Winter 2012

The Jackrabbit Dairy Review

Vikram Mistry
South Dakota State University, Vikram.Mistry@sdstate.edu

Follow this and additional works at: http://openprairie.sdstate.edu/dairy_review

Part of the Dairy Science Commons

Recommended Citation
http://openprairie.sdstate.edu/dairy_review/5

This Newsletter is brought to you for free and open access by the Dairy Science at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in The Jackrabbit Dairy Review by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact michael.biondo@sdstate.edu.
DAIRY SCIENCE DEPARTMENT

Faculty
Samsoor Azard Associate Professor
Jake Anderson Dairy Plant Manager
Robert Baer Professor Emeritus
Howard Bottmenn Instructor
David Cuper Assistant Professor
Stephen Crego Manager Dairy Research and Training Facility/Lecturer
Alauro Garcia Professor/Extension Dairy Specialist
Ashraf Hassan Associate Professor
David Heming Associate Professor Emeritus
Kenneth Kalteheier Associate Professor
Lloyd Metzger Associate Professor
Alfred Chair in Dairy Education
Vikram Misry Professor and Head
John Persons Professor and Head Emeritus
David Schingoethe Distinguished Professor Emeritus

Staff
Jennarda Anamchara Producted Research Associate
Ee Anderson Research Assistant
Melinda Bennett Secretary
Ananya Bowan Research Associate
Fernando Dua-Royen Temporary Research Scholar
Akimoto Ichinomiya Assistant Dairy Plant Manager
Pete Linky Ag Foreman/Fresh and Sick Cows/Calf Care
Chenshaish Marrella Manager, Institute of Dairy Ingredients Processing
Monica Marksood Dairy Store Supervisor
Jayne Rabin Senior Secretary
Tracey Rembi Extension Field Specialist
Melissa Shmet Assistant Manager
Dairy Research and Training Facility
Brooke Varmin Assistant Foreman

GRADUATE STUDENTS

Dairy Production
Joshua Acharya
Jacqueline Albrecht
Sall Andrea
Stephen Crego
Fernando Dua-Royen
Peter Linky
Angela Manthey
Santoshana Ramaswamy
Jiwesh Sahba
Umit Saha Vega
Adrian Schaller
Rebecca Sherry
*New students in 2011
**New students in 2012

Dairy Manufacturing
Wakadwoda Bhadhwani
Ananya Bowan
Cagan Deep
**Nita Garcia Fernandez
Kevin Herrick
**Sweety Mehta
**Laura Minsky
Pratapali Santhos
Kartik Shah
Dinesh Singh

2011 GRADUATES

B.S. Manufacturing
Rebecca Easson
Molly Petersen
Morgan Peterson
Nicole Stevens
Todd Wight
Gary Zelbo
B.S. Production
Kaelin Crecrera
Heather Jens
Melissa Lee
Stephanie Noshbaun
Rachel Patrick
Brian Speltz
Katlin Van Eck

B.S. Manufacturing and Production
Michael Dunn

Winter 2011-2012

MESSAGE FROM THE DEPARTMENT HEAD

2011 was a year of immense joy and sadness for the Dairy Science Department. It reminded us of the rich heritage of the department; it showed us how immensely dedicated our faculty, staff and students are; it showed us what the utmost loyalty of a dear faculty member means to us personally as well as to the program; it showed us how the stark realities of budget deficits can affect programs and people; and it also showed us how fortunate we are to have a dairy industry that is strongly committed to the future through support of education.

Dr. Arnold Hippen passed away after 13 years of service. He treated faculty, staff and students as his own, and he always brought out the best in students. While we are fortunate to have the ability to fill his position, he will be sorely missed. Dr. David Schingoethe retired after 42 years of service of research and teaching, and Dr. Robert Baer after 28 years. The departure of these three faculty members represents 83 years of excellence and experience that will be difficult to replace.

We are very pleased to welcome Dr. David Casper, a new assistant professor in the dairy cattle nutrition area; Jacob Anderson, our new dairy plant manager; Assistant Farm Manager Melissa Schmitt; Extension Field Specialist Tracey Rembi; Secretary Melinda Bennett; and Ag Foreperson Brooks Varnum. These new individuals and the continuing faculty and staff are the beneficiaries of our new facilities—the Alfred Dairy Science Hall and the Davis Dairy Plant.

Renovations to the 51-year-old facilities are marks of foresight of dairy industry and producer leaders who over the past 10 years helped us with design, fundraising, and building. The new facilities will help us continue and expand upon the strong dairy education and research missions of SDSU. Opportunities for new students coming into the program are impeccable and will provide hands-on dairy processing experience on the type of equipment that students will use upon graduation in the industry. We are very thankful to all the donors for their generosity and their persistence. The demand for dairy science graduates and summer interns remains very high.

During fiscal year 2011 our faculty received almost $650,000 of grant funds on research projects. These external funds were awarded to faculty through competitive grants and helped support research and salaries of 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 in the U.S. and abroad. They were recipients of national awards and participated in professional service activities that assisted the dairy industry. We continue to be fortunate to receive support in the form of scholarships and other projects 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.

I invite you to browse through this newsletter, visit our website and stop by for a chat and tour.

Vikram Misry

2011 was a year of intense joy and sadness for the Dairy Science Department. It reminded us of the rich heritage of the department; it showed us how immensely dedicated our faculty, staff, and students are; it showed us what the utmost loyalty of a dear faculty member means to us personally as well as to the program; it showed us how the stark realities of budget deficits can affect programs and people; and it also showed us how fortunate we are to have a dairy industry that is strongly committed to the future through support of education. Dr. Arnold Hippen passed away after 13 years of service. He treated faculty, staff, and students as his own, and he always brought out the best in students. While we are fortunate to have the ability to fill his position, he will be sorely missed. Dr. David Schingoethe retired after 42 years of service of research and teaching, and Dr. Robert Baer after 28 years. The departure of these three faculty members represents 83 years of excellence and experience that will be difficult to replace.

We are very pleased to welcome Dr. David Casper, a new assistant professor in the dairy cattle nutrition area; Jacob Anderson, our new dairy plant manager; Assistant Farm Manager Melissa Schmitt; Extension Field Specialist Tracey Rembi; Secretary Melinda Bennett; and Ag Foreperson Brooks Varnum. These new individuals and the continuing faculty and staff are the beneficiaries of our new facilities—the Alfred Dairy Science Hall and the Davis Dairy Plant.

Renovations to the 51-year-old facilities are marks of foresight of dairy industry and producer leaders who over the past 10 years helped us with design, fundraising, and building. The new facilities will help us continue and expand upon the strong dairy education and research missions of SDSU. Opportunities for new students coming into the program are impeccable and will provide hands-on dairy processing experience on the type of equipment that students will use upon graduation in the industry. We are very thankful to all the donors for their generosity and their persistence. The demand for dairy science graduates and summer interns remains very high.

During fiscal year 2011 our faculty received almost $650,000 of grant funds on research projects. These external funds were awarded to faculty through competitive grants and helped support research and salaries of 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 in the U.S. and abroad. They were recipients of national awards and participated in professional service activities that assisted the dairy industry. We continue to be fortunate to receive support in the form of scholarships and other projects 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.

I invite you to browse through this newsletter, visit our website and stop by for a chat and tour.

Vikram Misry
Arnold was known in the dairy industry for his research work in dairy cattle nutrition and in particular for his research involving the use of agricultural byproducts in dairy cattle rations and metabolic conditioning of dairy cows. A landmark of his research work was the collaboration with industry. His ultimate goal for research projects was always to provide practical value to the dairy farmer. Through this line of thought he was author or co-author of numerous publications, including one patent, reflecting his research work.

In recognition of his excellence he received the 2011 American Feed Industry Award of the American Dairy Science Association at its national meeting in New Orleans, La. He served as the faculty liaison to the SDSU Dairy Research and Training Facility. In this capacity he served in an advisory capacity to the dairy farm manager and helped the farm serve its teaching and research missions. His career passion however was students at both the undergraduate and graduate levels. He served as advisor to 10 graduate students and always integrated them into his research projects. He provided his students with a clear flavor of the complete spectrum of the life of a research project, from grant writing all the way to publication of work and ultimately application in the field. Consequently several of his students were awarded recipients and became leaders in their profession. Arnold was consistently and widely cited by undergraduate students for his compassion, knowledge and an ability to teach at the basic level. He served as advisor to many students, and was specifically sought out by many students. Arnold also served as a mentor to many students for undergraduate research activities. Arnold took particular interest in coaching the SDSU Intercollegiate Dairy Challenge Team. He viewed this activity as one that added immense value to student education, and as a result, dedicated many hours working and traveling with students. Arnold's caring for students carried into Dairy Club activities. He served as advisor and travelled with students on numerous Dairy Club trips. The school year typically ended with a bonfire that Arnold and his wife, Pat, hosted for the students at their home. Arnold was a coach, an outstanding colleague, a dedicated mentor and teacher, and a prolific researcher. He will be greatly missed by the Dairy Science Department and all the students and friends that were acquainted with him. Arnold is survived by his wife, Pat, son, Eric (Charlotte), Nevada, Iowa; grandsons, Matthias and Nohemia; mother, Mary Hippen, Wellburg, Iowa; and sisters, Marilyn (Jerry) Addimmund, Parken- burg, Iowa, and Donna Crosser; Iowa Falls, Iowa.

Dr. Robert Baer retired in May 2011 after 28 years of service to the Dairy Science Department. He joined the department in 1982 as assistant professor and rose from the rank of assistant professor to professor by distinguishing himself in teaching and research. His research focused on dairy chemistry and frozen desserts. This work was supported by funds from industry and the MN-IED Dairy Foods Research Center and involved 19 funded research projects led to 41 refereed publications, 45 abstracts, 26 trade and Extension publications, one patent, one patent pending and three book chapters. He also mentored 14 graduate students.

Dr. Baer’s work encompassed an integration of the science of milk production and milk processing. This collaborative work led to the development of softer butter by altering the diet of dairy cattle; the enhancement of conjugated linoleic acid in milk products, leading to healthier dairy products; and the elimination of this widespread flavor defect. He is nationally recognized for his work on the sensory attributes of milk and milk products. His work in the area of conjugated linoleic acid and milk products and on the texture of ice cream has been applied by industry because of its practical value.

Dr. Baer served as coach since 1988 and under his tutelage, the SDSU team won the national championship nine times. In addition, he led his team to the championship for three consecutive years from 2008 to 2010. In recognition of his excellence and accomplishments in teaching and research, Dr. Baer has been the recipient of at least three local and national awards.

Valerie Denison joined the Dairy Science Department in 2002 and retired in May 2011 after nine years of service as secretary. She managed department phone calls, student payroll, and as Extension secretary, also helped with the planning and execution of the 1-29 Dairy Conference.
NEW FACULTY AND STAFF

Jacob Anderson joined the department in January 2011 as manager of the new dairy plant. Jake holds a bachelor’s degree in dairy science from SDSU and was employed at Dairies Foods International in Lake Norden, S.D., as production supervisor prior to becoming the new plant manager.

Melinda Bennett joined the department as secretary. She is responsible for managing department phone calls, payroll and many other duties.

David Casper accepted a position as assistant professor in dairy science (production) and commenced his new position in November 2011. Dr. Casper received his bachelor’s degree in animal science from the University of Wisconsin — Platteville, and master’s and Ph.D. degrees in dairy production from SDSU. After completing his Ph.D. at SDSU, he was a research dairy scientist with the Agriculture Research Service of USDA at Beltsville, Md., where he researched the energy metabolism of dairy cows fed diets containing high fat feed ingredients, nonstructural carbohydrates or different forage sources using the respiration chambers at the Energy Metabolism Unit. He later joined Largit, Inc., as dairy innovation development manager researching and designing new feeding programs and products. He moved to Ag-King, Inc., in 1997 as consulting dairy nutritionist and was eventually promoted to vice president of nutrition. Dr. Casper has published widely in the area of dairy calf nutrition. He received the ADSA National Milk Producers Federation’s Richard M. Hoyt Award in 1989 in recognition of his graduate research at SDSU and recently was the overall program chair for the 2011 American Dairy Science Association/american Society of Animal Science Joint Annual Meeting. He will teach undergraduates and graduate courses in dairy production and will begin a research program focusing on the efficiency and profitability of nutrient digestion and utilization by dairy cattle when rations are formulated using different qualities and amounts of energy, protein and forages.

Tracey Renelt has joined SDSU Extension as Extension field specialist in dairy. She received her bachelor’s in dairy manufacturing and production from SDSU in 1989. Tracey brings significant Extension experience to the position, as immediately after graduation she worked for SDSU Cooperative Extension Service as the extension educator in Grant County from 1989 to 1993, and again from 1995 to 2000. She worked as a livestock production specialist for Land O’ Lakes from 1993-1995. From 2000 until accepting her current position as a field specialist, Tracey served as Extension educator/ extensionist in Kingbury County. In her position as field specialist, Tracey will be based in the Watertown Regional Extension Center (605-882-3140), but will work with SDSU Extension dairy specialist Dr. Alvaro Garcia, to serve dairy producers throughout the state. Her areas of expertise and interest include employee management, nutrition, quality assurance and aspects of dairy production.

Melissa Schmitt, a 2011 dairy and animal science graduate of Iowa State University joined the Dairy Science Department as assistant manager for the Dairy Research and Training Facility. In this position, Melissa will assist the farm manager, Steve Creemore, in all aspects of the dairy farm operation. She comes with prior experience from the Iowa State University Dairy Farm, Full Circle Jerseys in Duluth, Tenn., and study abroad in South Korea.

Brooks Varnum, joined the department as Ag Foreman for the Dairy Research and Training Facility. His duties include primarily feeding, but also include maintenance work at the unit.

UNDERGRADUATE STUDENTS

Lee Alexander, Twin Brooks, S.D., Manufacturing
Kelsey Anderson, Viborg, S.D., Production
Rebecca Bennett, Viborg, S.D., Production
Ethan Bennett, Viborg, S.D., Production
Brooks Casper, Moundridge, S.D., Production
Jacob Casper, Anolus, S.D., Production
 alerted, Inc., as dairy innovation development manager researching and designing new feeding programs and products. He moved to Ag-King, Inc., in 1997 as consulting dairy nutritionist and was eventually promoted to vice president of nutrition. Dr. Casper has published widely in the area of dairy calf nutrition. He received the ADSA National Milk Producers Federation’s Richard M. Hoyt Award in 1989 in recognition of his graduate research at SDSU and recently was the overall program chair for the 2011 American Dairy Science Association/american Society of Animal Science Joint Annual Meeting. He will teach undergraduates and graduate courses in dairy production and will begin a research program focusing on the efficiency and profitability of nutrient digestion and utilization by dairy cattle when rations are formulated using different qualities and amounts of energy, protein and forages.

Tracey Renelt has joined SDSU Extension as Extension field specialist in dairy. She received her bachelor’s in dairy manufacturing and production from SDSU in 1989. Tracey brings significant Extension experience to the position, as immediately after graduation she worked for SDSU Cooperative Extension Service as the extension educator in Grant County from 1989 to 1993, and again from 1995 to 2000. She worked as a livestock production specialist for Land O’ Lakes from 1993-1995. From 2000 until accepting her current position as a field specialist, Tracey served as Extension educator/extensionist in Kingbury County. In her position as field specialist, Tracey will be based in the Watertown Regional Extension Center (605-882-3140), but will work with SDSU Extension dairy specialist Dr. Alvaro Garcia, to serve dairy producers throughout the state. Her areas of expertise and interest include employee management, nutrition, quality assurance and aspects of dairy production.

Melissa Schmitt, a 2011 dairy and animal science graduate of Iowa State University joined the Dairy Science Department as assistant manager for the Dairy Research and Training Facility. In this position, Melissa will assist the farm manager, Steve Creemore, in all aspects of the dairy farm operation. She comes with prior experience from the Iowa State University Dairy Farm, Full Circle Jerseys in Duluth, Tenn., and study abroad in South Korea.

Brooks Varnum, joined the department as Ag Foreman for the Dairy Research and Training Facility. His duties include primarily feeding, but also include maintenance work at the unit.

NEW FACULTY AND STAFF

Jacobo Anderson joined the department in January 2011 as manager of the new dairy plant. Jake holds a bachelor’s degree in dairy science from SDSU and was employed at Dairies Foods International in Lake Norden, S.D., as production supervisor prior to becoming the new plant manager.

Melinda Bennett joined the department as secretary. She is responsible for managing department phone calls, payroll and many other duties.

David Casper accepted a position as assistant professor in dairy science (production) and commenced his new position in November 2011. Dr. Casper received his bachelor’s degree in animal science from the University of Wisconsin — Platteville, and master’s and Ph.D. degrees in dairy production from SDSU. After completing his Ph.D. at SDSU, he was a research dairy scientist with the Agriculture Research Service of USDA at Beltsville, Md., where he researched the energy metabolism of dairy cows fed diets containing high fat feed ingredients, nonstructural carbohydrates or different forage sources using the respiration chambers at the Energy Metabolism Unit. He later joined Largit, Inc., as dairy innovation development manager researching and designing new feeding programs and products. He moved to Ag-King, Inc., in 1997 as consulting dairy nutritionist and was eventually promoted to vice president of nutrition. Dr. Casper has published widely in the area of dairy calf nutrition. He received the ADSA National Milk Producers Federation’s Richard M. Hoyt Award in 1989 in recognition of his graduate research at SDSU and recently was the overall program chair for the 2011 American Dairy Science Association/american Society of Animal Science Joint Annual Meeting. He will teach undergraduates and graduate courses in dairy production and will begin a research program focusing on the efficiency and profitability of nutrient digestion and utilization by dairy cattle when rations are formulated using different qualities and amounts of energy, protein and forages.

Tracey Renelt has joined SDSU Extension as Extension field specialist in dairy. She received her bachelor’s in dairy manufacturing and production from SDSU in 1989. Tracey brings significant Extension experience to the position, as immediately after graduation she worked for SDSU Cooperative Extension Service as the extension educator in Grant County from 1989 to 1993, and again from 1995 to 2000. She worked as a livestock production specialist for Land O’ Lakes from 1993-1995. From 2000 until accepting her current position as a field specialist, Tracey served as Extension educator/extensionist in Kingbury County. In her position as field specialist, Tracey will be based in the Watertown Regional Extension Center (605-882-3140), but will work with SDSU Extension dairy specialist Dr. Alvaro Garcia, to serve dairy producers throughout the state. Her areas of expertise and interest include employee management, nutrition, quality assurance and aspects of dairy production.

Melissa Schmitt, a 2011 dairy and animal science graduate of Iowa State University joined the Dairy Science Department as assistant manager for the Dairy Research and Training Facility. In this position, Melissa will assist the farm manager, Steve Creemore, in all aspects of the dairy farm operation. She comes with prior experience from the Iowa State University Dairy Farm, Full Circle Jerseys in Duluth, Tenn., and study abroad in South Korea.

Brooks Varnum, joined the department as Ag Foreman for the Dairy Research and Training Facility. His duties include primarily feeding, but also include maintenance work at the unit.
On October 21, 2011, University and dairy industry leaders, along with state officials, led the nearly 300-member audience in a toast to dedicate the Alfred Dairy Science Hall and the Davis Dairy Plant. The ceremony that was emceed by Walt Wosje, a dairy science alumnus, marked the completion of the first major updates to the dairy microbiology building and dairy manufacturing plant in 51 years. Speakers at the ceremony included President Chicoine of SDSU; Dean of the College of Agriculture and Biological Sciences, Barry Dunn; SD Secretary of Agriculture, Walt Bones; District 7 Sen. Larry Tidemann; Max Gonzenbach and Rudy Nef of Valley Queen Cheese; and Jon Davis of Davisco Foods. The renovated dairy microbiology building has been renamed the Alfred Dairy Science Hall in honor of the late Alfred Nef and Alfred Gonzenbach, two Swiss immigrants who founded Valley Queen Cheese Factory in Milbank, S.D. Renovation of the building was funded by the students of SDSU and the state of South Dakota. The newly added manufacturing plant has been named Davis Dairy Plant in honor of the Davis family, owners of Davisco Foods International of Le Sueur, Minn. In addition to remodeling the existing dairy plant, the project added 10,850 square feet of space, creating a state-of-the-art plant totaling 17,900 square feet. The plant project, including equipment, cost $9.3 million. All but $1 million was privately funded by dairy processors, producers, suppliers, alumni and friends. The newly renovated facilities will allow the dairy science program to provide state-of-the-art training and research opportunities in dairy processing.

**FACILITIES RENOVATION**

**RENOVATION DONORS**

$5 million and more
- Davisco Foods International Inc.

$2.5 million to $4.9 million
- American Dairy Association of South Dakota
- Valley Queen Cheese
- Nef Family Foundation

$1 million to $2.4 million
- Agro Inc.
- Edlab Filtration Engineering Co. Inc.
- GEA Westfalia Separator Division
- Glacida Foods
- Gonzenbach Family, Milbank
- Jerzy and Juliene Lohr, San Jose, Calif., and Garretson, S.D.
- Midwest Ag Supplements
- SA Education Foundation

$500,000 to $999,999
- American Dairy Association, Midwest-Iowa Division
- ARABMARK
- SDSU College of Agriculture and Biological Sciences
- Daryl and Mary Ann Boddicker, Garcon, Ill.
- Dahmen Stainless Inc.
- Hillier Cheese Company Inc.
- SFP Corporation
- South Dakota Governor’s Office of Economic Development
- David A. and Marilyn M. Thompson, Barrington, Ill.

$250,000 to $499,999
- Agropur Inc.
- Ecolab
- Filtration Engineering Co. Inc.
- Glanbia Foods
- Gonzenbach Family, Milbank
- Jerry and Jolene Lohr, San Jose, Calif., and Garretson, S.D.
- Midwest Ag Supplements
- SA Education Foundation
- Tetra Pak

$100,000 to $249,999
- American Dairy Association, Midwest-Iowa Division
- ARAMARK
- SDSU College of Agriculture and Biological Sciences
- Daryl and Mary Ann Boddicker, Garcon, Ill.
- Dahmen Stainless Inc.
- Hillier Cheese Company Inc.
- SFP Corporation
- South Dakota Governor’s Office of Economic Development
- David A. and Marilyn M. Thompson, Barrington, Ill.

$50,000 to $99,999
- CFR
- DR Tech Inc.
- Farm Pump
- Land O’ Lakes Foundation
- Wells Dairy Inc.
- Werner Electric Supply

$10,000 to $49,999
- ACG Heat Transfer Inc.
- Associated Milk Producers Inc.
- Case-Clay
- First District Association
- Kemps LLC
- Kraft Foods Foundation
- Neil and Rachel Kueker, Eagan, Minn.
- Milk Specialties Global
- Schoen Family Foundation
- South Dakota Dairy Association
- Larry Telemann and Gail DeWitt Telemann, Brookings
- Walt and Yvonne Wosje, Brookings

$5,000 to $9,999
- Sioux Valley Dairy Herd Improvement Association
- Bruce Unterbrunner, Aibraries, Wis.

$1,000 to $9,999
- Bob and Deedra Barr
- Brian and Deborah Bonsbright
- Dairy Farmers of America
- Gertrude Hawk Ingredients
- Scott Halverson
- Ann Herdegger
- Gregory Holpuch
- Lonnie Food LLC
- Krouse Leidman Associations Inc.
- Auger Foods
- Dairy Builders Manager
- Keith Murfield
- Rochester Cheese
- Roger and Kay Scheibe
- Vernon and Cathy Voldke

**HEIFERS FOR STATE**

The 2011 Heifers for State was held in conjunction with the annual South Dakota Central Plains Fall Sale October 29, 2011, at the Swiftel Center in Brookings. Dairy Club members worked all week to set up the arena, receive cattle, prepare, feed and milk them. On the day of the sale they showed the cattle to buyers. More than 60 animals were sold at the sale. This generous producers also donated animals for the heifers for状 program. Donors included E. C. Dairy (Edward Karvasnog), Elibton, S.D.; Prairie Gold Dairy (Bandy Grove), Handneu, S.D.; and Marx and Jo Frost, Volig, S.D., and JA 57 was named the beloved animal. 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.
Judging Activities

Dairy Leadership Conference in St. Louis, Mo.

Morgan Petersen, Kamal Mjoun, Angela Manthey, Kevin Herrick, and Samantha Erickson received the John Brandt Fellowship. The SDSU team placed third overall, second in Dairy Production/Science majors, and Jennifer Vander Wal (ag journalism major) and Johnna Schuur (dairy production/ag education major), was the recipient of the Alltech American Judge and was ranked 12th overall and 9th in Guernsey. The team placed sixth just missing fifth place by four points. Individually, Jennifer placed as the second highest individual within the Holstein breed and fifth overall and April was awarded fourth highest individual in Oral Reasons.

DAIRY PRODUCTS

SDSU's Dairy Products Judging Team placed first in All Products in the 2011 90th Collegiate Dairy Products Evaluation Contest, held November 3 at Kraft Technology Center in Glenview, Ill. This was the fourth year in a row that the Dairy Products Judging Team won the national championship. The team placed first in milk, butter, yogurt and Cheddar cheese. A total of 40 undergraduate and graduate contestants from 32 U.S. and Canadian universities participated in the contest. SDSU team members were Luke Rohsrodu, Freeman, S.D.; Justin Ochsner, New London, Minn.; Angie Klaers, Waukesha, Minn.; and Som Khanal, Kathmandu, Nepal. Remarksi placed first overall and first in ice cream, second in butter and third in yogurt and Cheddar cheese. As top judge in the graduate contest, Rohsrodu received the Robert Rosenbaum Award. Ochsner placed fourth overall, second in Cheddar cheese and fourth in yogurt and butter. Klaers was fifth overall, and he placed first in butter and second in milk. As the top butter judge, Klaers received the Bert Steljes Award. In the graduate student contest, Khanal placed first overall and was first in yogurt, Cheddar cheese, ice cream and cottage cheese. As top judge in the graduate contest, Khanal received the Genevieve Christen Award. For placing first overall, the SDSU team won the Shirley Sea Memorial Scholarship. This scholarship is in memory of Shirley Sea, who coached the SDSU team for 25 years. The team was coached by Dr. Lloyd Metzger, associate professor of dairy science and Alfred Chair in Dairy Education, and Eric McNeil, SDSU student. Dr. Metzger also received the Aurora and George Nystedt Coach of the Year Award. The contest was sponsored by the U.S. Department of Agriculture, the Dairy Processing Suppliers Association, Chob. Hansen Inc., and the American Dairy Science Association.

Dairy Club

2011 Officers: April Johnson, President; Mitchell Muhler, vice president; Katie Nelson, secretary; Megan Rice, treasurer; Grace Lauthman and Cheleby Johnson, historians; Alisha Vander Wal and Megan Forst, activity coordinators; and Cheleby Johnson and Jennifer Vander Wal, Dairy Digest editors. Advisors were Jake Anderson, Howard Bremmenn, Steve Crego, Drs. Arnold Hippen, Kenneth Kalchesur and Lloyd Metzger. Club members attended ADSA-SAS Regional Conference in River Falls, Wisconsin. In February, the club members hosted 30 youth at the annual Jackrabbit Dairy Camp. Other club activities throughout the year included the Fall Central Plains Dairy Sale, Holst Dairy Sirens, trip to the World Dairy Expo in October and cheese houses.

Student Accomplishments

Samantha Erickson, top dairy products judge in the nation in 2010, participated along with coach Dr. Bob Baz in the 2011 Quality Chilled Dairy Leadership Conference in St. Louis, Mo.

Kevin Herrick received the John Brandt Fellowship for his Ph.D. program. Dr. Hipsen was Keve'n's advisor but Dr. Kenneth Kalchesur has taken over these duties. Keve'n received the first place award in the Land O'Lakes, Patrona Feed LLC Graduate Student Poster Contest -P.L.D. Division at the American Dairy Science Association annual meetings in New Orleans.

Angela Manthey, was the recipient of the Alltech Fellowship for supporting her M.S. program under the guidance of Dr. Kalchesur.

Kamal Mjoun, who gained his Ph.D. under the guidance of Dr. Kalchesur, received the National Milk Producers Federation Richard M. Hoyt Award from the American Dairy Science Assn.

Morgan Peterson won the undergraduate research award under the Griffith and Bentley undergrad-

uate research program 2010-11. Dr. Sanjeev Amour serves as her research advisor.

Javier Saldos, who received his master's under the guidance of Dr. Kalchesur, was an Alltech Fellow in dairy science.

Ana Schwaerl and Austin Austin, dairy production and manufacturing majors, respectively served as Ap Rios Ambassador.


Numerous students participated in internships during summer 2011. Organizations and locations included Alta Genetics, Baraboo, Wis.; Kamps LLC, Minnesota; Glandia Foods USA, Idaho; Deroles Foods, South Dakota; Kraft Foods, Ill.; First District Association, Minnesota; Supro Cheese, Black Creek, Wis.; and several others, including home farms.

Jurying Activities

Dairy Cattle Evaluation & Dairy Challenge

The 9th National Intercollegiate Dairy Cattle Judging Contest was held in conjunction with the World Dairy Expo in Madison, Wis., on October 3, 2011. There were 21 teams and 81 contestants present from across the country. The SDSU team was represented by April Johnson, Heron Lake, Minn.; Johanna Schuur, Sault Centre, Minn.; Angela Salfner, Sleepy Eye, Minn.; and Jennifer Vander Wal, Pipestone, Minn. The contest included 12 classes with six sets of reasons. The SDSU team tied for 11th place overall. April Johnson placed 3rd as an All-American judge and was ranked 12th overall and 9th in Guernsey. In the Milking Shorthorn Classes the top 11 students had a tied score with Angela Salfner placing 10th, two points from a perfect score. The team also placed eighth overall with Milking Shorthorn, Holsteins and Brown Swiss classes. The SDSU team was coached by Stephen Conger, dairy farm manager and lecturer.

Earlier in the year students also participated in the Accelerated Genetics Intercollegiate Judging Contest in Virginia, Wis., where 16 teams competed in four different dairy breeds with five sets of reasons. The SDSU team was represented by April Johnson (dairy production/ag education major), Johanna Schuur (dairy production/dairy manufacturing major), and Jennifer Vander Wal (ag journalism major). The team placed third overall, second in Jerseys and fifth in Guernsey’s and fifth overall in reasons. Angela Salfner was the third highest individual as well as third in Jerseys. Chelsey Johnson (ag communication/English education major), Alisha Vander Wal (dairy production major) and Holly Schum (dairy production/dairy manufacturing major) were other team members that attended the judging contest.

In January 2011 a team consisting of Katie Nelson, April Johnson, Jennifer Vanderavel, and Johanna Schuur participated in the Fort Worth Stock Show Dairy Judging Contest. The team traveled to Oklahoma where they met and practiced together with judging teams from Kansas State, Oklahoma State and North Dakota State. The teams traveled together and visited five farms in the Stilbite, Okla., area. They had the opportunity to judge Guernseys, Jerseys, Ayrshires and Holsteins. The Fort Worth contest took place January 16 and consisted of 31 classes and four sets of reasons. The SDSU team placed sixth just missing fifth place by four points. Individually, Jennifer placed as the second highest individual within the Holstein breed and fifth overall and April was awarded fourth highest individual in Oral Reasons.

Dr. Arnold Hippen and Kenneth Kalchesur coached the 2011 Intercollegiate Dairy Challenge Team that consisted of Melissa Lea, Katelyn Crocker, Heather Jon, and Cory Zelfel. The team traveled to Hickory, N.C., to participate in the intercollegiate contest and received silver placing.

Dairy Club

2011 Officers: April Johnson, President; Mitchell Muhler, vice president; Katie Nelson, secretary; Megan Rice, treasurer; Grace Lauthman and Cheleby Johnson, historians; Alisha Vander Wal and Megan Forst, activity coordinators; and Cheleby Johnson and Jennifer Vander Wal, Dairy Digest editors. Advisors were Jake Anderson, Howard Bremmenn, Steve Crego, Drs. Arnold Hippen, Kenneth Kalchesur and Lloyd Metzger. Club members attended ADSA-SAS Regional Conference in River Falls, Wis., in February. In June, the club members hosted 30 youth at the annual Jackrabbit Dairy Camp. Other club activities throughout the year included the Fall Central Plains Dairy Sale, Holst Dairy Sirens, trip to the World Dairy Expo in October and cheese houses.

Student Accomplishments

Samantha Erickson, top dairy products judge in the nation in 2010, participated along with coach Dr. Bob Baz in the 2011 Quality Chilled Dairy Leadership Conference in St. Louis, Mo.

Kevin Herrick received the John Brandt Fellowship for his Ph.D. program. Dr. Hipsen was Keve’n’s advisor but Dr. Kenneth Kalchesur has taken over these duties. Keve’n received the first place award in the Land O’Lakes, Patrona Feed LLC Graduate Student Poster Contest -P.L.D. Division at the American Dairy Science Association annual meetings in New Orleans.

Angela Manthey, was the recipient of the Alltech Fellowship for supporting her M.S. program under the guidance of Dr. Kalchesur.

Kamal Mjoun, who gained his Ph.D. under the guidance of Dr. Kalchesur, received the National Milk Producers Federation Richard M. Hoyt Award from the American Dairy Science Assn.

Morgan Peterson won the undergraduate research award under the Griffith and Bentley undergrad-

uate research program 2010-11. Dr. Sanjeev Amour serves as her research advisor.

Javier Saldos, who received his master’s under the guidance of Dr. Kalchesur, was an Alltech Fellow in dairy science.

Ana Schwaerl and Austin Austin, dairy production and manufacturing majors, respectively served as Ap Rios Ambassador.


Numerous students participated in internships during summer 2011. Organizations and locations included Alta Genetics, Baraboo, Wis.; Kamps LLC, Minnesota; Glandia Foods USA, Idaho; Deroles Foods, South Dakota; Kraft Foods, Ill.; First District Association, Minnesota; Supro Cheese, Black Creek, Wis.; and several others, including home farms.

Dairy Club

2011 Officers: April Johnson, President; Mitchell Muhler, vice president; Katie Nelson, secretary; Megan Rice, treasurer; Grace Lauthman and Cheleby Johnson, historians; Alisha Vander Wal and Megan Forst, activity coordinators; and Cheleby Johnson and Jennifer Vander Wal, Dairy Digest editors. Advisors were Jake Anderson, Howard Bremmenn, Steve Crego, Drs. Arnold Hippen, Kenneth Kalchesur and Lloyd Metzger. Club members attended ADSA-SAS Regional Conference in River Falls, Wis., in February. In June, the club members hosted 30 youth at the annual Jackrabbit Dairy Camp. Other club activities throughout the year included the Fall Central Plains Dairy Sale, Holst Dairy Sirens, trip to the World Dairy Expo in October and cheese houses.
PROFESSIONAL ACTIVITIES OF FACULTY AND STAFF

Faculty and students together presented numerous papers including refereed publications to scientific journals, abstract presentations, book chapters, Extension publications, thesis or dissertations, and Extension presentations. All publications will be listed on our new website at www.sdstate.edu/ds.

Dr. Sanjeev Anand was granted tenure in July 2011. Dr. Anand is the South Dakota State Resource person in food safety and was added in the “Food Safety Contacts Directory” of USDA, CSREES, July 2011-present.

Howard Bonnemann served as secretary/treasurer of the South Dakota Dairy Association. He conducted several dairy product judging clinics for South Dakota high schools. Beginning in January 2011 Howard became full-time instructor and dairy plant research manager.

Dr. Alvaro Garcia was promoted to professor of dairy science in July 2011. He has been a faculty member in dairy science since 2001 and has developed a strong highly recognized dairy Extension program. Dr. Garcia was invited to speak in Peru, Turkey and El Salvador. He was also appointed by the U.S. Secretary of Agriculture to the Agricultural Advisory Committee (ADAC) for international trade in animals and animal products.

Dr. Abdal Hussein is a member of the International Animal Agriculture Committee of the American Dairy Science Association, an expert panel on low fat cheese research of the Dairy Management Inc., and member of the editorial board of the Journal of Dairy Science. He returned to the faculty position after a year-long sabbatical with the dairy industry in Egypt.

Dr. Arnold Hinnen was positively acknowledged as the American Feed Industry Award of the American Dairy Science Association at the annual meetings in New Orleans, La., in recognition of his leadership and research work in dairy cattle nutrition.

Dr. Kenneth Kalischew was an active participant on a NC multistate research project, NC 1042, Management Systems to improve the Economic and Environmental Sustainability of Dairy Enterprises. He was invited to speak on dairies' grains at conferences in Japan and Italy.

SCHOLARSHIPS

Our students were once again the beneficiaries of the generosity of many alumni and industry. At the spring 2011 banquet, 189 attendees witnessed the award of 83 scholarships and awards totaling $69,490 as follows:

- Alfred Hermann Rhodes (2 @ $500 each), $1,000
- Associated Milk Producers Inc., $1,000
- Clyde Heliker Memorial, $500
- Dairy Club (2 @ $500 each), $1,000
- Dairy Connections, $1,000
- Dairy Science Department, $400
- Dairy Judging Productions, $1,000
- David H. Henry Memorial, $200
- Davisco Foods International, $2,000
- Dean Foods-Land O’Lakes, $1,000
- Dentall, $500
- Emery Butt Memorial, $3,000
- Gilbert T and Olga Gilbertson Memorial, $350
- H. C. Olson, $500
- Hefner for State, $500
- I-29 Dairy Extension, $500
- James Meruel Memorial, $400
- John Anderson Memorial, $2,000
- John C. Gross, $1,000
- Joseph Van Triek, $1,000
- Kemps L.L.C., $500
- Kirk Means Memorial, $950
- Land O’Lakes-Region 65, $250
- Midwest Dairy Association (2 @ $1,500 each), $3,000
- North Central Cheese Industries Association (2 @ $1,800, 1 @ $1,400), $5,000
- North Central Cheese Industry, Assn.-Recruiting (2 @ $500), $1,000
- Ross Baker Memorial, $600
- Ryan Graber Memorial, $1,000
- Saputo Cheese, $1,000
- Schreiber Foods, $1,500
- Shirley Sue Memorial, $500
- SD State Dairy Association (4 @ $1,000 each), $4,000
- Susan Hawkins, $1,000
- T. M. Olson, $600
- Todd and Erica Stahl, $5,000
- Valley Queen Cheese Factory, $4,000
- Wali and Yvonne Woos, $1,000
- WOVP Logistics Donald E. Uelming, $1,000
- Y. T. Yo, $500
- Awards
  - 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
  - Volks Logistik Donald E. Uelming, $1,000
- Incoming Students Scholarships
  - Dairy Science, $500
  - Dairy Science Facility (2 @ $800 each), $1,600
  - Royal and Helen Donor in Dairy Prod., $550

UPDATE: DAIRY RESEARCH & TRAINING FACILITY

Our dairy farm has approximately 150 certified and registered milking cows, including approximately 50 Brown Swiss, and a total herd of 300 animals. The rolling herd average attained a record of just over 28,400 pounds per year. The herd is used for research projects primarily in the cattle nutrition area and also for teaching. In addition, 12-15 students also benefit through the Dairy Camp and cattle judging contests that are hosted at the farm. Mitch Maler and Matthew Holdvogt serve as student managers. Several personnel changes occurred this year as manager, Melissa Schmitt became assistant manager, and Brooks Varnum is the ag foreman.

Stephen Crego served his first full year as manager of the Dairy Research and Training Facility. He also coached 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. He is a member of 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 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 on the Boards of the American Dairy Association of South Dakota, South Dakota Dairy Producers, and advisor to the North Central Cheese Association and the South Dakota Dairy Producers. He was the recipient of the first Dr. Harold and Barbara Bailey Award for Excellence in Academic Department Leadership at SDSU.

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 on the Boards of the American Dairy Association of South Dakota, South Dakota Dairy Producers, and advisor to the North Central Cheese Association and the South Dakota Dairy Producers. He was the recipient of the first Dr. Harold and Barbara Bailey Award for Excellence in Academic Department Leadership at SDSU.

Clyde G. Heliker Dairy Fieldmen’s, $1,000
Midwest Dairy Association/SD Division (2 @ $1,000), $2,000
SD Dairy Fieldmen’s Association (3 @ $1,000), $3,000
SD Dairy Association, $1,250
William and Marge Kallemeyn and Sons, $850
Valley Queen Cheese Factory, $3,000

NATIONAL DAIRY PROMOTION & RESEARCH BOARD SCHOLARSHIPS

SDSU dairy science students won five of the 19 scholarships awarded by the National Dairy Promotion and Research Board in nationwide competition. Students were Cassandra Habstein, April Johnson, Emily Jungemann, Molly Patterson and Ana Schweer.

Our students were once again the beneficiaries of the generosity of many alumni and industry. At the spring 2011 banquet, 189 attendees witnessed the award of 83 scholarships and awards totaling $69,490 as follows:

- Alfred Hermann Rhodes (2 @ $500 each), $1,000
- Associated Milk Producers Inc., $1,000
- Clyde Heliker Memorial, $500
- Dairy Club (2 @ $500 each), $1,000
- Dairy Connections, $1,000
- Dairy Science Department, $400
- Dairy Judging Productions, $1,000
- David H. Henry Memorial, $200
- Davisco Foods International, $2,000
- Dean Foods-Land O’Lakes, $1,000
- Dentall, $500
- Emery Butt Memorial, $3,000
- Gilbert T and Olga Gilbertson Memorial, $350
- H. C. Olson, $500
- Hefner for State, $500
- I-29 Dairy Extension, $500
- James Meruel Memorial, $400
- John Anderson Memorial, $2,000
- John C. Gross, $1,000
- Joseph Van Triek, $1,000
- Kemps L.L.C., $500
- Kirk Means Memorial, $950
- Land O’Lakes-Region 65, $250
- Midwest Dairy Association (2 @ $1,500 each), $3,000
- North Central Cheese Industries Association (2 @ $1,800, 1 @ $1,400), $5,000
- North Central Cheese Industry, Assn.-Recruiting (2 @ $500), $1,000
- Ross Baker Memorial, $600
- Ryan Graber Memorial, $1,000
- Saputo Cheese, $1,000
- Schreiber Foods, $1,500
- Shirley Sue Memorial, $500
- SD State Dairy Association (4 @ $1,000 each), $4,000
- Susan Hawkins, $1,000
- T. M. Olson, $600
- Todd and Erica Stahl, $5,000
- Valley Queen Cheese Factory, $4,000
- Wali and Yvonne Woos, $1,000
- WOVP Logistics Donald E. Uelming, $1,000
- Y. T. Yo, $500
- Awards
  - 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
  - Volks Logistik Donald E. Uelming, $1,000
- Incoming Students Scholarships
  - Dairy Science, $500
  - Dairy Science Facility (2 @ $800 each), $1,600
  - Royal and Helen Donor in Dairy Prod., $550

SDSU dairy science students won five of the 19 scholarships awarded by the National Dairy Promotion and Research Board in nationwide competition. Students were Cassandra Habstein, April Johnson, Emily Jungemann, Molly Patterson and Ana Schweer.
NEW AND ONGOING FUNDS FOR SUPPORTING RESEARCH

Anand, S. K., Hogefeld, J., Krishnan, P., Mithukumarappan, 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 08/31/2011. USDA/CSREES-EPT North Dakota State University. $88,496.


Garcia, A. D., Kalcheur, K. F., Rossen, K., and Wright, C. Producer surveys and outreach/Extension programs for Inrevostock producers. 03/01/2007 to 04/30/2012. USDA/Agricultural Research Service. $72,600.


Hassan, A. Suitability of commercial strains of lactic acid bacteria for reduced-fat cheese making. 03/01/2010 to 10/30/2011. Kraft Sponsored Research Program. $45,446.


Hippen, A. R., Schingoethe, D. J., Kalcheur, K. F. Examination of Butyrate Flakes, LLC. $52,000.


Kalscheur, K. F. Evaluation of commercial-scale pelleted DDGS in dairy cattle diets. 08/01/2010 to 07/30/2012. USDA-ARS. $25,000.

Kalscheur, K. F. Rotational dryland cropping to reduce fossil fuel inputs. 09/01/2010 to 08/31/2011. USDA/NIFA. $34,000.


Metzger, L. E. Development of modified milk protein concentrates and native casein concentrates that can be utilized as an alternative to ractopamine in process cheese product applications. 01/01/2010 to 12/30/2012. Dairy Management Inc. $35,000.

Metzger, L. E. Manufacture of modified MPC utilizing injection of carbon dioxide. 01/01/2011 to 12/31/2011. Dairy Management Inc. $63,000.


OUTREACH

Area Dairy Exports

Alumni, students, staff and faculty of the Dairy Science Department were involved in various activities of the 2011 Central Plains Dairy Expo. Dairy Club and staff assisted with registration and other duties. Faculty provided presentations on various topics at the Expo as a choice testing contest. Faculty also participated in the World Dairy Expo in Madison, Wis.

North Central Cheese Industries Association

Dr. Lloyd Metzger serves as executive secretary and Dr. Vikram Mistry as advisory vice-president to the NCCLA. The annual meeting was held in Bismarck, Minn., in October and attracted more than 50 cheese makers and suppliers from the upper Midwest.

K-12 STUDENTS

Dairy Camp

The Dairy Club hosted the eighth annual Dairy Camp in June 2011 for youth ages 8-18. The 35 participants visited a commercial dairy, Crosstown Jersey Farm and SDSU dairy plant, received training on care of heifers, judging, making ice cream, and clipping and showing cattle. Campers showed what they learned in a showmanship contest on the final day of the camp. Parents were invited to attend, and Randy Gross served as a judge for the show.

High School Visits

Recruiting students is a year-round activity and a priority. Dairy Science Ag-Bio Ambassadors visited high schools in South Dakota, Iowa and Minnesota. In addition, the department visited schools in Iowa, Minnesota and South Dakota.

EXTENSION

Sixth Annual I-29 Dairy Conference

More than 200 dairy farmers improved their understanding of sustainability concepts at an I-29 Regional Dairy Conference held in Sioux Falls. The theme was “Sustaining Our Dairy Families, Farms and Rural Communities” with a focus on Animal Well Being. Temple Grandin, Colorado State University, was the featured keynote presenter on the issue of Animal Well Being.

Milk Quality Workshop

Dr. Almo Garcia led a milk quality workshop at a large local dairy as well as several milk quality clinics for dairy employees. Milk quality workshops were also conducted in Central America through Winrock International and USAID.

Dairy Science at World Dairy Expo

The Dairy Science Department and the South Dakota Department of Agriculture jointly displayed at the World Dairy Expo in Madison, Wis., in October. The booth highlighted dairy development efforts, dairy education, research and education opportunities in South Dakota. More than 200 dairy farmers improved their understanding of sustainability concepts at an I-29 Regional Dairy Conference held in Sioux Falls. The theme was “Sustaining Our Dairy Families, Farms and Rural Communities.”

Alums and Students

Visit the careers section of our website (www.sdstate.edu/ds) for job opportunities in dairy science. Give us a call for details on positions that interest you.

YEARS OF SERVICE

Vikram Mistry completed 25 years of service to the SDSU Dairy Science Department. He joined the department as an assistant professor. He was subsequently promoted to associate professor, and professor and became department head in 2002.
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 U.S. 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 approaches 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 this 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 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.

**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 30 percent 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.