

## **Dairy Dispatch – Spring 2002**

### **Hilmar Cheese Company commits \$3 million to the environment**

Hilmar Cheese Co. recently announced a bonus program that pledges more than \$3 million to its milk producers who take extra steps to operate environmentally responsible dairies.

The company will pay out bonuses to its dairy producers who participate in the environmental segment of the California Dairy Quality Assurance Program (CDQAP), an environmental stewardship program. Dairy producers will receive an average of \$10,000 per dairy from Hilmar Cheese Co. for completing the CDQAP environmental certification.

“We currently have more dairies certified under CDQAP than any other milk processor in the state,” notes John Jeter, president and CEO of Hilmar Cheese Co. “These pioneering dairies have shown us the tremendous benefits this program can provide for individual producers and the industry as a whole. We wanted to create an incentive for all of our producers to certify their dairies.”

The CDQAP was formed in 1997 to provide a voluntary venue to help California dairy producers understand and comply with the various laws enforced by local, state and federal agencies. It focuses on three components: food safety, animal health and welfare, and environmental stewardship. The U.S. Environmental Protection Agency, which provided \$443,000 in funding for the program, called it a “model” for the rest of the nation. Since its inception, the Environmental Stewardship component has provided voluntary training to more than 1,400 dairy farmers and their employees.

“The Dairy Quality Assurance Program provides a great opportunity for farms to do the right thing environmentally and to bring themselves into compliance with state, local and federal regulations,” said Tom Huetteman, chief of the EPA’s Clean Water Act Compliance Office in San Francisco. “We appreciate Hilmar’s efforts to help California dairies run more cleanly and more efficiently.”

The CDQAP is supported by dairy industry leadership including the Alliance of Western Milk Producers, California Farm Bureau Federation, California Manufacturing Milk Advisory Board, California Milk Advisory Board, Milk Producers Council, and Western United Dairymen. Government agencies and academic organizations partnering with the environmental certification program include the California Department of Food and Agriculture, the California Environmental Protection Agency, the State Water Resources Control Board, the California Resources Agency, the Department of Fish and Game, Region nine of the U.S. Environmental Protection Agency, University of California at Davis, and the U.S. Department of Agriculture Animal Plant Health Inspection Service, Natural Resources Conservation Service and Farm Services Agency.

Hilmar Cheese Co., located in California’s Central Valley town of Hilmar, is an 18-year-old privately held corporation owned by 11 dairy families and supplied by more than 250 dairies throughout the Central Valley and North Bay. It is the largest single-site cheese manufacturer in the world, with the majority of its production in Cheddar and Monterey Jack cheeses. Current customers include companies across the United States and abroad in food service, ingredients and retail.

## **The American advantage**

By Joseph O'Donnell

Competition is the name of the game in U.S. business. Most business people believe in the principle that fewer constraints on competitive forces benefit us all. So how does the American dairy industry compete at home and in the world market?

Starting with the commodities, effective competition revolves around price. Among suppliers who can meet the specs, the one with the lowest price gets the sale—at least that is the theory. A dairyman friend of mine had a simple yet profound operating principle. He worked to produce milk at the lowest cost possible. In this way he guaranteed he had a market. That did not imply that his dairy was a primitive, low-input operation—quite the contrary. It was a carefully managed, modern operation that achieved his objective. By being the low-cost producer, he also stood to pocket the greatest margin. In the worst-case scenario, he would be the last guy standing. In the best-case scenario, he would be the richest guy standing. The principle applies to all commodity businesses.

Domestically we see constant regionalization in the production of milk. New York was at one time the leading dairy state. Then that title shifted to Wisconsin, and today California has that distinction. Milk production is declining in the Midwest and expanding on the West Coast. Cost of production has a lot to do with that shift.

Internationally, American dairy products can be competitive against even the likes of New Zealand. But we're hurt internationally by the currency exchange rates, not by our proficiency. The United States performs at the highest level of farm management and manufacturing management. In fact, our professional management approaches keep us in the game in spite of unfavorable currency exchange rates.

What sets American business apart is what sets most things American apart from the competition—innovation. When we focus on a target, then the axiom “necessity is the mother of invention” enters the equation. Necessity stimulates innovation, the competitive advantage that enables American dairy products to establish and retain a global market. Whether that market is for basic commodities or value-added functional ingredients, American innovation, once focused, will distinguish our products from all others.

We can't neglect the reality of the downside of innovation. By its nature, innovation requires taking on risk. But America was built on risk. Our business structure has bankruptcy laws and other instruments that serve as a cushion when risk goes bad. Our business environment tries to soften the blow of failure so as to not extinguish the enthusiasm for innovation.

Innovation also requires a solid footing and understanding of technology. That implies financial commitment. The sophisticated and well-heeled research organizations supported by overseas dairy industries can be intimidating. On the surface, American investment in product innovation pales compared to these overseas powerhouses. But let's look deeper.

The American dairy industry co-invests with our agricultural universities, especially the globally unique land-grant university system. Co-investing with the land-grant universities more than doubles the investment because the infrastructure, faculty salaries and overhead are covered by the respective universities. In addition, this is a huge system. Land-grant universities are among the largest in the country—for example, the University of Minnesota, University of

Wisconsin, University of California, Cornell University, North Carolina State University, Utah State University, and South Dakota State University—just for starters. The sophisticated, broad-based expertise available through the land-grant system would be difficult to duplicate elsewhere. It is precisely this well of creative expertise that leads to American innovation. The challenge is to focus this expertise on dairy issues—the reason that communication is paramount. The independence of university faculty members is one of the reasons why universities are creative. Couple this creativity with resources from the industry needed to do the work, and with proper insight innovation is born. Innovation doesn't stop there. The research and development laboratories, staffed by graduates of the research universities, apply university-generated concepts and technologies in development of novel products.

So global competitiveness through innovation requires three levels of investment: state-funded agricultural universities; dairy producers and processors funding university precompetitive research; and proprietary R&D. This triumvirate represents an incalculable investment that is not fully appreciated.

Innovation generated by such investments constitutes the foundation of food safety, efficient low-cost processing, functionality, nutritional understanding, and novel processing. Innovation, born of investment and attitude, is America's advantage.

This article first appeared in the December 2001 issue of *Cheese Market News*.

### **UC Davis and Cal Poly offer new graduate program in agriculture**

Graduate students can now combine advanced agricultural studies at the University of California, Davis, and California Polytechnic State University, San Luis Obispo, through a new graduate program designed to benefit students across the state.

The McOmie Graduate Education Program provides students the opportunity to complete their master's studies in Cal Poly's College of Agriculture and continue their doctoral studies through graduate programs in UC Davis' College of Agricultural and Environmental Sciences. The program, which was created through a form of gift called a charitable remainder trust, was formally launched in September 2001.

This agreement strengthens the research connection between the University of California and California State University systems and helps prepare highly qualified students for doctoral studies at UC Davis.

The late Lorenzo and Judith McOmie established the McOmie charitable remainder trust in 1975 as a \$5 million fund at UC Davis and Cal Poly to support agricultural research programs at both universities, especially in animal husbandry and field crops. It is now valued at \$20 million. UC Davis' \$10 million share is the second largest gift ever to the College of Agricultural and Environmental Sciences.

Lorenzo McOmie was raised on farms from Idaho to California. He graduated from Stanford University in 1930 and began a career as a farmer and rancher, owning numerous properties throughout California's Central Valley.

“We’re excited about the McOmie Graduate Education Program and the spirit of cooperation it demonstrates between two excellent institutions,” said Neal Van Alfen, dean of College of Agricultural and Environmental Sciences at UC Davis. “This new program made possible by the generosity of Lorenzo and Judith McOmie will foster educational collaboration between the two universities, and provide easy access to UC Davis for agricultural students at Cal Poly, San Luis Obispo.”

The new program expands the original vision behind the L.M. McOmie charitable remainder trust to include a broad array of graduate programs in UC Davis’ College of Agricultural and Environmental Sciences. The program is subject to review every five years, with each institution contributing \$35,000 the first year.

“We are very pleased to enter into an agreement to cooperate with the scientists at UC Davis in developing joint graduate programs in agriculture that will benefit our students,” said David Wehner, interim dean in the College of Agriculture at Cal Poly. “This program allows our faculty and students access to some advanced technologies and programs at Davis that we cannot provide at Cal Poly and helps develop relationships among the scientists at both institutions that will benefit California.”

The new program affirms the informal relationship between the two universities in the agricultural sciences that has been established over the years as Cal Poly graduates have gone on to pursue advanced degrees at UC Davis.

“The range of expertise, experience and talent assembled at both UC Davis and Cal Poly offers doctoral students in the agricultural sciences a unique opportunity to seek knowledge at both institutions,” said Gary Anderson, chair of the UC Davis animal science department. “Our focus is to allow the faculty and students to respond to a broad range of contemporary issues related to the growth and development of the animal and agricultural sciences.”

Anderson noted that several of his students who earned their bachelor’s degrees at Cal Poly, San Luis Obispo, have gone on to distinguish themselves in their graduate studies at UC Davis.

Among these were Stefanie Oppenheim, who received the 1999 John Kinsella Award for the top doctoral thesis in the College of Agricultural and Environmental Sciences, and Shelley Cargill, who was the 1998 recipient of the Physiology Graduate Group’s Hertzendorf Award for graduate research and good citizenship.

### **Focus on Genomics: Lactic acid bacteria sequenced**

By Todd R. Klaenhammer

The first year of the new millennium generated a flash of new excitement around the Southeast Dairy Foods Research Center (SDFRC) and the National Dairy Foods Research Center (DFRC) programs. Much of this revolved around a novel opportunity uncovered by David Mills (University of California, Davis, Viticulture and Enology) to sequence the genome of *Oenococcus oenus*, a lactic acid bacterium involved in secondary fermentation of wines. The Joint Genome Institute (JGI) in Walnut Creek, Calif., is the sequencing arm of the Department of Energy. JGI had initiated a program known as microbe month in which 10-12 microbial genomes are sequenced in one month to greater than 8X, and those draft sequences are released immediately on JGI’s Web site ([www.jgi.doe.gov](http://www.jgi.doe.gov)).

The initial discussions surrounding *Oenococcus oeni* raised JGI's interest in the industrial and beneficial roles of the diverse collection of lactic acid bacteria. A consortium of scientists was then organized in the spring of 2001, by *David Mills (CDRF)* and *Bart Weimer (Western DFRC)*, to develop a proposal for JGI to sequence 11 different members of the lactic acid bacteria. The Lactic Acid Bacteria Genomics Consortium (LABGC) was born and included scientists hailing primarily from DFRC programs around the nation.

In early 2002, the first genome of 11 species of lactic acid bacteria was completed and placed in the public domain. The genome sequence of *Lactobacillus gasseri*, a probiotic species found routinely in humans, can be located at the JGI Web site. This organism was contributed from the North Carolina State University/SDFRC and now doubles the genome information we have on probiotic lactobacilli when added to the genome sequence of *Lactobacillus acidophilus*. The research, funded by Dairy Management Inc., is a collaboration between Cal Poly San Luis Obispo/CDRF and North Carolina State University/SDFRC.

Ten more species are in process and expected to be completed by this summer. The bacteria to be sequenced are *Lactococcus lactis*, *Lactobacillus gasseri*, *Bifidobacterium longum*, *Lactobacillus casei*, *Lactobacillus delbrueckii* ssp. *bulgaricus*, *Streptococcus thermophilus*, *Brevibacterium linens*, *Leuconostoc mesenteroides*, *Lactobacillus brevis*, *Oenococcus oeni*, and *Pediococcus pentosaceus*. Seven of these species are critically important to milk fermentation, cheese ripening, yogurt production, and as probiotic cultures delivered through dairy products. The availability of these genome sequences to DFRC researchers in 2002 will revolutionize scientists' ability to control and exploit the beneficial attributes of lactic acid bacteria used in dairy manufacturing and delivered through dairy products. For example, genome sequences have already identified the genes likely involved with production of intense cheese flavor by peptidases, stimulation of the human immune system, tolerance to stomach acid, resistance to bile salts, and binding of toxins. The clear winner is the dairy industry, because this information will positively impact dairy products and bioprocessing, as well as promote the positive image of health benefits that can be delivered by probiotics through dairy products.

At this juncture, the future holds many opportunities to deliver on the investment of the Dairy Foods Research Centers into dairy cultures and probiotics. Many of the individuals responsible for developing the consortium were trained or are supported by the National DFRC program, coordinated by Dairy Management Inc. This is how research investments are supposed to work—first, positioning the field; second, training the leaders of tomorrow; and third, discovering the innovations that will catapult new information and applications into expanded markets.

*Todd R. Klaenhammer, executive director of the Southeast Dairy Foods Research Center at North Carolina State University, is one of the world's leading experts in the role of lactic acid bacteria in food fermentation, and a member of the prestigious National Academy of Sciences.*

### **Did you know...**

The International Dairy Federation (IDF), a dairy information organization that serves 38 member countries, publishes 10 bulletins per year comprising scientific, technical and economic information to promote and enhance the image, trade, production and consumption of milk and milk products worldwide. Some of the topics covered in last year's *Bulletin of the International*

*Dairy Federation* include “Mastitis,” “Influence of Feed on Major Components of Milk,” “Nutrient Removal Practices in the Dairy Industry,” and “2001 World Dairy Situation.” Past and current issues of the *Bulletin*, as well as other dairy publications, may be ordered by visiting the IDF Web site at [www.fil-idf.org](http://www.fil-idf.org).

## News and Notes

### **Payne formally named director of CDQAP**

The California Dairy Quality Assurance Program (CDQAP) recently appointed Michael Payne, D.V.M., Ph.D., as its program director. An extension researcher in the Department of Environmental Technology at the University of California, Davis, Payne has served the dairy industry in private practice, as an extension veterinarian and as a dairy researcher. For the past four years he has been a central figure in the development and implementation of the CDQA Program. One of Payne’s major focuses as program director will be to secure co-funding from outside organizations. “From day one he has been an important part of the CDQA Program,” said Joseph O’Donnell, executive director of the California Dairy Research Foundation. “His leadership has influenced state and federal agencies to match as much as \$6.81 for every dollar invested by California’s dairy industry.”

### **UC Davis food scientists ranked top 20 most referenced**

CDRF principal investigator J. Bruce German was among three UC Davis food scientists ranked by the Institute for Scientific Information (ISI) among the top 20 “most referenced agricultural science researchers.” German ranked 16th of 1,500 scientists. Food Science and Technology professor Edwin Frankel ranked second, and the late John Kinsella, who served as dean of the UC Davis College of Agricultural and Environmental Sciences, was ranked 17th.

### **Education campaign results in dramatic rise in 1% milk sales**

Sales of 1% milk at four Fresno grocery stores soared following an 18-week “1% Milk—Healthy and Delicious!” campaign aimed at raising public awareness about the health benefits of lower-fat milk.

Melissa Martinez, one of the investigators participating in the study observed that many people are buying whole milk out of habit. “If we give them accurate information about the health benefits of low-fat milk, many will try it,” said Martinez, a program representative for California Nutrition Network based at the UC Cooperative Extension office in Fresno.

The Central Valley LEAN coalition, comprising numerous health-oriented community agencies determined that the Hispanic population consumes more whole milk per capita than non-Hispanic populations. Since dietary fat intake is known to contribute to obesity, heart disease, cancer, stroke and type 2 diabetes—conditions disproportionately high in the Hispanic population—switching to low-fat 1% milk would significantly reduce fat intake while retaining the benefits of calcium, protein and vitamin D.

The campaign, which was designated to reach both Spanish- and English-speaking Hispanic mothers of young children, included milk taste tests and presentations at schools, and grocery

stores; posters and brochures at supermarkets; television, print, and radio promotions; dissemination of materials at health provider sites, and health fairs; and collaboration with the Fresno Unified School District to serve 1% milk.

The post-campaign survey of milk sales at the four grocery stores showed a pronounced progression to 1% milk. Stores in the study experienced a 7.8% decrease in whole milk sales, an 11.5% increase in 2% milk sales, a 43.8% increase in 1% milk sales, and a 31.7% increase in flavored 1% milk sales.

Even with the changes, however, whole milk is still by far the most popular choice at the grocery stores surveyed. At the end of the campaign, the stores still sold more than 20,000 units of whole milk within a month, almost 6,000 units of 2% milk, and nearly 1,500 units of 1% milk.

“We still have work to do, but we’ve found ways to get consumers to consider 1% milk and, in many cases, try serving the healthier, lower-fat product to their families,” Martinez said.

For more information, contact Patty Minami or Melissa Martinez at (559) 456-7142 or (559) 250-3173, [mkquerra@ucdavis.edu](mailto:mkquerra@ucdavis.edu).

### **Visalia to host the Marschall Cheese Seminar**

The Marschall Cheese Seminar, sponsored by Rhodia Inc. and the California Dairy Research Foundation (CDRF), will return again to Visalia, Calif. for its 39th annual event. The seminar will take place this coming October 2 and 3, with a pre-seminar golf outing and Cal Poly San Luis Obispo short course on October 1. In addition to seminars and workshops designed for educational development, the event will include a trade show, a cheese-grading competition and a wine and cheese reception showcasing award-winning cheeses from throughout the country.

The Marshall Cheese Seminar will be held at the Visalia Convention Center, 35 miles south of Fresno and 240 miles north of Los Angeles. Seminar information will begin appearing in trade publications and mailboxes this spring.

For more information please contact Jo Ann Sterenberg at (574) 264-2557 or visit [www.marschallcheeseseminar.org](http://www.marschallcheeseseminar.org) and [www.rhodiadairy.com](http://www.rhodiadairy.com) for continuing updates.