The Jackrabbit Dairy Review

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**Message from the Department Head**

After spending a year and a half in cubicles around campus amid packed boxes, the Dairy Science offices finally returned to the Dairy-Micro Building on 20th December 2010. We now occupy the first and third floors of this spectacularly renovated building that features new offices, a new teaching lab, new graduate offices, and new research labs with supporting facilities such as equipment and conference rooms. Another major development in 2010 was the long awaited ground breaking of the new dairy plant. This event that took place on 7th May brought to campus many of the generous donors for the project as well as alumni and friends. Construction is progressing well and the project is expected to be completed in summer 2011. These two major projects will help strengthen our programs significantly and we are looking forward to continuing to serve the dairy industry for many years to come. The projects have also given us a unique perspective in many ways on the engineering aspects of construction, the visionary nature of industry leaders, generosity of industry, alumni, and friends, persistence and leadership of those involved in making such projects succeed amidst many challenges, and the dedication of faculty, staff and students in the face of numerous hurdles. The demand for Dairy Science graduates remains high. Placement has remained at 100% for the past many years. In 2010 fifteen companies from around the US visited the department and conducted 143 interviews that resulted in numerous offers for internships and permanent positions. During fiscal year 2010 our faculty and staff spent almost $850,000 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 scientists and graduate students. Faculty excellence was demonstrated through their teaching and service to the industry in various capacities. Faculty members were invited to speak at professional events. They were recipients of national awards and participated in professional service activities that assisted the dairy industry. Details of all activities are listed in this newsletter. These are particularly difficult times for the dairy industry and for individuals as well but support 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.

**Vikram Mistry**

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**2010 Graduates**

**B.S. Manufacturing**
- Jordan Dorneman
- Kara Gutormson

**B.S. Production**
- Holly Bruns
- Sara Lopez
- Ashley Schroeder
- Brian Speltz
- Casey Utke
- Michelle Vander Linden
- Bradley Vansanten
- Abigail Wirt

**B.S. Manufacturing and Production**
- Samantha Erickson
- Alex Ode

**M.S.**
- Jenna Buyck

**Ph.D.**
- Kamal Mjoun
Jacob Anderson will join the Dairy Science Department as Manager of the new dairy plant in January 2011. Jacob holds a B.S. degree in Dairy Science from SDSU and was employed at Davisco Foods International in Lake Norden, SD as Production Supervisor.

Howard Bonnemann who is instructor and dairy plant manager will assume the role of instructor and research coordinator after the arrival of Jacob Anderson. Howard has been with the department since 1997 and holds B.S. and M.S. degrees in Dairy Science from SDSU.

Stephen Crego, formerly Assistant Manager accepted a position as Manager, Dairy Research and Training Facility, Lecturer. He holds a BS degree in Farm Business Management/Animal Science/Plant Science from Cornell University, Ithaca, NY. Steve will manage all aspects of the farm and will coach the cattle judging team and teach the dairy cattle evaluation class.

Chenchaia Marella moved from position of Post Doctoral Research Associate in Dairy Science to Manager of the Institute of Dairy Ingredients Processing. 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 will work under Dr. Lloyd Metzger to manage research on ingredients in the new dairy plant.

Dawn Standish joined the department in summer as a temporary Secretary for the Dairy Plant and Store. She then assumed permanent employment in December 2010. She holds an Associate’s Degree in Sales, Marketing and Management from Ridgewater College.

Carol Van Meveren joined the Dairy Science Department as Sales Clerk for the new downtown dairy store. She holds a B.S. degree in Horticulture from SDSU. She is responsible for managing the downtown dairy store.

NEW FACULTY AND STAFF

Undergraduate Students

- Ann Albaugh, Castlewood, SD: Prod, Man
- Lee Alexander, Twin Brooks, SD: Man
- Kyle Anderson, De Smet, SD: Man
- Austin Asche, Stewart, MN: Man
- Adam Bates, Green Isle, MN: Man
- Jessica Becker, Eden Valley, MN: Prod, Man
- Kevin Berg, Baltic, SD: Prod, Man
- Roxane Chapman, Winfred, SD: Prod, Man
- Bethany Chapman, Winfred, SD: Prod
- Katelyn Crocker, Grand Rapids, MN: Prod
- Michael Dunn, Vale, SD: Pro, Man
- Carrie Ellesfon, Princeton, MN: Prod
- Jordan Evans, Pipestone, MN: Man
- Eric Flynn, N. Sioux City, SD: Man
- Megan Forst, Gibbon, MN: Prod, Man
- Nathan Gollnick, Flandreau, SD: Man
- Jennifer Gunnic, Lake Benton, MN: Prod
- Tom Hammink, Bruce, SD: Prod
- Rebecca Hanson, Brandon, SD: Man
- Renee Hinkkel, Alta, IA: Prod
- Andrea Hoffman, Cleveland, MN: Prod
- Matthew Holubogt, Eden Valley, MN: Prod
- Kayla Holscher, Twin Brooks, SD: Man
- Cassandra Hulstein, Edgerton, MN: Prod
- April Johnson, Heron Lake, MN: Prod
- Heather Jons, Bonesteel, SD: Prod
- Emily Jungemann, Wolsey, SD: Prod
- Andrew Kern, Owatonna, MN: Prod
- Angela Klaers, Wabasso, MN: Man
- Caleb Kottke, Owatonna, MN: Prod
- Taylor Lais, Brandon, SD: Man
- Melissa Lax, Sleepy Eye, MN: Prod
- Grace Liebenstein, Dundas, MN: Prod
- Mitchell Maher, Nunda, SD: Prod
- Laura McMartin, Gerber, CA: Prod
- Eric McNeil, Blackfoot, ID: Man
- Valerie Mohr, New Ulm, MN: Prod
- Brittany Morse, Minnetonka, MN: Prod
- Katie Nelson, Rice, MN: Prod
- Larissa Neugebauer, Dimock, SD: Prod
- Joshua Nussbaum, Garretson, SD: Prod
- Kaitlin Van Eck, Ruthton, MN: Prod
- April Johnson, Heron Lake, MN: Prod
- Rachel Patrick, Eatonton, GA: Prod
- Molly Rice, Firth, NE: Prod
- Eric McNeil, Blackfoot, ID: Man
- Heather Jons, Bonesteel, SD: Prod
- David Mohr, New Ulm, MN: Prod
- Stephanie Nussbaum, Garretson, SD: Prod
- Lisa Oakley, Dakota Dunes, SD: Man
- Justin Ochsner, New London, MN: Man
- Molly Paterson, Marshall, MN: Man
- Rachel Patrick, Eaton, GA: Prod
- *Timothy Pennings, Saint Petersburg, FL: Man

*New students in 2010

The 2010 Heifers for State was held in conjunction with the annual South Dakota Central Plains Fall Sale on 30th October 2010 at the Animal Science Arena on the SDSU campus. Dairy Club members worked all week to set up the arena, prepare cattle, feed and milk them. On the day of the sale they showed the cattle to buyers. Over 60 animals were sold at the sale. Three generous producers also donated animals for the fourth Heifers for State program. Donors included New Alta Dairy, Pipestone, MN; K. C. Dairy -- Edward Kavanaugh, Elkton, SD and Marv and Joy Post, Volga, SD. $5,000 were raised 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

- New Alta Dairy, Pipestone, MN
- K. C. Dairy Edward Kavanaugh, Elkton, SD
- Marv and Joy Post, Volga, SD
Judging Activities

Dairy Cattle & Production

SDSU Dairy Science students competed in the 89th Intercollegiate Dairy Cattle judging contest that was held in conjunction with the World Dairy Expo in Madison, WI. Twenty universities from the across the USA participated in the contest. During the contest, students placed twelve classes representing seven dairy cattle breeds and presented six sets of oral reasons. The SDSU team consisting of Katie Nelson, Rice, MN; Megan Rice, Firth, NE; and Heather Jons, Bonesteel, SD placed 16th overall in the contest. On an individual basis Katie placed 26th. The team placed 4th overall in the Red and White Holstein class. The SDSU team was coached by Matthew Laubach and Stephen Crego, Interim Manager of the SDSU Dairy Research and Teaching facility. Earlier in the year our students also participated in the Midwest Regional Dairy Challenge Contests in Wooster, OH and the North American Intercollegiate Dairy Challenge Contest in Visalia, CA. At the Midwest contest Cassey Ute, Holly Bruns, Cory Zelfel, Michael Dunn (pictured) participated and competed against students from 15 other universities. Holly Bruns was a member of a Platinum awarded team. At the National Contest 28 teams from the United States and two teams from Canada competed. The SDSU team included Holly Bruns, Samantha Erickson, Abigail Wirt and Alex Ode and received Platinum placing, the highest at this contest. Both Challenge teams were coached by Dr. Arnold Hippen and Matt Laubach.

Dairy Products

The Dairy Products Judging Team consisting of Samantha Erickson, Rebecca Hanson, Eric McNeel, and Gagan Deep competed in regional and national contests in 2010. At the regional contest that was held at Kraft Foods, Glenview, IL, Rebecca Hanson placed first, Eric McNeel placed second, and Samantha Erickson placed third overall in the contest. Gagan Deep placed first in the graduate student contest. Eight teams from seven states with 30 contestants participated in the contest. The SDSU team placed first in milk, yogurt, ice cream, and cottage cheese. At the national contest that was held at Archer Daniels Midlands Company, Decatur, IL, our team placed first in all products. This was the third year in a row for the Dairy Products Judging Team to win the National Championship. The team placed first in milk, butter, ice cream, and Cheddar cheese. A total of 38 undergraduate and graduate contestants from 10 universities in the U.S. and Canada participated in the contest. Erickson placed first overall, including first in milk, butter, and Cheddar cheese. As top judge in the nation, Erickson received the Robert Rosenbaum Award and lifetime membership in the National Dairy Shrine. She has also been invited to participate in the spring 2011 Quality Chekd Dairies, Inc. annual conference in St. Louis, MO. Hanson placed fourth overall, first in ice cream and second in milk and butter. She was awarded lifetime membership in the National Dairy Shrine. McNeel was 12th overall and placed fifth in Cheddar cheese. In the graduate student contest, Deep placed first overall and was first in milk, butter, ice cream, cottage cheese, and yogurt. As top judge in the graduate contest, Deep received the Genevieve Christen Award. 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. The contest was sponsored by the U.S. Department of Agriculture, the Food Processing Suppliers Association, Chr. Hansen, Inc., and the American Dairy Science Association. The team for both contests was coached by Drs. Bob Baer and Lloyd Metzger. Czmowski (Assistant Chief Judge), Virgil Metzger, and Mark Johnson.

Dairy Facilities Renovation

2010 was a landmark year for the Dairy Science Department; renovation of the Dairy-Micro Building was completed in December and construction of the new dairy plant began. The Dairy-Micro Building project involved complete gutting and redesign of the interior of the building. During this phased project that began in May 2009, offices moved to other locations on campus. Research labs remained in sections of the building. Offices returned to the Dairy-Micro Building in December of 2010. The Dairy Science Department now occupies the first and third floor of the building. After approximately 10 years of fundraising and preparation, ground breaking for the new dairy plant took place on 7th May 2010. Approximately 150 people that included alumni, friends, donors, university personnel and students participated. The Clark Drew Construction company has been making remarkable progress on the project with engineering assistance from Davisco Foods. Progress on the project can be viewed on our website.
**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 will be listed on our new website at http://www.sdstate.edu/ds.

**ACTIVITIES**

- **Dr. Sanjeev Anand** was granted tenure effective July 2010. 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, SDSA-Functional Genomics Core Faculty, ADSA/ASAS Food Safety Committee, Member of the FAO expert group (IECFA) for food additives, contaminants and natural toxins for 2007 to 2011, Chair of the Food Safety Committee for the 2010 Joint ADSA-ASAS-CSAS symposium that was held in Denver, CO. SD State resource person in food safety and added in the ‘Food Safety Contacts Directory’ of USDA, CSREES, July 2007-present.
- **Dr. Robert Baer** was recipient 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 product judging clinics for South Dakota high schools.
- **Dr. Alvaro Garcia** was a co-organizer of the 1-29 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., and member of the editorial board of the Journal of Dairy Science. Dr. Hassan traveled to Egypt with two Dairy Science students for a short exchange visit. He began a year-long sabbatical visit to Egypt in August.
- **Dr. Arnold Hippen** was an active participant in multi-state regional projects, NC 1040, Metabolic relationships of nutrients. He was a member of the Graduate Student Poster Competition Committee for the ADSA. He served as chair of Institutional Animal Care and Use Committee of SDSU.
- **Dr. Kenneth Kalscheur** was an active participan on a NC multi-state research project, NC 1042, Management Systems to improve the Economic and Environmental Sustainability of Dairy Enterprises. He awarded the ADSA Foundation Scholar Award for Dairy Production at the national meeting. He is currently serving as Vice-president of the Midwest ADSA/ASAS Board of Directors.
- **Stephen Crego** served as Assistant dairy farm manager until September, at which time he was appointed as interim Manager and then as Manager effective 22nd December 2010. He also coached of the dairy cattle judging team.
- **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. Member – ADSA Dairy Foods Milk Protein and Enzyme Committee, President 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. He also serves on the Board of the American Dairy Association of South Dakota and advisor to the North Central Cheese Association and the South Dakota Dairy Producers.
- **Dr. Dave Schingoethe** is a Member of the Contemporary and Emerging Issues committee for the ‘09–11 meetings of ADSA. He was elected as a Fellow of the American Society of Animal Science at the national meeting.

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

Anand, S. K., Hegerfeld, J., Krishnan, P., Muthukumarappan, K., Wang, X. Recruitment and retention of a diverse population of food safety students using novel approaches to market enhanced programs. 09/01/2008 to 08/31/2012. USDA/CSREES EPT North Dakota State University. $88,866.


Baer, R. J. Improving the texture of ice cream. 01/02/2008 to 06/30/2011. Industry Support. $15,000.

Garcia, A. D. Producer surveys and outreach/extension programs for livestock producers. 05/01/2007 to 04/30/2012. USDA/ Agricultural Research Service. $36,800.


Hassan, A. Application of salt whey from Egyptian cheese varieties and Cheddar in process cheese making. 08/14/2008 to 09/30/2010. US-Egypt Joint Science and Technology Board through USDA/FAS. $30,000.


Hassan, A. Production of 50% reduced fat Cheddar cheese with improved characteristics. 11/26/2009 to 03/31/2010. Dairy Management Inc. $57,044.


Hippen, A. R. Direct enumeration of metabolically active yeast from the rumen of ruminally-fistulated cattle. 10/19/2009 to 06/01/2010. Alltech Inc. $4,777.


Hippen, A. R. Prebiotic digestibility and production experiment. 06/05/2009 to 06/05/2010. Temple-Inland Inc. $19,961.


Kalscheur, K. F., Hippen, A. R. Prebiotic digestibility and production experiment. 06/05/2009 to 06/05/2010. Temple-Inland Inc. $19,961.


Kalscheur, K. F., Rosentrater, K. A. Evaluation of commercial-scale pellets DDGS in dairy cattle diets. 08/01/2010 to 07/31/2012. USDA/Agricultural Research Service. $25,000.

Kalscheur, K. F. Use of alternative crops in dairy cow diets. 09/01/2010 to 08/31/2012. USDA-Alternative Crops Consortium. $34,000.


Metzger, L. E. Low fat/fat free process cheese for slice-on-slice applications. 01/01/2007 to 06/30/2010. Dairy Management Inc. $91,877.


Metzger, L. E. Prediction of process cheese instrumental texture and melting characteristics using dielectric spectroscopy and chemometrics. 07/01/2009 to 06/30/2010. Dairy Management Inc. $52,500.

Metzger, L. E. Development of a new rapid method for the determination of lactose in low pH products such as whey and cheese using a commercially available blood glucose biosensor. 01/01/2010 to 12/31/2010. Midwest Dairy Association. $21,200.


Metzger, L. E., Mistry, V. V., Hassan, A., Muthukumarappan, K. Institute for Dairy In...
gredient Processing, 09/01/2007 to 08/31/2010. Dairy Management Inc. $866,904. Schingoethe, D. J. Evaluation of the Silo-King in fermented feeds throughout the ensiling period. 09/15/2008 to 05/01/2010. Ag里-King, Inc., $9,550. Schingoethe, D. J., Hippen, A. R., Kalscheur, K. F. Maximize the use of Canola meal in dairy feeds: amino acid nutrition and metabolism. 07/01/2010 to 03/31/2013. Canola Council. $299,000. The Dairy Science Department has been a member of the Midwest Dairy Foods Research Center since 1988. Through this Center the department has participated in numerous research activities funded by the Midwest Dairy Association and the Dairy Management Inc. The annual conference was held in at the University of Minnesota, St. Paul and included a contingent of faculty, students and researchers from the Department. Dr. Lloyd Metzger serves as the Director of the Center.

STUDENT ACCOMPLISHMENTS

Jill Anderson was the recipient of the John Brandt Fellowship for her Ph.D. program. Dr. Kenneth Kalscheur serves as her advisor.

Emily Jungemann, Dairy Production major was selected as the South Dakota Dairy Princess for 2010–2011. As a dairy ambassador she will promote the dairy industry around the country: 2010 on an exchange program.

Kamal Mjoun was a recipient of the Young Dairy Scholars Award at the 2010 Midwest ADSA/ASAS Meeting held in Des Moines, IA during 15-17 March, 2010. Kamal earned a B.S. and M.S. degrees in Animal Science from the National School of Agriculture in Morocco. He also received a M.S. degree in Animal Science with an emphasis on dairy cattle nutrition from South Dakota State University working on phosphorus utilization in dairy cows. He completed his Ph.D. research in Dairy Science at SDSU.

Rebecca Niewoehner was awarded an undergraduate research award of $8,500 under the ‘Funds to enhance scholarly excellence 2010’ of the Vice President of Academic Affairs, and completed a research project entitled ‘Effect of a natural biopreservative ‘Nisin’ in different foods’, during spring 2010. Dr. Sanjeev Anand served as her research advisor.

Jordan Dorneman as the top Cheddar cheese judge in 2009 was invited to the 2010 US Champion Cheese Contest in Green Bay. At this contest Dorneman participated as associate judge to evaluate over 2,300 cheeses from around the world.

Jordan Dorneman, Nicki Stevens and Cassey Utke dairy products judging team members in 2009 were invited to participate along with coach Dr. Bob Baer to participate in the 2010 Quality Chekd Dairy Leadership Conference in Dallas, Texas.

YEARS OF SERVICE

Howard Bonnemann was recognized for 15 years of service.

RETIEMENT

Gary Kirkham, Ag Foreman at the Dairy Research and Training Facility (DRTF) retired after 26 ½ years of service to the Dairy Science Department. Gary joined the Dairy Science Department in May 1984 as a farm worker for the SDSU Dairy Farm. Since that time he served in many capacities and eventually became the lead feeder at the facility. The DRTF, home of SDSU Holstein and Brown Swiss cows, provides a venue for dairy nutrition research, and teaching. In his capacity as feeder Gary was responsible for the feeding operations at the farm and he interacted with faculty members that used the facility for research and teaching activities. He also interacted with student workers at the farm. A retirement reception was held in Gary’s honor on 16th December.

Visitors

Santiago Nigro, Exchange student from Argentina for the fall semester.

Dr. Latha Sabikhi who is Research Scientist at the National Dairy Research Institute, Karnal, India was sponsored by her government for a 2-month assignment in the Dairy Science Department to work with Dr. Sanjeev Anand. While at SDSU she worked in the area of probiotic bacteria with specific emphasis on the anti-tumor activity of conjugated linoleic acid (CLA) produced by a starter culture isolate.

Fernando Diaz-Royon of Spain worked as a Ph.D. scholar with Drs. Kalscheur and Garcia on dairy cattle nutrition.

Doaa Essam, Animal Production major, and Orchid Elbadry, Dairy Manufacturing major of Alexandria University, Egypt in the Faculty of Agriculture visited the SDSU Dairy Science Department during summer on an exchange arrangement.

Dairy Club

2010 Officers: Katelyn Crocker, President; Mitchell Maher, Vice President; Megan Rice, Secretary; Melissa Lax, Treasurer; Megan Forst and April Johnson, Historians; Cassie Hulstein and Carrie Ellefson, Activities Coordinators; and Nicole Stevens, Dairy Digest editor. Advisors were Howard Bonnemann, Dr. Arnold Hippen, Dr. Kenneth Kalscheur, Matt Laubach and Dr. Lloyd Metzger. The Dairy Club hosted the Midwest ADSA-SAD conference in Brookings. Approximately 350 dairy students and advisors from universities in the Midwest travelled to Brookings to attend this conference. After a year of planning, this conference went off very well. In June, Club members hosted 30 youth at the Superhero Dairy Camp. Other club activities throughout the past year included the Fall Central Plains Dairy Sale, Hobo Days festivities, trip to the Canadian Royal in December.
Our students were once again the beneficiaries of the generosity of many alumni and industry. At the spring 2010 banquet, 175 attendees witnessed the award of over 80 scholarships and awards totaling $75,400. The scholarships were as follows:

**John Anderson Memorial** $1000  
**Associated Milk Producers, Inc.** $1000  
**Ross Baker Memorial** $550  
**Emery Bartle Memorial** $5000  
**Dairy Club (2 @ $500 each)** $1000  
**Dairy Farmers of America** $400  
**Dairy Science Department (4 @ $variable)** $1750  
**Danisco (2 @ $1,000 each)** $2000  
**Davisco Foods Int’l, Inc.** $750  
**Dean Foods - Land O’Lakes** $1000  
**Derdall** $500  
**Gilbert T. & Olga Gilbertson Memorial** $500  
**John C. Gross** $1000  
**Heifers for State (2 @ $500)** $1000  
**Clyde Helsper Memorial** $500  
**1-29 Dairy Extension** $500  
**Kemps LLC (2 @ $1,500 each)** $3000  
**Land O’Lakes-Region 65** $300  
**Midwest Dairy Association (2 @ $1,500 each)** $3000  
**David H. Henry Memorial** $250  
**James Marvel Memorial** $400  
**Kirk Mears Memorial** $1150  
**Nordica Licensing, Inc.** $750  
**North Central Cheese Industries Association (2 @ $1800, 1 @ $1400)** $5000  
**H. C. Olson** $550  
**T. M. Olson** $750  
**Alfred Herrmann Rishoi (2 @ $650 each)** $1300  
**Ralph Rogers Memorial** $600  
**Ryan Graber Memorial** $1000  
**Saputo Cheese** $1000  
**Schreiber Foods** $1500  
**Schuch Family** $1000  
**Shirley Seas Memorial** $500  
**SD State Dairy Association (5 @ $1000 each)** $5000  
**Todd and Erica Stahl** $1000  
**Valley Queen Cheese Factory** $4000

**Awards**

- **D. F. Breazeale Memorial** $500  
- **Dairy Challenge (4 @ $150)** $600  
- **Dairy Judging Manufacturing** $150  
- **Dairy Judging Production** $150  
- **Forbes Leadership** $300  
- **Graber-Ford** $100  
- **Students Employee Excellence (2 @ $250)** $500  
- **Alfred Tobkin Memorial (4 @ $110 each)** $440  
- **Virginia Dare** $250  
- **Howard Voelker Memorial (4 @ $135 each)** $540

**Incoming Students Scholarships**

- **Dairy Science** $500  
- **Dairy Science Faculty (2 @ $800 each)** $1600  
- **William & Marge Kallemeyn & Sons (2 @ $650 each)** $1300  
- **Midwest Dairy Assn/SD Division (2 @ $1000)** $2000  
- **NCCIA Recruiting Scholarship** $750  
- **SD Dairy Fieldmen’s Association (5 @ $1000)** $5000  
- **Clyde G. Helsper Dairy Fieldmen’s** $1000  
- **Royal and Helen Donor in Dairy Production** $400  
- **SD Dairy Association (2 @ $500, 1 @ $650)** $1650  
- **Valley Queen Cheese Factory** $1000  
- **SD Dairy Association (2 @ $600 & 1 @ $500)** $1700  
- **Valley Queen Cheese Factory** $1000

Dairy Science students won 8 of the 20 scholarships awarded by the National Dairy Promotion and Research Board in nation-wide competition. Students were Austin Asche, Samantha Erickson, April Johnson, Emily Jungemann, Melissa Lax, Ana Schweer, Nicole Stevens and Todd Wight. Nicole Stevens was the recipient of the James H. Loper award.

**SDSU Dairy Science in Egypt**

Dr. Ashraf Hassan and two Dairy Science students, Kathryn Norling and Eric McNeel, spent three weeks at Alexandria University in May 2010. This launched the student research exchange portion of the agreement between SDSU and Alexandria University. The goal of this visit was to provide students an opportunity to expand their technical knowledge of the global dairy foods industry in a multi-cultural environment. Alexandria University provided faculty advisors, assisted our students in establishing networks with Egyptian students of similar interest, and provided housing arrangements. Students worked in an internationally recognized dairy microbiology laboratory. They learned how to make Egyptian cheeses, and modern techniques in isolation and identification of lactic acid bacteria from dairy products produced in Egypt. Students visited two dairy plants in Egypt. Students also enjoyed sightseeing and experienced the Egyptian culture including a visit to the pyramids and Egyptian museum in Cairo. In summer of 2010 two undergraduate Dairy Science students visited the SDSU Dairy Science department for experience in the Dairy Production and Manufacturing programs.

**Scenes From the Past**
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 attained a record of just over 26,400 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 hosted at the farm. Mitch Maher and Heather Jons serve as student managers. Some of our cattle were shown at the South Dakota State Fair. A major change this year included the retirement of Gary Kirkham after 26 ½ years of service to the farm. Matt Laubach, Manager resigned for a new position with Pioneer Hi-Bred. Steve Crego, Assistant Manager, was appointed as Manager.

Outreach

1-29 Dairy Conference

The Department in conjunction with the University of Minnesota, Iowa State University, and the University of Nebraska organized the 5th annual dairy conference. Invited speakers discussed various issues pertaining to dairying in the Midwest. The theme of the conference was “Sustaining Our Dairy Families, Farms, and Rural Communities”.

Area Dairy Expos

Alumni, students, staff, and faculty of the Dairy Science Department were involved in various activities of the 2010 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 World Dairy Expo in Madison, WI and at the World Ag Expo in Tulare, CA.

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 second Applied Food Safety Education Lab Course II - 2010 was jointly conducted by College of Agriculture and Biological Sciences, and College of Education and Human Sciences, South Dakota State University from June 21st to 24th, in continuation of Applied introductory food safety lab workshop held in August, 2009. These workshops are a part of the USDA Higher Education Challenge grant (2009–12) handled collectively by North Dakota State University, South Dakota State University, and New Mexico State University. The instructors were Dr. Sanjeev Anand, Joan Hegerfeld-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 students with food safety risks at all levels of the food production and delivery systems, and how the risks are monitored and reduced, prevented or eliminated. The target groups of the workshop were high school science teachers, family consumer science teachers, extension personnel and foodservice, processing and production industry personnel. Twelve participants attended.

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 Brookings in October and attracted over 130 cheese makers and suppliers from the upper Midwest.

K-12 Students

Dairy Camp

The Dairy Club hosted the 8th 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 Iowa, Minnesota, and South Dakota.

Extension

Meetings and Workshops: Aside from local extension workshops, Extension also participated in regional and international activities including Peru and Ecuador. In Ecuador, Dr. Garcia discussed efficient ways of raising heifers.

Milk Quality Workshop: Dr. Alvaro Garcia led a milk quality workshop at a large local dairy as well as several milk quality clinics for dairy employees.

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://www.sdstate.edu/ds) 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 2011 Dairy Science scholarship banquet is on 4th April at 6 pm 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 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 coproducts, 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 improve milk production and reduce nutrient 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.

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.