Winter 2010

The Jackrabbit Dairy Review

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After almost half a century of residence in the Dairy-Micro Building, the Department moved out to make room for renovations. Offices are temporarily located in the basement of Hansen Hall and much of research activity remains in the Dairy-Micro Building in compressed space. The moving act took months of planning and packing by students, faculty and staff. Through this intensive and difficult process our sights have remained on the anticipated outcome in late 2010; a fully renovated building that will set the stage for our programs for many years to come. The moving process was also very humbling; we discovered documents, pictures and other paraphernalia that demonstrated the history of the department and the accomplishments of those that preceded us. This particularly gave us a sense of direction for our own future in the remodeled building. These historical materials have now been archived. Another exciting development is that of our student numbers. For the first time since approximately 1982, our undergraduate major population reached 90 in fall'09. This is an important landmark given the demand for Dairy Science graduates. Placement has remained at 100% for the past many years. In 2009 16 companies from around the US visited the department and conducted 143 interviews that resulted in numerous offers for internships and permanent positions. Planning for the dairy plant project is in its final stages and we hope to finally begin construction in 2010. During fiscal year 2009 our faculty and staff spent almost $880,000 of grant funds on research projects. These external funds were awarded to faculty through competitive grants and helped support research and salaries of at least 22 researchers and graduate students. In addition, faculty excellence was demonstrated through their teaching, and service to the industry in various capacities. The past two years have been particularly difficult for the dairy industry but support from the industry in the form of scholarships and other projects continued at admirable levels. We recognize this and continue to develop extension and research programs that will benefit the industry in the long term. Most importantly this support has helped develop the future leaders of the industry. In 2010 I invite you to visit us and be a part of a new chapter in the Dairy Science Department and observe progress on facilities development.

Vikram Mistry

Staff
Jayendra Amamcharla, Postdoctoral Research Associate
Jill Anderson, Research Assistant
Ananya Biswas, Microbiologist
Jongwoo Choi, Post Doctoral Research Associate
Stephen Crego, Assistant Manager, Dairy Research & Training Facility
Valerie Denison, Secretary
Akimoto Ichinomiya, Assistant Dairy Plant Manager
Gary Kirkham, Ag Foreperson/Lead Feed
Pete Linke, Ag Foreman/Fresh and Sick Cows/Calf Care
Chenchaiah Marella, Post Doctoral Research Associate
Jayne Raabe, Senior Secretary
Misty Young, Secretary
Huimin Zhang, Research Associate

Dairy Science Department
Faculty
Sanjeev Anand, Associate 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

Graduate Students
Dairy Production
Jill Anderson
*Heidi Bruns
*Kevin Herrick
Peter Linke
Kamal Mjoun
Rosemary Nyoka
Sanjeewa Ranathunga
*Javier Sabbia

Dairy Manufacturing
Mallika Avadhanula
*Ananya Biswas
Jenna Buyck
*Gagan Deep
Akimoto Ichinomiya
*Oliver Janevski
Anil Kommneni
*Maneesha Mohan
Nirupama Nigam
Prafulla Salunke
*Kartik Shah

*New students in 2009

Dairy Facilities Renovation
After approximately 50 years of residence in the Dairy-Micro Building, the Dairy Science Department vacated the building in May 2009 to make room for extensive renovations that began in 2009. The $8.5 million project when completed in mid to late 2010 will include total upgrades to labs and offices. In the interim, the Dairy Science offices are housed in the basement of Hansen Hall and most classes are scheduled also in Hansen Hall. Fundraising for the dairy plant is finally nearing completion; upgraded designs will be completed in spring 2010 and construction is scheduled to begin in summer, pending completion of fundraising.

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**New Faculty and Staff**

Jongwoo Choi joined the Dairy Science Department as a Post Doctoral Research Associate under the supervision of Dr. Ashraf Hassan. Dr. Choi holds a BS degree in Dairy Science from Chonbuk National University, S. Korea, MS in Animal Science from McGill University, Canada, and PhD in Food Science from University of Wisconsin-Madison. Dr. Choi is working on research that is exploring the application of exopolysaccharide cultures in the manufacture of reduced fat cheeses.

Stephen Grego accepted a position as Assistant Manager, Dairy Research and Training Facility. He holds a BS degree in Farm Business Management/Animal Science/Plant Science from Cornell University, Ithaca, NY. Steve will assist the farm manager in all aspects of farm management.

Chenchaiah Marella is a Post Doctoral Research Associate in Dairy Science. His BS is in Dairy Technology from Acharya N. G. Ranga Agricultural University, India, MS in Dairy Engineering from Gujarat Agricultural University, India and PhD in Agricultural Biosystems Engineering, SDSU. Dr. Marella is working on membrane applications in dairy ingredient development under Dr. Lloyd Metzger.

Misty Young joined the Dairy Science Department as Secretary for the Dairy Plant. She holds a AAS in Business from Southeast Technical Institute in Sioux Falls. Misty is responsible for managing the dairy store.

**Undergraduate Students**

**Dairy Production**
- Brittany Albrecth, Stewart, MN
- Rachel Becker, Eden Valley, MN
- Nicholas Bosma, Harris, IA
- Holly Bruns, Lafayette, MN
- Katelyn Crocket, Merrifield, MN
- Tyler Egeland, Osian, IA
- Carrie Ellesfon, Princeton, MN
- Tom Hammink, Bruc, SD
- Monte Hickman, Orange City, IA
- Rene Hinkeldey, Ah, IA
- Andrea Hoffman, Cleveland, MN
- James Huffman, McCook, NE
- April Johnson, Heron Lake, MN
- Heather Jons, Hormet, SD
- Emily Jungemann, Welsey, SD
- Angela Kalkbrenner, Kandyoky, MN
- Gerben (Gary) Landman, White, SD
- Melissa Lax, Sleepy Eye, MN
- Grace Liebenstein, Dundas, MN
- Sara Lopez, Elinton, SD
- Nicholas Lundberg, Murdock, MN
- Mitchell Maher, Namda, SD
- Valerie Mohr, New Ulm, MN
- Brittany Morose, Minsota, MN
- Katie Nelson, Rice, MN
- *Larissa Neugebauer, Dimock, SD
- Craig Niemann, Clear Lake, SD
- Stephanie Nussbaum, Garretton, SD
- Rachel Patrick, Eatonon, GA
- *Ethan Pedde, Samborn, MN
- Robert Plaisted, New Woodstock, NY
- Wylie Scalise, Brandonville, MA
- Cody Schlecht, Canby, MN
- Ashley Schroeder, Castle Rock, MN
- Ana Schweer, Watertown, SD
- *Angela Sellner, Sleepy Eye, MN
- Brian Spellz, Plannview, MN
- *Danielle Tews, Hutchinson, MN
- Cassey Utke, Brandon, SD
- *Cody Van Eck, Rainott, MN
- Kaitlin Van Eck, Rusthion, MN
- Jennifer Vander Linden, Edgerton, MN
- Bradley Vansanten, Luverne, MN
- *Briatene Veno, Holifa, MA
- Abigail Wirt, Lewinston, MN
- *Wade Wolff, Pipestone, MN
- Kade Zeman, Owatonna, MN

**Dairy Manufacturing**
- Lee Alexander, Twin Brooks, SD
- *Austin Asche, Stewart, MN
- Jordan Dorneman, Milbank, SD
- *Nathan Gollnick, Flanbrew, SD
- Kara Gutermson, Macdall, ND
- Rebecca Hanson, Brandan, SD
- *Kayla Holscher, Twin Brooks, SD
- Angela Klaers, Wabasso, MN
- Taylor Lais, Brandon, SD
- *Eric McNeel, Blackdon, ID
- *Kathryn Norling, Beforest, SD
- *Joshua Oakley, Dakota Dunes, SD
- Justin Ochsner, Nemours, MN
- *Angela Paterson, Marshall, MN
- Morgon Petersien, Cokan, MN
- Luke Rentsink, Freeman, SD
- Nicole Stevens, Pipestone, MN
- T. J. Swartos, Velga, SD
- *Todd Wight, Poseilo, ID
- Cory Zelfel, Kennard, NE

**Dairy Prod/Manuf Double Majors**
- Kimberly Allen, Page, NE
- Jessica Becker, Eden Valley, MN
- Jessica Berg, Baltic, SD
- *Skye Bynnes, Plantation, FL
- Roxane Chapman, Sioux Falls, SD
- Michael Dunn, Vale, SD
- Samantha Erickson, Poostrive, IA
- Megan Forst, Gibbon, MN
- Alex Ode, Brandon, SD
- Megan Rice, Fortth, NE
- Johanna Schuur, Sank Center, MN

- *New students in 2009*

**2009 Graduates**

**B.S. Manufacturing**
- Tricia Schuller
- Emily Stephenson

**B.S. Production**
- Rachel Becker
- Timothy Korver
- Gerben (Gary) Landman
- Craig Niemann
- Brittany Nussbaum
- Eric Schultz
- John Temme

**B.S Manufacturing and Production**
- Kimberly Allen
- Jessica Berg

**M.S.**
- Todd Owens

**Ph.D.**
- Himanshu Somni

**New Faculty and Students**

**Heifers for State**

The 2009 Heifers for State was held in conjunction with the annual South Dakota Central Plains Fall Sale on 31st October 2009 at the Animal Science Arena on the SDSU campus. Dairy Club members worked hard setting up the arena, preparing cattle to look their best, as well as showing the cattle to buyers during the sale. Over 60 animals were sold at the sale. Four generous producers also donated animals for the fourth Heifers for State program. Donors included Paul DeBoer, Randy Gross, Edward Kavanaugh, and Marv Post. More than $4,000 was collected from the donated animals. This contribution will be used for supporting dairy education, research programs and providing scholarships to Dairy Science students at SDSU. The Heifers for State program started in 2006.

**Heifers for State Donors**

Paul DeBoer, Randy Gross, Edward Kavanaugh, and Marv Post
Judging Activities
Dairy Cattle & Production

Students participated in two cattle judging contests during 2009; The 16th Annual Accelerated Genetics Intercollegiate Dairy Cattle Judging Contest in Viroqua Wisconsin and the North American International Livestock Exposition Dairy Cattle Judging Contest in Louisville, Kentucky. For the two contests team members were Heather Jons, Megan Rice, Amanda Hoover, and Valerie Mohr, and Heather Jons, Megan Rice, and Gerben (Gary) Landman, respectively. At the Viroqua contest Val Mohr was 10th overall, 3rd in Guernsey and 5th in Milking Shorthorns. The team placed 9th overall and 5th in Milking Shorthorns, and was 8th in reasons overall. At the Louisville contest in the Ayrshire breed, Gary place 24th overall. The team placed 8th in the Guernsey breed, with Heather Jons placing 8th individually and Megan Rice 18th. In Holsteins, Gary was 25th and the team was 7th. Heather Jons placed 25th overall in the contest. The SDSU coach is Matthew Laubach, who is also Instructor and Manager of the Dairy Training and Research Facility at SDSU.

Dairy Products

The Dairy Products Judging Team placed first in All Products in the 2009 National Collegiate Dairy Products Evaluation Contest, held in Glenview, IL. The team placed first in Cheddar cheese, milk, yogurt, and butter and second in ice cream and cottage cheese. A total of 50 undergraduate and graduate contestants from 16 universities in the U.S. and Canada participated in the contest. SDSU team members were Jordan Dorneman, Nicole Stevens, Cassey Utke, and Oliver Janevski. Alternate team members included Sami Erickson, Becky Hanson, and Eric McNeel. The team was coached by Bob Baer, SDSU Professor of Dairy Science. Utke placed first overall, Dorneman placed second overall, and Stevens was third overall. In the graduate student contest, Janevski placed first overall. The SDSU team became the first entrant in the contest’s 88 years to sweep the top three places in the overall undergraduate competition. For placing first overall, the SDSU team won the Shirley Seas Memorial Scholarship. This scholarship is in memory of Shirley Seas, who coached the SDSU team for 21 years. Baer also received the Aurelia and George Weigold Coach of the Year Award. As top judge in the nation, Utke received the Robert Rosenbaum Award and lifetime membership in the National Dairy Shrine. As second place judge, Dorneman received the Everett Byers Memorial Award and in March 2010 has been invited to participate in the World Championship Cheese Contest in Madison, WI. For placing third, Stevens received the Harold Roberts Award. As top judge in the graduate student contest, Janevski received the Genevieve Christen Award. The team has been invited to participate in the spring 2010 Quality Chekd Dairies, Inc. annual conference in Dallas, TX.

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 herd is used for research projects primarily in the cattle nutrition area and also for teaching. In addition k-12 students also benefit from it through the Dairy Camp and cattle judging contests that are offered at the farm. Mitch Maher and Heather Jons serve as student managers. Some of our cattle were shown at the South Dakota State Fair. One of our Brown Swiss was named Grand and Reserve Grand Champion and best udder of show. Several Holstein and Brown Swiss took various individual honors. Several upgrades to the farm this year include the installation of new bins for specialized feed that will help the research programs; a new tractor; the planting of approximately 20 trees in the dry-cow lot, and other on-going improvement projects including barn fans and sprinklers for improved cow comfort in the summer.
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 was granted promotion to Associate Professor effective July 2009. Dr. Anand has been a faculty member since September 2006. He teaches Dairy Microbiology, Advance Dairy Microbiology and Food Microbiology classes and conducts research in the area of biofilms on membranes, CLA in cheese and other areas involving food safety. He is a Member of the American Dairy Science Association, SDSU-Functional Genomics Core Facility, ADSA/ASAS Food Safety Committee, Member of the FAO expert group (JECFA) for food additives, contaminants and natural toxicants for 2007 to 2011, Chair of the Food Safety Committee for the 2010 Joint ADSA-ASAS-CSAS symposium to be held in Denver, CO, SD State resource person in food safety and added in the ‘Food Safety Contacts Directory’ of USDA, CSRES, July 2007 – present.

Dr. Robert Baer was a member of the Aurelia and George Weigold Coach of the Year Award for dairy products judging.

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

Dr. Alvaro Garcia completed his term as Director Midwest Branch ADSA; He is Ruminant Nutrition Committee Chair, 2009 MW ADSA/ASAS. He is also a co-organizer of the I-29 Dairy Conference along with colleagues from Iowa, Minnesota, Nebraska and North Dakota.

Dr. Ashraf Hassan is a member of the International Animal Agriculture Committee of the American Dairy Science Association and of the expert panel on low fat cheese research of the Dairy Management, Inc. He is Chair — ADSA Foundation Scholar Award Committee. Dr. Hassan traveled to Egypt along with other SDSU personnel to explore collaborative research opportunities under USDA programs.

Dr. Arnold Hippen was an active participant in multi-state regional projects, NC 1040, Metabolic relationships of nutrients. He is a member of the ASASES, July 2007 – present.

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

Matthew Laubach served as dairy farm manager and coach of cattle and dairy challenge programs. He also judged several youth cattle contests around the state and in Minnesota.

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 member of the ADSA Dairy Foods Milk Protein and Enzyme Committee, Secretary of the ADSA Dairy Foods division and member of the editorial board of the Journal of Dairy Science. At the 2009 ADSA conference, Dr. Metzger received the Cargill Flavor systems award in recognition of his research work.

Dr. Vikram Mistry served as the U.S. editor of the French Journal of Dairy Science and Technology, Le Lait and Associate Director of the Midwest Dairy Foods Research Association. He also serves as the Director of the Midwest Dairy Foods Research Center, ADSA/ASAS Food Safety Committee through his position as the Director of the SDSU-Functional Genomics Core Facility.

New and Ongoing Funds for Supporting Research and Other Programs


Bauer, R. Improving the texture of ice cream. 1/2/2008 to 11/12/2010. 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.


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.


S tu d e n t ac c o m p l i s h m e n t s

Tricia Schuller as the top Cheddar cheese judge in 2008 was invited to participate in the 2009 US Champion Cheese Contest in Green Bay. At this contest Schuller and Dr. Baer participated as associate judges to evaluate over 1,300 cheeses from around the world.

Ana Schweer, Dairy Production major was selected as the South Dakota Dairy Princess for 2009–2010. Larissa Neugebauer, freshman was runner-up. Ana was also selected as an Ag-Bio Ambassador for the college of Agriculture and Biological Sciences. As an ambassador she will promote the college to prospective students.

Numerous Students participated in internships around the country during summer 2009. Organizations and locations included Leprino Foods, Fort Morgan, CO; Kemps, LLC; Pfizer Animal Health; Schwan’s Foods, Marshall, MN; Glanbia Foods USA, Twin Falls, and Gooding, ID; Kraft Foods, Springfield, MO and NY; University of Minnesota Extension, Yellow Medicine County; AgriVision Farm Management, Hartley, TX; Braums Dairy, Tuttle, OK; Hilmar Farms, Hilmar, CA; First District Association, Litchfield, MN, and several others, including home farms.

V i s i t o r s

Dr. Muhammad Abdullah who is Professor and Dean of the Faculty of Animal Production & Technology at the University of Veterinary and Animal Sciences at Lahore, Pakistan was sponsored by his government for a 3-month assignment in the Dairy Science Department to work with Dr. Arnold Hippen. While at SDSU he worked in the area of fiber digestibility of ethanol co-products in diets of dairy cows. Humberto Francesca assisted Extension with dairy farm safety training program for Hispanic workers.

Dr. Morsi El-Soda, Dean of the Faculty of Agriculture at Alexandria University visited the Dairy Science Department to discuss opportunities for collaborative research.

Mostafa Elaaser, a graduate student from the National Research Institute in Cairo, Egypt spent one month in the laboratories of the Dairy Science Department conducting fatty acid analysis of cheese and milk samples. Mostafa was visiting as a part of US-Egypt Joint Board project that has been awarded to Dr. Arnold Hippen.

D a i r y c l u b

2009 Officers: Samantha Erickson, President; Heather Jons, Vice President; Holly Bruns, Secretary; Katelyn Crocker, Treasurer; Valerie Mohr and Brittany Moore, Historians; and Katie Korver and Cory Zelief, Activities Coordinators. Advisors are Howard Bonnemann, Dr. Arnold Hippen, Dr. Kenneth Kalscheur, Matt Laubach and Dr. Lloyd Metzger. The Dairy Club has nearly 65 members including Dairy Science as well as other majors and continues to be very active. Early in the year they travelled to Fargo, ND to attend the Midwest ADSA-SAD conference. In June, Club members hosted 30 youth at the Superhero Dairy Camp. Other club activities throughout the past year included the Fall Dairy Sale, Hobo Days festivities, cheese boxes and selling of Grilled Cheese and milk as a fundraiser for the upcoming ADSA conference. The SDSU Dairy Club will host the 2010 Midwest ADSA Student Affiliate Division Conference in February.

Y e a r s o f s e r v i c e

Gary Kirkham was recognized for 25 years of service and Dr. David Schingoethe for 40 years.

Kirkham  

Schingoethe
### Scholarships

Our students were once again the beneficiaries of the generosity of many alumni and industry. At the spring 2009 banquet, 207 attendees witnessed the award of over 80 scholarships and awards totaling $63,430. The scholarships were as follows:

<table>
<thead>
<tr>
<th>Scholarship Name</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Anderson Memorial</td>
<td>$1000</td>
</tr>
<tr>
<td>Associated Milk Producers, Inc.</td>
<td>$1000</td>
</tr>
<tr>
<td>Ross Baker Memorial</td>
<td>$550</td>
</tr>
<tr>
<td>Emery Bartle Memorial</td>
<td>$4000</td>
</tr>
<tr>
<td>Dairy Club (2 @ $250 each)</td>
<td>$500</td>
</tr>
<tr>
<td>Dairy Farmers of America</td>
<td>$400</td>
</tr>
<tr>
<td>Dairy Science Department (3 @ $250)</td>
<td>$750</td>
</tr>
<tr>
<td>Danisco (2 @ $1,000 each)</td>
<td>$2000</td>
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<tr>
<td>Davisco Foods Int'l, Inc.</td>
<td>$750</td>
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<tr>
<td>Dean Foods - Land O'Lakes</td>
<td>$1000</td>
</tr>
<tr>
<td>Dordall</td>
<td>$500</td>
</tr>
<tr>
<td>Gilbert T. &amp; Olga Gilbertson Memorial</td>
<td>$500</td>
</tr>
<tr>
<td>John C. Gross</td>
<td>$1000</td>
</tr>
<tr>
<td>Heifers for State (2 @ $500)</td>
<td>$1000</td>
</tr>
<tr>
<td>Clyde Helser Memorial</td>
<td>$500</td>
</tr>
<tr>
<td>I-29 Dairy Extension</td>
<td>$300</td>
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<tr>
<td>Kemps LLC</td>
<td>$1500</td>
</tr>
<tr>
<td>Land O'Lakes-Region 65</td>
<td>$300</td>
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<tr>
<td>David H. Henry Memorial</td>
<td>$250</td>
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<tr>
<td>James Marvel Memorial</td>
<td>$400</td>
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<tr>
<td>Kirk Mears Memorial</td>
<td>$1200</td>
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<tr>
<td>Nordica Licensing, Inc.</td>
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<tr>
<td>North Central Cheese Industries Association (2 @ $1800, 1 @ $1400)</td>
<td>$5000</td>
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<tr>
<td>H. C. Olson</td>
<td>$550</td>
</tr>
<tr>
<td>T. M. Olson</td>
<td>$750</td>
</tr>
<tr>
<td>Alfred Hermann Rishoi (2 @ $650 each)</td>
<td>$1300</td>
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<tr>
<td>Ralph Rogers Memorial</td>
<td>$400</td>
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<tr>
<td>Saputo Cheese</td>
<td>$1000</td>
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<tr>
<td>Schuch Family (2 @ $1000 each)</td>
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<tr>
<td>Shirley Seas Memorial</td>
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<tr>
<td>Robert F. Sistowicz Memorial</td>
<td>$1250</td>
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<tr>
<td>SD State Dairy Association (5 @ $1000 each)</td>
<td>$5000</td>
</tr>
<tr>
<td>Todd and Erica Stahl</td>
<td>$1000</td>
</tr>
<tr>
<td>Valley Queen Cheese Factory</td>
<td>$4000</td>
</tr>
<tr>
<td>Joseph Van Treeck</td>
<td>$1000</td>
</tr>
<tr>
<td>Walt and Yvonne Wosje</td>
<td>$1000</td>
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<tr>
<td>WOW Logistics’ Donald E. Utschig</td>
<td>$2000</td>
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<tr>
<td>J. J. Yee</td>
<td>$500</td>
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### Awards

<table>
<thead>
<tr>
<th>Award</th>
<th>Amount</th>
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<tbody>
<tr>
<td>D. F. Breazeale Memorial</td>
<td>$450</td>
</tr>
<tr>
<td>Dairy Challenge (4 @ $150)</td>
<td>$600</td>
</tr>
<tr>
<td>Dairy Judging Manufacturing</td>
<td>$150</td>
</tr>
<tr>
<td>Dairy Judging Production</td>
<td>$150</td>
</tr>
<tr>
<td>Forbes Leadership</td>
<td>$300</td>
</tr>
<tr>
<td>Graber-Ford</td>
<td>$100</td>
</tr>
<tr>
<td>Students Employee Excellence (2 @ $250)</td>
<td>$500</td>
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<tr>
<td>Alfred Tobkin Memorial (4 @ $110 each)</td>
<td>$440</td>
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<tr>
<td>Virginia Dare</td>
<td>$250</td>
</tr>
<tr>
<td>Howard Voelker Memorial (4 @ $135 each)</td>
<td>$540</td>
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### Incoming Students Scholarships

<table>
<thead>
<tr>
<th>Scholarship Name</th>
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<tbody>
<tr>
<td>Dairy Science Faculty (2 @ $800 each)</td>
<td>$1600</td>
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<tr>
<td>William &amp; Marge Kallemein &amp; Sons (2 @ $650 each)</td>
<td>$1300</td>
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<tr>
<td>Midwest Dairy Assn/SD Division (2 @ $750)</td>
<td>$1500</td>
</tr>
<tr>
<td>NCCIA Recruiting Scholarship</td>
<td>$750</td>
</tr>
<tr>
<td>SD Dairy Fieldmen’s Association (5 @ $1000)</td>
<td>$5000</td>
</tr>
<tr>
<td>Clyde G. Helser Dairy Fieldmen’s</td>
<td>$1000</td>
</tr>
<tr>
<td>Royal and Helen Donor in Dairy Production</td>
<td>$400</td>
</tr>
<tr>
<td>SD Dairy Association (2 @ $500)</td>
<td>$1000</td>
</tr>
<tr>
<td>Valley Queen Cheese Factory</td>
<td>$1000</td>
</tr>
</tbody>
</table>

Dairy Science students won 12 of the 20 scholarships awarded by the National Dairy Promotion and Research Board in nationwide competition. Students were: Rachael Becker, Samantha (Wahls) Erickson, April Johnson, Heather Jons, Melissa Lax, Brittany Moore, Kathryn Norling, Rachel Patrick, Ana Schweer, Nicole Stevens, Michelle Vander Linden and Abigail Wirt.
OUTREACH

I-29 Dairy Conference
The Department in conjunction with the University of Minnesota, Iowa State University, and the University of Nebraska organized the 4th annual dairy conference. Invited speakers discussed various issues pertaining to dairying in the midwest. The theme of the conference was “Going Green in a Black and White World”.

Area Dairy Expos
Alumni, students, staff, and faculty of the Dairy Science Department were involved in various activities of the 2009 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. Faculty also participated in the Midwest Dairy Expo in St. Cloud, MN and the Nebraska Dairy Convention in Columbus, NE.

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 15 personnel from several cheese manufacturing organizations from the upper Midwest. Presenters included Drs. Bob Baer, Sanjeev Anand and Lloyd Metzger.

Food Safety Lab Workshop
The first ‘Applied introductory food safety lab workshop’ was conducted at South Dakota State University in August as a part of a project under the CSREES USDA Higher Education Challenge grant (2009–11) handled collectively by North Dakota State University, South Dakota State University, and New Mexico State University. The instructors were Dr. Sanjeev Anand, Joan Hegelfeld-Baker, Maneesha Mohan, and Robert Jjuuko from Dairy Science, and Nutrition and Food Science Departments of SDSU. The aim of the workshop was to familiarize participants with basic food processing systems and the underlying food safety principles by involving them in hands-on sessions. The target groups of the workshop were high school science teachers, family consumer science teachers, extension personnel and foodservice, processing and production industry personnel.

North Central Cheese Industries Association
Dr. Lloyd Metzger serves as Executive Secretary and Dr. Vikram Mistry as Advisor to the NCCIA. The annual meeting was held in Rochester, M.N. in October and attracted over 130 cheese makers and suppliers from the upper Midwest. As always, SDSU Dairy Science graduates in their respective roles in the cheese industry were major participants. The 2010 meeting will be in Brookings, SD.

South Dakota Dairy Producers
In spring the South Dakota Dairy Producers, was launched to serve the dairy producers of the state. The Executive Director is Roger Scheibe, Dairy Science graduate. Another graduate, Marv Post is serving as President. Dr. Vikram Mistry serves as advisor. Information on the new organization can be found at http://sd-dairyproducers.org/Default.aspx

K-12 STUDENTS

Dairy Camp
The Dairy Club hosted the 7th annual Dairy Camp in June for K-12 youth. This year there were 30 participants. Activities included a visit to a commercial dairy, training on care of heifers, reading a 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, and South Dakota.

EXTENSION

Meetings and Workshops: Aside from local extension workshops, Extension also participated in regional and international activities including Chile. In Chile, Dr. Garcia discussed distillers grains applications in dairy cattle.

Farm Employee Safety Project: Dr. Alvaro Garcia led a project that emphasized dairy farm safety through education. This project involved training workshops on farms around the area. A partnership was also extended to Unidad Academica Campesina (UAC), a college in rural Bolivia.

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.

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 2010 Dairy Science scholarship banquet is on 5th April at 6 p.m. at the SDSU Student Union.
**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 and Kasiyavanath 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, and 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 Kalscheur and David Schingoethe. 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.

**Role of Exopolysaccharides-producing Cultures in Biofilm Formation and as a Texturizing Agent**

Drs. Ashraf Hassan and Vikram Mistry. The objective of this work is to optimize manufacturing conditions for the production of 50% reduced fat and low fat Cheddar cheeses with characteristics similar to those in the full fat types using exopolysaccharide-producing cultures, to develop novel functional ingredients from whey containing exopolysaccharides and to study the formation of biofilms on whey reverse osmosis membranes as a cause of membrane fouling.