 \*Megan Forst, Gibbon, MN  
 Rachel House, Whittier, CA  
 Alex Ode, Brandon, SD  
 \*Megan Rice, Firth, NE  
 \*Johnna Schuur, Sauk Center, MN  
 Samantha Wahls, Postville, IA

\*New students in 2008



## HEIFERS FOR STATE

The 2008 Heifers for State was held in conjunction with the Central Plains Fall Sale in October at the SDSU campus. Dairy Club members set up the arena, and prepared and showed cattle to buyers during the sale. Several generous producers donated animals for the third Heifers for State program. Donors included Post Dairy (Marv Post), Al Shar Holsteins (Darin Zoellner), K.C. Dairy (Edward Kavanaugh), Boadwine Farms Inc. (Lynn

Boadwine), DeBoer Holsteins (Paul DeBoer), Linde Dairy (Rein Landman). The donated animals and embryos raised a total of \$9,850 that will be used for supporting dairy education and research programs at SDSU. The Heifers for State program began in 2006. We invite you to consider becoming a future donor to the Heifers for State program and an investor in the future of the dairy industry.



### HEIFERS FOR STATE DONORS

- Post Dairy (Marv Post) • All Shar Holsteins (Darin Zoellner)
- K.C. Dairy (Edward Kavanaugh) • Boadwine Farms, Inc. (Lynn Boadwine)
- DeBoer Holsteins (Paul DeBoer) • Linde Dairy (Rein Linde)



## JUDGING ACTIVITIES

### Dairy Cattle & Production



Dairy Science students participated in the Midwest Regional Intercollegiate Challenge in Merrillville, IN, the Western Regional Challenge contest in Visalia, CA and the North American Intercollegiate Contest in Madison, WI. Matt Laubach and Dr. Arnold Hippen served as coaches. Participating students in the three contests in various combinations included Heather Rollefson, Craig Niemann, Peter Beck, Gerben Landman, Rachel Patrick, Tim Korver, Heather Jons, John Temme, Samantha Wahls, and Abbie Wirt. At the Midwest regional contest Rachel Patrick and Tim Korver were on Platinum awarded teams the contest's highest distinction. At the Western regional contest Gary Landman, Craig Niemann, and Peter Beck were on Platinum awarded teams. At the National Contest, the SDSU team received a Gold placing.

The cattle judging team participated in two contests. The team for the World Dairy Expo included Jessica Berg, Abbie Wirt, John Temme, and Tim Korver, and the Viroqua, WI contest included Ashley Schroeder, Rachel Becker, Rachel Patrick, and Brian Speltz. In Viroqua our team placed 11th overall and in Madison they placed 19th overall. The teams were coached by Matt Laubach.

### Dairy Products

The Dairy Products Judging Team placed 2nd at the Midwest Regional Contest. Team members were Jordan Dorneman (alternate), Vandana Panchal (graduate student), Jessica Berg, Abbie Wirt, Tricia Schuller, Cassey Utke (alternate), and Nicki Stevens (alternate). At the National Collegiate Dairy Products Judging Contest which was held in Newark, OH the team placed 1st overall among 15 teams. Abbie Wirt placed first overall in the contest. Vandana Panchal placed first in the graduate student contest. The SDSU team won the Shirley Seas Memorial Scholarship. Baer also received the Aurelia and George Weigold Coach of the Year Award. As top judge in the nation, Wirt received the Robert Rosenbaum Award and lifetime membership in the National Dairy Shrine. In addition, she has been invited to participate in the spring 2009 Quality Chek'd Dairies, Inc. annual conference in Kansas City, MO. As second place judge, Schuller received the Everett Byers Memorial Award and lifetime membership in the National Dairy Shrine, will attend the Quality Chek'd Dairies conference, and will participate in March 2009 in the U.S. Championship Cheese Contest at the Lambeau Field Atrium in Green Bay, WI. The team was coached by Dr. Bob Baer. Earlier in the year, the 2007 winner of the Cheddar Cheese category, Derek Griesse and Dr. Baer participated as guest judges in the World Cheese Contest. Derek is seen in the accompanying picture along with other SDSU alums that also served as judges in this contest. These judges include Tim Czmowski (Assistant Chief Judge), Virgil Metzger, and Mark Johnson.



## DAIRY RESEARCH AND TRAINING FACILITY UPDATE

Our dairy farm has approximately 140 certified and registered milking cows and a total of 300 animals. This includes approximately 50 Brown Swiss. The rolling herd average is just over 24,000 pounds per year. The SDSU Brown Swiss herd was recognized by the Brown Swiss Association as a Genetic Honor Herd for 2007. This is based on the PTA protein average of all cows in the herd which have calved in the past two years. Recognition is given to the top 25% of eligible BSA/PTPR herds. Herds with an average of 9.5 PTA protein or above qualified for this recognition for 2007. At the 2008 South Dakota State Fair 11 animals from the DRTF were on show. SDSU was named premier breeder and exhibitor for the Brown Swiss show, and several Holstein and Brown Swiss took individual honors. Holsteins included honorable mention junior champion of the show, a second-place senior 2-year-old cow, plus a third-place senior 3-year-old cow and for Brown Swiss, junior and reserve champion for the junior division, and the intermediate and the reserve intermediate champions. We also had the Brown Swiss reserve grand champion, which was our intermediate champion, she ended up placing as reserve grand, and she was also named best udder of the show. This Brown Swiss was Viking Valley KB Tribune ET. Her pedigree includes Sun-Made Jetway Twirl ET and Sun-Made Blend Trisha ET.

The facility serves as a site for research and teaching programs, the annual Dairy Camp, and cattle judging contests for the FFA Convention and Little-I. Tim Korver and John Temme serve as student managers.





## PROFESSIONAL ACTIVITIES OF FACULTY AND STAFF

Faculty and students together presented numerous papers including refereed publications in scientific journals, abstracts, presentations, book chapters, extension publications, thesis or dissertations, and extension presentations. All publications are listed at <http://dairysci.sdstate.edu>.

### ACTIVITIES

**Dr. Sanjeev Anand** is serving the Food and Agriculture Organization of the United Nations as an expert on Joint FAO/WHO Expert Committee on Food Additives, contaminants and natural toxins (JECFA) for the period 2007-2011. Dr. Anand is also a member of the Food Safety Committee of the ADSA.

**Howard Bonnemann** served as secretary/treasurer of the South Dakota Dairy Association. He conducted several dairy product judging clinics for South Dakota high schools.

**Dr. Alvaro Garcia** once again offered a Dairy Spanish class. He was recognized with the President's Volunteer Service Award for his work with Winrock International. The President's Council on Service and Civic Participation issued the award on behalf of the President of the United States. He is Director Midwest Branch ADSA Chair, Ruminant Nutrition Committee, 2009 MW ADSA/ASAS.

**Dr. Ashraf Hassan** was granted tenure effective 1st July 2008. Dr.



**Hassan**

Hassan has been a faculty member in Dairy Science at SDSU since July 2003 and is responsible for teaching and research in Dairy Manufacturing. He has developed a strong research program in the area of low fat cheese technology, in particular investigating the applications of cultures producing exopolysaccharides for improving the quality of low fat cheeses. His expertise in the application of electron microscopy is well recognized. His research work is supported by the Midwest Dairy Foods Research Center, US-Egypt Joint Science Technology Board (USDA-FAS) program, Dairy Management Inc., and others. Dr. Hassan is a member of the International Animal Agriculture Committee of the American Dairy Science Association.

**Dr. Arnold Hippen** was an active participant in multi-state regional projects, NC 1040, Metabolic relationships of nutrients. He is a member of the Graduate Student Poster Competition Committee for the ADSA. He serves as chair of Institutional Animal Care and Use Committee of SDSU.

**Dr. Kenneth Kalscheur** was an active participant on a NC multi-state research project; NC-1042, Management Systems to Improve the Economic and Environmental Sustainability of Dairy Enterprises.

**Dr. Lloyd Metzger** serves as the Director of the Midwest Dairy Foods Research Center and the Executive Secretary of the North Central Cheese Industries Association. He is also Chair – ADSA Foundation Scholar Award Committee, Member – ADSA Dairy Foods Milk Protein and Enzyme Committee, Elected – Secretary of the ADSA Dairy Foods division and member of the editorial board of the Journal of Dairy Science.

**Dr. Vikram Mistry** served as the US editor of the French Journal of Dairy Science and Technology, Le Lait and Associate Director of the Midwest Dairy Foods Research Association. Member of editorial board of the International Dairy Journal.

**Dr. Dave Schingoethe** was an Editor of Journal of Dairy Science (ADSA) and is a Member of the Contemporary and Emerging Issues committee for the '09-'11 meetings.

## NEW AND ONGOING FUNDS FOR SUPPORTING RESEARCH AND OTHER PROGRAMS

**Anand, S. K. and Hassan, A.** Bacterial biofilm formation on dairy filtration membranes. 9/1/2008 to 12/31/2009. Midwest Dairy Foods Research Center. \$68,200.

**Anand, S. K., Hassan, A., Kalscheur, K. F.** Manufacture of cheese enriched with conjugated linoleic acids. 1/1/2007 to 6/30/2009. Midwest Dairy Foods Research Center. \$56,154.

**Wolf-Hall, C. E., Anand, S. K., Chamberlin, B., Garden-Robinson, J., Gleason, J., Hall, C., Hegerfeld-Baker, J., Krishnan, P., Muthukumarappan, K., Littlefield, R., Panigrahi, S., Saxowsky, D., and Wachenheim, C.** Recruitment and retention of diverse population of food safety students using novel approaches to market enhanced programs. 9/1/2008 to 8/31/2011. USDA-CSREES- Higher Education Challenge Grant (jointly awarded to NDSU, SDSU, and NMSU). \$475,000

**Baer, R. J.** Improving the texture of ice cream. 1/2/2008 to 1/1/2010. Industry support. \$15,000.

**Garcia, A. D.** Producer surveys and outreach/extension programs for livestock producers. 5/1/2007 to 4/30/2012. USDA/Agricultural Research Service. \$36,000.

**Garcia, A. D., Endres, M., Keown, J., Mondak, C.** A dairy farm safety training program for Hispanic workers. 7/1/2008 to 6/30/2009. North Central Risk Mgmt Ed Center and Midwest Dairy Consortium. \$60,000.

**Hassan, A.** Application of salt whey from Egyptian cheese varieties and Cheddar in process cheese making. 8/14/2008 to 9/30/2010. US-Egypt Joint Science and Technology Board through USDA/FAS. \$30,000.

**Hassan, A.** Development of novel functional ingredients from whey containing exopolysaccharides. 10/1/2008 to 1/31/2010. Dairy Management Inc. \$49,790.

**Hassan, A.** Production of 50% reduced fat Cheddar cheese with improved characteristics. 11/26/2007 to 12/31/2009. Dairy Management Inc. \$57,044.

**Hassan, A., Dwivedi, C.** Chemopreventive effects of exopolysaccharides produced by yogurt cultures on tumor development. 9/1/2006 to 8/31/2008. AES - In House. \$20,000.

**Hassan, A., Mistry, V. V., Muthukumarappan, K.** Low fat cheese texture enhancement. 11/1/2007 to 4/30/2009. Dairy Management Inc. \$65,000.

**Hippen, A. R., Hassan, A., Abd El-Salam, M. H.** Production of novel probiotic dairy products rich in conjugated linoleic acid. 3/1/2006 to 11/30/2009. US Egypt Joint Board. \$27,000.

**Hippen, A. R., Kalscheur, K. F.** Effect of Silaferm treatment of corn silage on milk production, milk composition, and lactation performance of dairy cows. 12/1/2007 to 11/30/2009. Ajinomoto USA, Inc. \$32,547.

**Hippen, A. R., Kalscheur, K. F., Schingoethe, D. J.** Monensin, corn distillers grains, and nonstructural carbohydrate dietary Interactions on production and milk fatty acid composition in dairy cows. 3/1/2007 to 7/1/2009. Elanco Animal Health. \$65,019.

**Hippen, A. R., Kalscheur, K. F., Schingoethe, D. J.** New uses of distillers grains products in dairy cattle feeding. 5/1/2007 to 4/30/2012. USDA/Agricultural Research Service. \$160,000.

**Kalscheur, K. F., Hippen, A. R., Schingoethe, D. J.** Evaluation of low-fat distillers grains in dairy cow diets. 6/7/2007 to 5/31/2009. VeraSun Energy Corporation. \$77,282.

**Metzger, L. E., Mistry, V. V., Hassan, A. N., Muthukumarappan, K.** Institute for Dairy Ingredient Processing. 9/1/2007 to 8/31/2010. Dairy Management Inc. \$866,904.

**Metzger, L. E.** Low fat/fat free process cheese for slice-on-slice applications. 1/1/2007 to 6/30/2009. Dairy Management Inc. \$91,293.

**Metzger, L. E.** Manufacture of reduced/low sodium SOS process cheese. 11/1/2007 to 4/30/2009. Dairy Management Inc. \$95,997.

**Metzger, L. E., Muthukumarappan, K.** Manufacture of WPC and WPI for use in beverage applications. 9/1/2007 to 4/30/2009. Dairy Management Inc. \$52,495.

**Metzger, L. E., Hassan, A. N.** Evaluation of NFDM and MPC in yogurt formulations. 10/1/08 to 3/30/10. Dairy Management Inc. \$67420

**Mistry, V. V., Somni, H.** Manufacture of concentrated whey proteins in their native form/state using membrane processing and their characterization. 1/1/2007 to 6/30/2009. Midwest Dairy Foods Research Center. \$63,856.

**Schingoethe, D. J., Hippen, A. R., Kalscheur, K. F.** Evaluation of high protein distillers grains versus regular DDGS, soybean meal, and canola meal for lactating dairy cows. 12/1/2007 to 9/30/2009. POET/Dakota Gold Research Association. \$46,000.



STUDENT ACCOMPLISHMENTS

**Valerie Mohr**, freshman Dairy Production placed first in 4-H nationally at the World Dairy Expo.

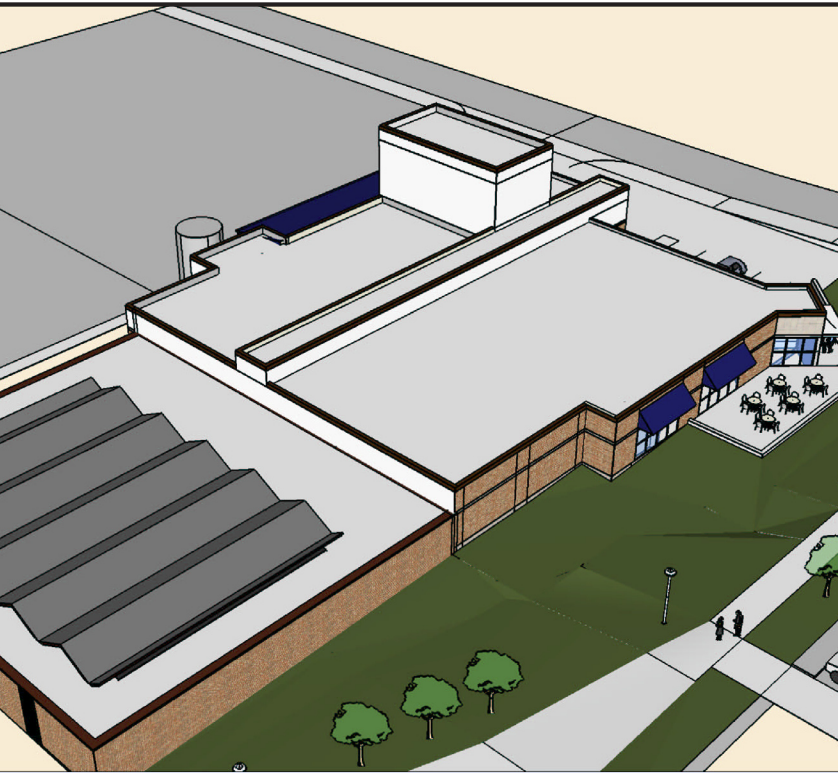
**Stephanie Nussbaum**, Dairy Manufacturing major was selected as the SD Dairy Princess for 2008-2009.

**Rachel Patrick**, Dairy Production major is the President of the SD Chapter of the PAS.

**Megan Rice**, Freshman Dairy Manufacturing and Production major received a National Proficiency Award in Dairy Production at the National FFA Convention in Indianapolis.

**Wendy Weber** served as AgBio Ambassador. As an Ambassador, Wendy promoted the SDSU College of Agriculture and Biological Sciences to prospective students.

**Twelve students** participated in internships throughout the country and beyond during summer'08. Organizations and locations include Leprino Foods, Ravena NE, Tracy CA, Waverly NY, and Fort Morgan CO, Kemps, LLC, Rochester MN and Farmington MN, Valley Queen Cheese, Milbank SD, Davisco Foods Inc., Lake Norden SD, Hilmar Farms, Hilmar CA, WI Holstein Association, Baraboo WI, Dairy Net 2000, Brookings SD, Land O' Lakes, Arden Hills MN, Land O' Lakes Purina Feeds, Lewiston MN, AMPI, Sanborn IA, Central Crop Consulting, Cottonwood MN, La Combe, Toulouse, France.



DAIRY PLANT RENOVATION

Dairy Plant building and renovation fund raising is in its final stages. Hilmar Cheese of California and First Premiere Bank joined the Jack-rabbit Dairy Council and the Dairy Producers of the state through the ADA of SD doubled their contributions to the project. Other partners in the Jackrabbit Dairy Council include Davisco Foods, Ecolab, Glanbia Foods USA, SA Education Foundation, TetraPak, Valley Queen Cheese, and Wells' Dairy. Several individual contributors have also generously donated towards the project. The Dairy Management Inc., is supporting the Institute of Dairy Ingredient Processing through personal sup-port within the new plant. Additional contributors are being sought to complete this project, which is estimated to cost approximately \$10.5 million, equally divided in bricks and mortar and equipment. Do call us if you would like to join us in the exciting project that will help shape the future of the dairy industry. In spring '08 the university announced renovations plans for the entire Dairy-Micro Building. This \$8.5 million project will renovate all the labs, classrooms and offices in the Dairy-Micro Building. Architectural plans have already begun and the project is scheduled to begin in late spring'09 and scheduled to be completed by December 2010. During this period, the Dairy Science Department will temporarily move out of the Dairy-Micro Building. By the end of 2010, the Dairy Science program will have been the beneficiary of much-needed and significant renovations.

The Jackrabbit Dairy Council includes

American Dairy Association of SD • Hilmar Cheese • First Premiere Bank  
Davisco Foods International • Ecolab • Glanbia Foods USA • Tetra Pak CPS  
SA Education Foundation • SDSU • Valley Queen Cheese • Wells' Dairy

DAIRY CLUB

2008 Officers: John Temme, President; Tim Korver, Vice President; Samantha Wahls, Secretary; Heather Jons, Treasurer; Jessica Berg and Kaitlin Van Eck, Historians; and Rachel Patrick and Abbie Wirt, Activities Coordinators. Advisors are Howard Bonnemann, Dr. Arnold Hippen, Matt Laubach and Dr. Lloyd Metzger. In spring, Club members traveled to the University of Minnesota, St Paul to attend the ADSA Midwest student affiliate conference. The Club hosted a Dairy Camp for k-12 students in June and attended the World Dairy Expo in Madison, WI. Club members helped host the 2008 Central Plains Fall Sale on the SDSU campus and sold cheese boxes in the fall. In fall a bus-load of students also travelled to Canada to attend the Canadian Royal. The Club was well represented in the Hobo Day parade by students.

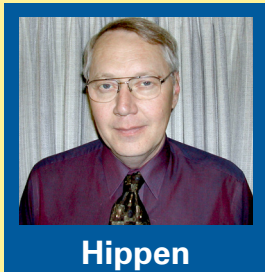


YEARS OF SERVICE

Dr. Robert Baer, was recognized for 25 years of service to SDSU and Dr. Arnold Hippen for 10 years.



Baer



Hippen



SCHOLARSHIPS

Our students were once again the beneficiaries of the generosity of many donors. At the spring 2008 banquet, 207 attendees witnessed the award of over 80 scholarships and awards totaling \$67,275. The scholarships were as follows:

Allen Safety	\$3,000	SD State Dairy Association (4 @ \$1200 each)	\$4800
John Anderson Memorial	\$1000	Todd and Erica Stahl	\$1000
Associated Milk Producers, Inc.	\$1000	Valley Queen Cheese Factory	\$2500
Ross Baker Memorial	\$800	Joseph Van Treeck	\$1000
Emery Bartle Memorial	\$4000	Wells Family Foundation	\$1000
Dairy Club (2 @ \$250 each)	\$500	Walt and Yvonne Wosje	\$1000
Dairy Farmers of America	\$400	JJ Yee	\$500
Dairy Science Department	\$600		
Danisco (2 @ \$1,000 each)	\$2000	<b>Awards</b>	
David H. Henry Memorial	\$350	D. F. Breazeale Memorial	\$650
Davisco Foods Int'l, Inc.	\$750	Dairy Challenge (4 @ \$150)	\$600
Dean Foods - Land O'Lakes	\$1000	Dairy Judging Manufacturing	\$150
Derdall	\$500	Dairy Judging Production	\$150
Gilbert T. & Olga Gilbertson Memorial	\$750	Forbes Leadership	\$300
John C. Gross	\$1000	Graber-Ford	\$125
Clyde Helsper Memorial	\$500	Students Employee Excellence (2 @\$250)	\$500
Kemps LLC	\$1500	Alfred Tobkin Memorial (4 @ \$150 each)	\$600
Land O'Lakes-Region 65	\$500	Howard Voelker Memorial (4 @ \$150 each)	\$600
James Marvel Memorial	\$600	Virginia Dare	\$250
Kirk Mears Memorial	\$1800		
North Central Cheese Industries Association		<b>Incoming Students Scholarships</b>	
(2 @ \$1500, 1 @ \$1200)	\$4200	Dairy Science Faculty (4 @ \$500, 1 @ 250)	\$2250
Nordica Licensing Inc.	\$750	William & Marge Kallemeyn & Sons	
H. C. Olson	\$850	(2 @ \$1000 each)	\$2000
T. M. Olson	\$1000	Midwest Dairy Assn/SD Division (2 @ \$750)	\$1500
Alfred Hermann Rishoi (2 @ \$1000 each)	\$2000	SD Dairy Fieldmen's Association (5 @ \$1000)	\$5000
Ralph Rogers Memorial	\$400	Clyde G. Helsper Dairy Fieldmen's	\$1000
Saputo Cheese	\$1000	Royal and Helen Donor in Dairy Production	\$600
Joe E. Schuch (2 @ \$1000 each)	\$2000	SD Dairy Association (2 @ \$600 & 1 @ \$500)	\$1700
Shirley Seas Memorial	\$750	Valley Queen Cheese Factory	\$1000
Robert F. Sistowicz Memorial	\$1250		



Dairy Science students won 7 of the 20 scholarships awarded by the National Dairy Promotion and Research Board in nation-wide competition. Front row, left to right: Melissa Lax, Jared DeNoble, Nicole Stevens; Back row, left to right: Abigail Wirt, Rachel Patrick, Heather Jons, Samantha Wahls.

SCENES FROM THE PAST



## OUTREACH

### I-29 Dairy Conference

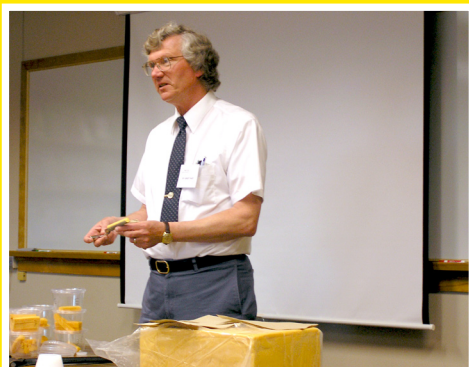
The Department in conjunction with the University of Minnesota, Iowa State University, and the University of Nebraska organized the 3rd annual dairy conference. Invited speakers discussed various issues pertaining to dairying in the midwest.

### Central Plains Dairy Expo

Alumni, students, staff, and faculty of the Dairy Science Department were involved in various activities of the 2008 Central Plains Dairy Expo. Dairy Club and staff assisted with registration and other duties. Faculty provided presentations on various topics and conducted a cheese tasting contest.

### Cheese Grading Workshop

The Dairy Science Department hosted a cheese grading workshop under the auspices of the North Central Cheese Industries Association. The workshop drew 13 personnel from several cheese manufacturing organizations from the upper Midwest. Presenters included Drs. Bob Baer, Sanjeev Anand, Lloyd Metzger.



### Cochran Fellowship Program, USDA-FAS

The Dairy Science Department hosted Mr. Gianchand Mutreja, General Manager at the National Dairy Research Institute, Karnal, India under the Cochran Fellowship Program as part of the USDA-FAS. Mr. Mutreja participated in SDSU dairy plant operations, classes and visited area facilities.



### Midwest Dairy Foods Research Center Planning Conference

The Dairy Science Department has been a member of the Midwest Dairy Foods Research Center (formerly MN-SD Dairy Foods Research Center) since 1988. In spring the department hosted a research planning meeting for the Center. Representatives from the three participating universities (SDSU, University of Minnesota, and Iowa State University), dairy industry and the Midwest Dairy Association participated to identify dairy processing research topics that will increase the demand for dairy products.

### North Central Cheese Industries Association

In October the department was host to the annual meeting of

the North Central Cheese Industries Association. The day and a half meeting that was presided by SDSU Dairy Science alum, Brad Snaza, drew approximately 120 participants. Various contemporary topics relevant to the cheese industry were covered. President David Chicoine of SDSU was the key-note speaker at the awards banquet.

### SD Holstein Association

During summer 2008 the department hosted the summer picnic of the South Dakota Holstein Association. Participants toured the dairy and participated in a judging contest.



### K-12 STUDENTS

#### Dairy Camp

The Club hosted the 6th annual Dairy Camp in June for k-12 youth. This year there were 20 participants. Activities included a visit to a commercial dairy, training on care of heifers, reading pedigree, judging, visit to the SDSU dairy plant, making ice cream, clipping and showing cattle and entertainment.

### High School Visits

Recruiting students for our programs is a year-round activity and a priority. Dairy Science Ag-Bio Ambassadors visited several high schools throughout the year in South Dakota, Iowa and Minnesota. In addition, the Department visited schools in Minnesota, South Dakota and Idaho.

### Extension

**Meetings and Workshops:** Aside from local extension workshops, Extension also participated in regional and international activities including Brazil, Colombia, Mexico, Uruguay and Venezuela.

**Training Courses for Hispanics:** Training workshops to obtain hygienic milk were offered to dairy workers. A special Dairy Spanish class "Spanish for Animal Scientists" was also offered to students in fall'08.

**Dairy Science at World Dairy Expo:** The Dairy Science Department and the South Dakota Department of Agriculture jointly displayed a booth at the World Dairy Expo in Madison, WI in October. The booth highlighted the dairy development efforts and dairy education and research activities and opportunities in South Dakota. Many interested people and alums stopped by to learn about the South Dakota dairy industry and education and to say hello.

Alums and Students: Visit the Careers Section of our website (<http://dairysci.sdstate.edu>) for a listing of job opportunities in Dairy Science. Please give us a call for details on positions that interest you.

### Mark your calendar:

- The 2009 Dairy Science scholarship banquet is on 6th April at 6 pm at the SDSU Student Union.





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## RESEARCH HIGHLIGHTS

Faculty research activities are supported by the Agricultural Experiment Station, and external grants. The broad areas of research are as follows:



### Metabolic Relationships In Supply Of Nutrients For Lactating Cows.

Drs Arnold Hippen, David Schingoethe and Kenneth Kalscheur. The long-term goal is to improve the efficiency of milk production, cow health and longevity, and thus promote environmental and economic sustainability in the US dairy industry. The approach to achieve this goal is to systematically identify those biological and nutritional management processes that will provide the greatest improvements in milk production and sustainability of dairy systems.

### Management Systems To Improve The Economic And Environmental Sustainability Of Dairy Enterprises.

Drs Kenneth Kalscheur and Arnold Hippen. The purpose of this project is to develop decision support systems that address nutrition, management, environmental impacts, and economics of 1) calves and heifers and 2) lactating and dry cows.

### Enhancement Of Quality, Safety And Health Attributes Of Milk And Dairy Products.

Dr. Sanjeev Anand. The purpose of the present investigation is to study the persistence of spoilage and pathogenic microflora under dairy farming environments and develop HACCP based system approach to control the pathogens. The study also aims at establishing cross contamination between dairy farms and dairy processing plants due to the presence of certain infectivity cycles. Another purpose of the study is to enhance the health attributes of dairy products by enriching them with functional components like bioactive peptides, conjugated linoleic acid, and riboflavin to enhance health attributes.

### Manufacture, Functionality, And Application Of Protein Based Dairy Ingredients

Drs. Lloyd Metzger, Vikram Mistry, Ashraf Hassan, Kasiviswanath Muthukumarappan. This project will develop manufacturing processes for protein based dairy ingredients that can serve domestic and export markets.

### Strategies To Increase The Utilization Of Coproduct And Traditional Feeds By Lactating Cows.

Drs. David Schingoethe, Arnold Hippen, Kenneth Kalscheur and Alvaro Garcia. This research will evaluate the use of new ethanol co-products, as well as other byproduct feeds, in diets of lactating cows.

### Use Of Biofuel Coproducts To Improve Nutrient Utilization In Dairy Cattle

Drs. Kenneth Kalscheur, Arnold Hippen, David Schingoethe, and Alvaro Garcia. This project examines nutrient utilization of dairy cattle fed diets using biofuel coproducts to reduce losses to the environment.

### Flavor, Texture, And Nutritional Enhancement Of Milk And Dairy Products

Dr. Robert Baer. A method that inhibits and reverses light-induced oxidized off-flavor in milk will be developed. A method to reduce pink discoloration, a defect in Cheddar and Colby cheeses, will be evaluated. Frozen desserts will be produced with improved nutrition and texture.

### Metabolic Conditioning Of Early Lactation Dairy Cows.

Drs. Arnold Hippen, Kenneth, David Schingoethe and Kalscheur. The approach of these investigations focuses on regulatory mechanisms of blood glucose concentrations and aids for more rapid attainment of normal carbohydrate status through dietary intervention.

### Modifying Milk Fat Composition For Enhanced Manufacturing Qualities And Consumer Acceptability.

Drs. David Schingoethe, Robert Baer and Arnold Hippen. Milk is nature's most nearly perfect food but can be made even better. Results of this research will improve the healthfulness, marketability, and consumer acceptability of dairy products. The purpose of this research is to improve the healthfulness and marketability of dairy products.

### Applications Of Exopolysaccharides-Producing Cultures In Dairy Products

Drs. Ashraf Hassan, and Vikram Mistry. The objective of this work is to improve the characteristics of low fat fermented dairy products. In addition, effectiveness of exopolysaccharides at enhancing the survival of probiotics in yogurt will be examined.