

CALIFORNIA Dairy Dispatch

RESEARCH, EDUCATION AND SERVICE TO SUPPORT THE DAIRY INDUSTRY

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Milking Technology Lab Helps Dairymen Manage Mastitis

The health of California's dairy herds, especially those of Tulare County which produce nearly 9 billion pounds of milk each year, directly affects the health of the industry as a whole.

For the past five years, Lionel Brazil, D.V.M., has operated the Milking Technology Laboratory at the Veterinary Medicine Teaching and Research Center in Tulare. The purpose of the lab is to ensure the health and productivity of dairies by evaluating milking equipment performance and dairy management practices with a specific focus on minimizing mastitis through improved milking management practices.

Mastitis, an inflammation of the bovine mammary gland, can be extremely costly to a dairy operation in terms of lost milk production and the potential for reduced economic returns for cows with a temporary or permanent yield reduction. Dr. Brazil's efforts have focused on determining those management and milking equipment factors most related to increased levels of mastitis in dairy herds.

As part of his research, Dr. Brazil has established a data acquisition system and monitoring procedure by which he collects monthly data from 20-25 dairies. Recently, he used a sophisticated monitoring system on 37 dairy parlors in an effort to detect the relationship of malfunctioning

milking equipment to increased mastitis and somatic cell levels. Participating dairies paid a minimal fee, with additional support provided by the CDFA.

Dr. Brazil has concluded that mastitis causative factors are minimal

*(See **Milking Technology** on page 2)*



From left, CDRF Executive Director Joe O'Donnell, Professor David Barbano, and William C. Haines.

CDRF Presents William C. Haines Dairy Science Award

Cornell University Professor David Barbano received the inaugural William C. Haines Dairy Science Award from the California Dairy Research Foundation (CDRF) during the seventh Cal Poly Symposium on Advances in Dairy Product Technology in Shell Beach, Calif. Dr. Barbano, who made a presentation at the March symposium on the commercialization of milk protein fractionation

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when milking equipment is properly installed and well maintained, along with proper milking management on a 24-hour basis.

His present opinion is that it is the random or unplanned events that contribute to increased mastitis levels. In addition, increased mastitis and somatic cell levels are caused by abrupt pressure changes at teat end, which propel infecting bacteria into the mammary gland during the milking period. This most often happens when the milking unit is abruptly removed under a vacuum load—a condition often caused by leaking milk valves, lack of proper decay time (the dissipation of the vacuum pressure is too slow) or



Milking Technology Lab (Photo: VMTRC, Tulare)

extremely rapid retraction time. Similar conditions can occur when a cow steps on the milk hose or twin air hoses.

Recent discoveries indicate that those dairies with high levels of re-attachment during the milking period have higher levels of mastitis. While some of the above are not new concepts, the data generated through continued research suggest how these forces are applied and how such activity can be curtailed.

With a background of 50 years in veterinary medicine and as a dairyman for 25 years, Dr. Brazil has worked in milking management consulting for the past 10 years—most recently in applied research supported by California dairymen and the California Dairy Research Foundation.



Dr. Lionel Brazil

Moving forward, Dr. Brazil is continuing to offer monthly monitoring and evaluation services, including periodic testing of specific areas of the milking parlor to dairies at three different pricing levels, depending on the services required by dairymen.

According to Dr. Brazil, “As dairies become larger, consistent monitoring of all milking equipment performance levels, product usage and milker performance either manually, mechanically or electronically will be mandatory for high levels of success, both from reduced mastitis levels and increased productivity.”

Dairies interested in Dr. Brazil’s work or services can contact him at (559) 686-3995 or (559) 289-9634. For more information about research conducted by the Milking Technology Laboratory, visit www.cdrf.org and click on “Food Safety & Quality” under “Research Portfolios.” *CDR*



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Student-Run Cal Poly Creamery Reports Record Cheese Sales

The Cal Poly, San Luis Obispo, Creamery reported record-setting cheese sales for the 2004 holiday season. Final figures from January show the student-run enterprise project recorded sales of just under 1,000 gift packs, up from 650 during the 2003 holidays.

Creamery students stayed at the university during most of the winter break in December, packaging and mailing all the gift packs that were ordered early and making sure the packages arrived in time for holiday gifts. The Cal Poly Creamery is run entirely by students as an enterprise project. Due to budget cuts, the creamery is now supported through product sales alone.

Professor Nana Farkye directs the dairy students in the Creamery, helping them to gain hands-on experience in the production of cheese and in developing new ideas and new techniques in cheese production. One of Farkye's recently completed CDRF-funded projects compares the microbial differences between commercial Cheddar cheeses manufactured at different regions within the United States. Farkye's results suggest that cheeses manufactured in the eastern and midwestern United States ripen faster than those manufactured in the west. However, Farkye reports, "by careful selection of starter and non-starter adjuncts good quality aged Cheddar cheeses can be made in California."

Students are part of the entire creamery process: managing, producing, marketing, wrapping, packaging and selling a variety of gourmet cheeses. All of the creamery's dairy products are natural and come from Cal Poly's own dairy cows, raised and milked by student herdsmen.



Cal Poly Creamery students making cheese

"It is the passion of the students and support from friends and alumni that keep the program running and help it grow," said Farkye. "The creamery students are continuing the Cal Poly tradition of 'learn by doing,' and they would like to thank everyone who has supported them."

Cal Poly Cheese is normally available year-round at functions in the San Luis Obispo area; new cheeses should be available in spring. Cal Poly Cheese is sold to local wineries for tastings, at alumni events and other on-campus events.

The Cal Poly Creamery has produced cheeses and other dairy products for the campus, community and alumni since 1903. The creamery currently produces Gouda, smoked Gouda, Chipotle Jack, Mustang Cheddar, smoked Cheddar and San Luis Lace, a delicate, Swiss-style cheese developed on campus.

For more information about Cal Poly Cheese, visit the Cal Poly Cheese Web site at www.calpolycheese.com, or contact Nana Farkye at (805)756-6100 or nfarkye@calpoly.edu.

ODD

Cal Poly Cheeses

San Luis Lace—a Cal Poly original. This delicate Swiss-style cheese makes a great afternoon snack or table cheese.

Reduced-Fat Lace—one of Cal Poly's award-winning cheeses. It contains 25 percent less fat than regular San Luis Lace, but still maintains its nutty flavor.

Smoked Cheddar—a traditional orange Cheddar that has been mildly smoked with natural hickory.

Gouda—another award-winning Cal Poly cheese. It is creamy with a mild delicate flavor. It makes a delicious snack or salad and fruit topping.

Smoked Gouda—the same award-winning Gouda cheese that has been mildly smoked to perfection with natural hickory.

Chipotle Jack—a traditional Monterey Jack cheese with a zest of smoked jalapenos. It is a great table cheese and perfect way to spice up an omelet.

Mustang Cheddar—a unique flavored, smooth, rich-bodied medium traditional orange Cheddar that is aged over 6 months.



Dairy Science Award *from page 1*

products as food ingredients, was chosen for his contributions to the field of dairy science.

"I can't think of a better choice to receive the first William C. Haines award than Dave Barbano," said Joseph O'Donnell, executive director of the CDRF. "Throughout his career, Dave has made numerous contributions that have had a direct, beneficial impact on the dairy industry—from leading the Northeast Dairy Foods Research Center to training the dairy scientists of tomorrow. His dedication to the field of dairy science is the perfect alliteration of this award."

"This award is a great honor and one that I share with my past and present students and staff, because it is recognition of the hard work by all of us, not just me," said Dr. Barbano. "This award is particularly meaningful because of my long-time friendship and working relationship with Bill Haines. Bill has made an outstanding contribution to the dairy

industry throughout his career, and I thank the CDRF for the honor of being the first recipient of this prestigious award."

A professor in the Department of Food Science at Cornell University in Ithaca, NY, Dr Barbano also has served as the director of the Northeast Dairy Foods Research Center since its inception 17 years ago. His current research focuses on improving analytical testing methods for the measurement of fat, protein, lactose and solids content of milk and other dairy products; the influence of mastitis and milk somatic cell count on dairy products quality and yield; factors influencing manufacturing costs for cheese and whey products; improving natural cheese quality, production efficiency and yield through process control; and the utilization of low concentration factor casein concentrates from microfiltration for cheese making and milk serum protein concentrates from microfiltration in beverages.

Established in 2004, the William C. Haines Dairy Science Award was

created to recognize individuals who, through their accomplishments in research and development in the field of chemistry, biochemistry, microbiology, technology, nutrition, and/or engineering, have made a significant contribution to dairy science and the betterment of the dairy industry and consumers of dairy products.

The award, named for William Haines, former vice president of Product Innovation for Dairy Management Inc., includes an engraved plaque, \$1,000 in cash and travel expenses to an annual dairy industry event co-sponsored by the CDRF. A committee of dairy personnel representing producers, processors, manufacturers and researchers make the final award selection. Nomination forms for the 2006 award are available online at www.cdrf.org under "Awards & Giving." The deadline to submit 2006 nomination forms and supporting materials is Sept. 23, 2005.

CDR

Dairy Welfare Evaluation Guide Available to Dairy Producers

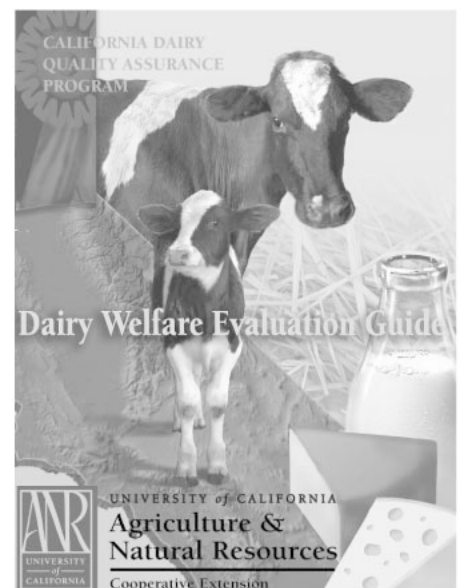
Dairy producers may now download a free dairy welfare guide created as a teaching tool for use by the California Dairy Quality Assurance Program (CDQAP). The program consists of two parts: Assessment of the Dairy Facility and a technical guide, which provides science-based information on best management practices.

The Assessment of the Dairy Facility objectively evaluates the major areas of welfare on the dairy, including management policies, health care, facilities and environment, feed and water, handling and transport, and management of calves. The technical guide, funded by CDRF and available as a download

on www.cdqa.org/ahw, provides detailed information on topics related to animal welfare, assisting the dairy management in improving current policies and procedures for these specific areas.

The *Dairy Welfare Evaluation Guide* was produced for the CDQAP by UC Davis Animal Welfare Specialist Carolyn Stull, Ph.D., and colleagues Dairy Management and Health Specialist Steven Berry, D.V.M., M.P.V.M., Dairy Farm Advisor Barbara Reed, M.S., and CDQAP Director Michael Payne, D.V.M., Ph.D. For information about the CDQAP, visit www.cdqa.org.

CDR



Whey-Based Film Promises Cost and Environmental Savings

Scientists have discovered a new way to use dairy byproducts to preserve fresh foods, a discovery that could save money and lead to less packaging waste, according to an article by Anthony Fletcher that appeared in the Feb. 28 article in www.foodproductiondaily.com.

UC Davis Professor John Krochta has developed an edible food coating derived from the dairy byproduct whey.

He believes that his edible whey coating could be used to cover nuts to keep them fresh in packages or to keep them from going rancid in chocolate bars. Other uses might include coating fragile foods such as breakfast cereals and sealing foods like salmon or sliced turkey, possibly with the addition of a natural anti-bacterial agent.

Krochta is just one of a number of scientists looking for new and improved ways to stop spoilage—indeed research into biodegradable

packaging has taken off as scientists look for a cost-effective alternative to polystyrene-based products.

Tara McHugh, a scientist with the USDA's Agriculture Research Service (ARS), is turning pureed fruits and vegetables into edible packaging in the form of vibrantly-colored wraps.

The pureed fruit wraps are not as strong as plastic film, although they are about as tough as paper. Neither the wraps nor Krochta's whey coating are intended to replace packaging altogether; food would still have to be protected by another barrier, such as a bag or box, to keep things hygienic.

However, an undeniable opportunity exists to improve the environmental profile of the food industry. The food processing sector is a major contributor to industrial waste—in the UK, for example, the Environment Agency has estimated that the food and drink sector produces between seven and eight

million tons of waste per year, second only to the construction industry.

Edible films could cut down on the amount of packaging required, such as the bag-in-box or plastic-plus-foil approaches used now.

“Our concept is rather than putting the oxygen barrier in the package, put it on the product so that you can get away with a simpler package that uses less material and is cheaper,” said Krochta.

Indeed, 2004 was largely an unsatisfactory year for manufacturers of plastics packaging and packaging films. Raw material cost increases for plastics, which have been rising for an unusually long period of time, have made polystyrene—and other plastics—an expensive commodity. Limited raw material supply, container shortages and rising oil prices have exacerbated the problem.

ODD

CDRF and IDFA to present HACCP Short Course for Cheesemakers

Current Hazard Analysis and Critical Control Point (HACCP) and food/biosecurity practices and their implementation in cheese plants will be the topic of a three-day short course in San Luis Obispo this August, sponsored by the California Dairy Research Foundation (CDRF) and the International Dairy Foods Association (IDFA).

The Advanced HACCP Short Course for the California Cheese Industry, which will be held August 2-4 at the Dairy Product Technology Center at Cal Poly San Luis Obispo, will include a thorough review of current HACCP practices for large cheese operations and will cover important national regulatory and

food security issues. Noted HACCP lecturers Allen Sayler from the IDFA and John Rushing, a professor at North Carolina State University, will headline a program that also will feature team exercises and knowledge assessments. Joining Sayler and Rushing for a California-specific focus will be John Bruhn, Cooperative Extension Specialist in the UC Davis Department of Food Science and Technology, and Professor Phillip Tong of Cal Poly. Participants will receive customized manuals and materials, a certificate from the IDFA, and qualify for continuing education points.

“This is a unique opportunity for California's cheese industry. The IDFA is one of the leading providers

of HACCP training for the dairy industry.” said Joe O'Donnell, executive director of CDRF. “Its programs are extremely comprehensive and will help California cheesemakers with managing and maintaining their HACCP program.”

Overall costs for the three-day short course are being underwritten by the CDRF. Advance registration is required and is limited to 40 participants. Pre-registration is \$150 through July 19; after July 19 registration is \$175. Online registration is available at www.acteva.com/go/CDRF. For more information contact event organizer Jennifer Giambroni at (415) 254-4549 or jgiambroni@sbcglobal.net.

ODD

UC Davis scientists join food safety network

Scientists from UC Davis are among the 50 researchers from 18 colleges and universities participating in a new Food Safety Research and Response Network, funded by a \$5 million grant from the U.S. Department of Agriculture and led by North Carolina State University.

The researchers will study disease-causing microbes such as *E. coli*, *Salmonella* and *Campylobacter* to determine where they occur in the environment, how they are sustained and how they infect livestock herds.

Among the partners in the project is veterinary epidemiologist Ian Gardner, who will receive funding to provide epidemiology support for the network, along with colleagues at Cornell University. The network will provide \$40,000 to UC Davis to fund Gardner's work.

This initiative complements other food safety research and training programs at UC Davis' School of Veterinary Medicine and Western Institute for Food Safety and Security.

Other network collaborators from UC Davis are parasitologist Patricia Conrad and dairy herd-health expert Bill Sischo, both from the School of Veterinary Medicine, as well as food microbiologist Linda Harris and post-harvest pathologist Trevor Suslow, both from the College of Agricultural and Environmental Sciences.

The other 17 institutions in the project are UC Berkeley, Cornell

University, Iowa State University, McMaster University, Mississippi State University, North Dakota State University, The Ohio State University, Tuskegee University, University of Arizona, University of Florida, University of Illinois, University of Kentucky, University of Minnesota, University of Montreal, Washington State University and West Texas A&M University.

Dairy helps you look good, claims new UK campaign

The British dairy industry is appealing to the vanity of teenage girls in a bid to get them to drink more milk. A marketing campaign launched by the Milk Development



Council (MDC) in March aims to promote the beauty benefits offered by nutrients in dairy products,

including the link between B vitamins and healthy skin, calcium's role in tooth care and the use of protein and amino acids in healthy hair.

Calcium intake is important during adolescence, which is considered a key period for the formation of bones and protection against osteoporosis later in life. However research suggests that only one out of four girls is eating at least three portions of dairy products daily.

Those who are leaving out dairy products are most likely doing so because of their fear of putting on weight. The new campaign, to run for two years, will use a range of media, including cinema, radio and press, to carry the "Naturally Beautiful" message.

"What's important to teenage girls is looking good," said Vicky Hathaway, marketing manager at the MDC, a government-appointed marketing body for the UK milk sector. "There is no point talking to them about osteoporosis, which they view as a long-term condition that is not life-threatening. We have to give them other reasons for eating more calcium."

The campaign's success will be carefully watched by manufacturers of other health foods. Consumer research suggests that marketers who focus on positive health benefits are more successful than those who focus on disease prevention.

This article was excerpted from the March 31 issue of DairyReporter.com.

Yogurt bacteria help prevent tooth decay, bad breath

A team of researchers from Tsurumi University in Yokohama, Japan, reported in March that eating sugarless yogurt may reduce bad breath, tooth decay and gum disease.



A test group of 24 volunteers avoided yogurts and similar foods, like cheese, for two weeks, after which the researchers measured bacteria levels and odor-causing compounds, including hydrogen sulphide, in saliva. The volunteers then ate 90 grams of yogurt a day for six weeks. At the end of the study, researchers found hydrogen sulphide levels decreased in 80 percent of participants. Levels of plaque and the gum disease gingivitis also were significantly lower among the yogurt-eating group.

The benefits are thought to come from the active bacteria in yogurt, *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. The research was presented at the International Association for Dental Research meeting in Baltimore, MD (abstract 920).

This article was excerpted from the March 22 issue of Foodnavigator.com.

Milk cuts men's heart disease risk

A Quebec study shows regular dairy consumers have better cardiovascular health. It's not just women and children who should drink milk. It's men, too. An analysis of nutritional data from a large Canadian study suggests drinking milk and eating dairy products can reduce men's risk of heart disease by nearly one-third. "Our findings show there's definitely a place for milk in men's diets," says study author Benoît Lamarche, an associate professor of food science and nutrition at Laval University in Quebec City. Lamarche reached that conclusion after

analyzing 13 years of data from the Quebec Cardiovascular Study, which involved 2,000 middle-aged men in the Quebec City area who were initially free of heart disease. He found that men who consumed more than 1.2 portions of dairy products (including milk, cheese and yogurt) each day had a 30 per cent lower rate of heart disease than men who consumed less than this amount. "The data support the conclusions of previous studies that have suggested that milk and dairy products have cardio-protective properties," Lamarche says.

This story first appeared at: <http://www.macleans.ca/topstories/health/>

Milk Protein Interactions Focus of Special Symposia at July Joint ASAS-ADSA-CSAS Meeting in Cincinnati

Milk protein interactions are the topic of a special symposium organized by the American Dairy Science Association's Milk Protein & Enzyme Committee (MPEC) for the joint annual meeting of the American Society of Animal Science (ASAS), American Dairy Science Association (ADSA) and Canadian Society of Animal Science (CSAS). The ASAS-ADSA-CSAS meeting will be held July 24-28 at the Cincinnati Convention Center. The MPEC session, presented every two years, will celebrate the sixth revision of "Nomenclature of the proteins in cow's milk" (J Dairy Sci. 87(6): 1641-74) by focusing on the chemistry and molecular interactions of milk proteins.

"We have attracted four international speakers who are directly responsible for some of the more innovative work on milk protein chemistry, physics and interaction studies," said MPEC chair and symposium organizer Rafael Jiménez-Flores a professor at Cal Poly San Luis Obispo. "Long ago the scientific community learned a lesson with the discovery of "Simplex," an aggregate of whey proteins that mimics the texture of fat. Today there are a variety of approaches to studying how milk proteins interact among themselves or with other molecules in our food. This symposium aims to review some of the most exciting developments in this area."

Symposia sponsors include the California Dairy Research Foundation, Dairy Management Inc., US Dairy Export Council, Land O' Lakes, Glanbia and Masterfoods. For more information about the program, visit www.fass.org/2005 on the Web.

Calendar of **EVENTS**

July 24-28, 2005

ADAS-ADSA-CSAS joint annual meeting. Location: Cincinnati Convention Center. For more information, visit www.fass.org/2005 on the Web.

August 2-4, 2005

Advance HACCP Planning Seminar. Sponsored by the International Dairy Foods Association and the California Dairy Research Foundation. For information, contact Jennifer Giambroni at (415) 254-4549 or info@cdrf.org. Location: Cal Poly Dairy Products Technology Center, San Luis Obispo, CA

August 14-17, 2005

International Association for Food Protection (IAFP) 92nd Annual Meeting. Location: Baltimore, MD. For information, visit www.foodprotection.org.

September 17-22, 2005

IDF World Dairy Summit. PARTNERING—The Future of the World Dairy Industry. Location: Vancouver, Canada. For information, visit www.meet-ics.com/idf/

September 23, 2005

Submissions due for 2006 nominations for the William C. Haines Dairy Science Award. Downloadable nomination forms available at www.cdrf.org under "Awards & Giving" link at top of page.

September 27-30, 2005

Sixth Annual Dairy Science and Technology Basics for the Artisan/Farmstead Cheesemaker. Location: Cal Poly Dairy Products Technology Center, San Luis Obispo. For more information, call Laurie Jacobson at (805) 756-6097 or send an e-mail message to ljacobso@calpoly.edu.

October 18-19, 2005

Ninth Annual Dairy Cleaning and Sanitation Short Course. Location: Cal Poly Dairy Products Technology Center, San Luis Obispo. For more information, call Laurie Jacobson at (805) 756-6097 or send an e-mail message to ljacobso@calpoly.edu.

November 7-10, 2005

Sixth Annual Frozen Dairy Desserts Manufacturing Short Course. This course emphasizes ingredients function and usage, mix formulation, equipment and processes in frozen dessert manufacture. Location: Cal Poly Dairy Products Technology Center, San Luis Obispo. For more information, call Laurie Jacobson at (805) 756-6097 or send an e-mail message to ljacobso@calpoly.edu.

November 10-11, 2005

Second International Symposium on the Milk Genome and Human Health. Location: COPIA—The American Center for Wine, Food and the Arts in Napa, Calif. For more information, call Jennifer Giambroni at (415) 254-4549 or send an e-mail message to jgiambroni@sbcglobal.net.