



Dairy Foods Research Centers Program Celebrates 25 Years of Dairy Research, Education and Innovation

Renowned inventor and scientist Alexander Graham Bell once said, “Great discoveries and improvements invariably involve the cooperation of many minds.” Bell’s words also ring true for the contributions the National Dairy Foods Research Centers – and the many individuals associated with them – have made to the dairy industry. Since America’s dairy farmers established the research program 25 years ago through the dairy checkoff program, these resources have served as a unifying hub for many intelligent individuals yielding insights and innovations that have made innumerable contributions to the dairy industry. The National Dairy Foods Research Center program also has served as a confidential resource equipped with the facilities and technical experts needed to help dairy, food and beverage companies bring new or improved products to market in a highly competitive arena. The six university-affiliated centers, located at strategic locations across the U.S., work with industry to provide leading dairy product and ingredient research, as well as unique technical resources designed to accelerate innovation in dairy-based products to help increase demand for dairy.

The longstanding commitment by dairy farmers and the dairy industry to sound, scientific dairy research, through the National Dairy Foods Research Center program, is supported in part by the Dairy Research Institute®. Founded in 1987, the program was developed to meet the need for ongoing training, research and education in dairy product processing. From the beginning, the program and the individual centers have supported industry wide initiatives, working with partners such as the Innovation Center for U.S. Dairy®, the U. S. Dairy Export Council®, National

Dairy Council® and countless companies to ensure dairy products meet the needs of consumers and result in increased dairy consumption.

According to John Lucey, Ph.D., director of the Wisconsin Center for Dairy Research at the University of Wisconsin—Madison, the resources offered by the program have played a valuable role for industry by bringing product innovation, technical experts and relevant research to the attention of dairy companies. “Our combination of industry and academic experience contributes greatly to our ability to understand issues and to offer solutions,” said Lucey.

Success Defined

The Centers are each equipped with pilot and commercial scale lab equipment and staffed with specialty area experts, working with research and development teams from companies around the world. The Centers also serve as a teaching resource helping companies develop new products or make improvements to their product using dairy ingredients and helping ingredient suppliers improve upon an existing dairy ingredient through processing and other methods.

A number of measurable successes can be found in looking at the impact the Centers have had over the last 25 years.

Doubling Cheese Consumption

Improvements in natural cheeses have been made possible through education and training and have played a role in almost doubling consumer consumption over the last 20 years.¹ The Centers have successfully developed technology to create unique and value-added cheeses with higher protein, lower sodium, probiotics and other ingredients which in turn, has spurred new product and

line extensions leading to more diverse cheese offerings to meet consumer demands. The growth in specialty/artisan cheese can be partially attributed to technical training and short courses at the Centers and helping start ups and existing companies take their products to the next level. Case in point: nearly 60 percent of the winners at the 2012 World Cheese Contest attended short course training at the Wisconsin Center for Dairy Research at UW-Madison, highlighting the incredible impact of these programs on cheese variety and quality. Today the U.S. produces almost 1 billion pounds of specialty cheese annually. In addition, there are 600 styles and types of cheese produced in Wisconsin, and of these, 50 percent are specialty cheeses.

Process improvements for cheeses have led to greater use with pizzas for improved stretch and melt. The Centers are helping meet consumer demand for shredded, natural and processed cheese by continuously improving on what we already have, helping companies stay ahead of the curve and improve their product lines.

We’ve Come a Long Way: Adding Value and Finding New Uses for Dairy Ingredients

Quality and performance improvements in dairy ingredients as well as the discovery of new uses and product applications often started with the work at the Dairy Research Centers.

“Twenty-five years ago, whey was a byproduct of cheese manufacture and had very little value,” said Lloyd Metzger, Ph.D., director of the Midwest Dairy Foods Research Center and dairy science professor at South Dakota State University. “Thanks to research on whey processing and functionality conducted

by the Dairy Foods Research Centers in partnership with the dairy industry, today whey is a profitable value added ingredient that makes a major contribution to the value of milk.”

Researchers uncovered its valuable use as a high quality protein and now recognize its functionality and ease of use in a variety of products. Whey continues to increase in popularity and its use in foods and beverages has resulted in whey consumption more than doubling over the last 20 years.¹

The combination of product research and nutrition research to uncover benefits in sports nutrition and healthy aging has resulted in the use of whey protein in a wide variety of food and beverage products; which has prompted industry analysts to predict that this ingredient is on the edge of mass commercialization.²

Research also has helped evolve and expand the use of permeate. First used as a cost-effective ingredient that added browning and flavor benefits to baked products, Center research has helped identify permeate's ability to replace salt in formulations. The Centers began researching permeate about 10 years ago, exploring its potential uses and applications in a variety of products such as soups, bakery and seasoning blends. Center research has been able to reduce the amount of added salt in foods by 30 to 75 percent, providing a potential solution for companies seeking alternatives to

The dairy farmer-funded National Dairy Foods Research Centers are located across the U.S. including:

- **California:** Cal Poly State University, San Luis Obispo, Calif. and University of California-Davis, Davis, Calif.
- **Midwest:** University of Minnesota – St. Paul, Minn., South Dakota State University – Brookings, S.D., and Iowa State University – Ames, Iowa
- **Northeast:** Cornell University, Ithaca, NY
- **Southeast:** North Carolina State University, Raleigh, NC, and Mississippi State University, Starkville, Miss.
- **Western:** Utah State University, Logan, Utah
- **Wisconsin:** University of Wisconsin – Madison, Wisc.

reduce salt in formulations and improve sodium levels for the product label.

Dairy Products to Meet Consumer Needs

Product research combined with industry innovation efforts helped dairy companies develop flavored milk that meets the National School Lunch and Breakfast Program's requirements. Today, the average flavored milk has 134 calories — just 31 more calories than white milk — the result of new formulations which reduced added sugars in flavored milk by 38 percent.

To meet consumer interest in a greater diversity of protein options, research, application and technical training on different processes and ingredients support the manufacturing growth of Greek yogurt, smoothies and other innovative cultured dairy products with higher protein concentrations.

Putting great product research minds together has clearly paid off. Over the past quarter century, the National Dairy Foods Research Center program has worked with industry to turn knowledge and expertise into collective successes by bridging cutting edge research with practical education, applications and outreach. I am excited to see how this resource continues to transform our industry and encourage companies to reach out to our Centers to help solve formulation challenges or make the next great discovery. ■

— By Bill Graves, Senior Vice President,
Dairy Research Institute®

For more information on the dairy research centers and capabilities and dairy research resources go to www.usdairy.com/dairyresearchinstitute.

¹ International Dairy Foods Association (IDFA). *Dairy Facts*, 2011.

² Sloan TrendSense. *Staying Ahead of the Curve: Whey Protein*, Nov 2011, *Nutraceuticals World*.

