



Dairy Task Force: Product and Process Innovation, and Invention

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Center for Dairy Research *“Solution Based Research Backed by Experience, Passion and Tradition”*



To grow the WI dairy industry, do we need to grow volume or add more value to current volume?

More milk production

Or Both?

Higher value from milk





Successful New Food Products/Processes: Need to Meet Certain Criteria

- Need to Understand the Consumers (market research)
- Who/where are the consumers?
- Does it have Unique features? (value proposition)
- Does it Solve a Problem?
- What is the cost of production?
- Etc.



Who are the Consumers?

- **Domestic vs. International?**

- Different expectations for taste, color, texture depending on their experiences
- Countries with low historical dairy consumption are increasing their usage of dairy through the spread of multinationals like KFC, Pizza Hut, McDonalds, etc

- **Age?**

- *Children*: Infant formula/foods (China is world's largest market at \$20 billion in sales and imports the majority of these products)
- *Millennials and adults*: are busy and that trend is increasing snacking
- *Seniors*: There are over 600 million people in the world over the age of 65, with specific nutritional needs for “healthy aging” (protein, calcium)

- **Ethnic group?**

- Hispanic population in the U.S is 57 million, often heavy dairy users



Global Challenges and Opportunities

- World population of 9 billion estimated by 2050
- Estimated that we would need to produce > 60% more food than today
- *“Long-term demand for dairy products continues to increase – primarily as a result of population and dairy consumption growth....”*

Bulletin of the International Dairy Federation 485/2016
Price: 500 Euros

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THE WORLD DAIRY SITUATION 2016

- *“...there will be global milk demand growth of 25% over 10 years or 2.3% per year....”*





If per capita consumption of cheese increases at the same rate in the U.S.

Then in 10 years the U.S. would have to produce 9,600 million lbs more milk to meet this demand



U.S. Dairy Exports

- U.S. Dairy exports have quadrupled since 2000 to \$4.9 billion in 2016
- Top five markets are:
 - Mexico (\$1.2 billion)
 - Southeast Asia (\$671 million)
 - Canada (\$632 million)
 - China (4384 million)
 - South America (\$280 million)
- About 14% of U.S. milk production ends up being exported (expressed as milk solids)



WISCONSIN GROWTH OPPORTUNITIES



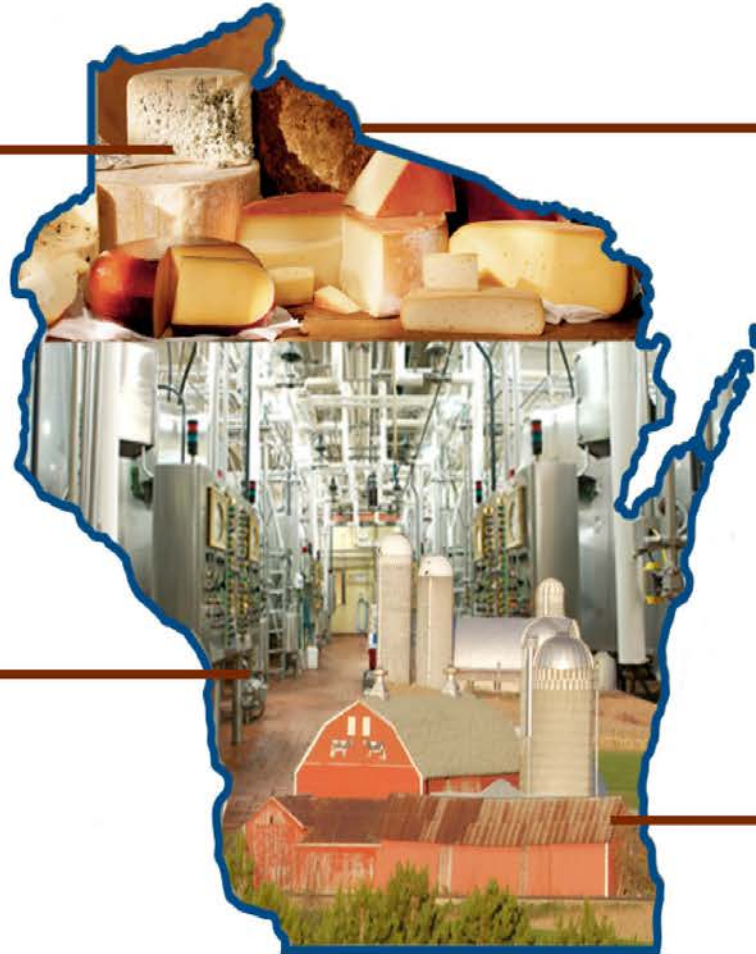
SPECIALTY CHEESE
(increase to 50% of total WI cheese
from the 23% current level)



DAIRY EXPORTS
(double current value of exports)



CULTURED PRODUCTS
(double per capita consumption
of cultured/fresh products)



DAIRY INDUSTRY



NEW BEVERAGES
(new products to replace
declining milk consumption)



WISCONSIN DAIRY EXPORTS BY THE NUMBERS

9,520
dairy farms

203
dairy plants

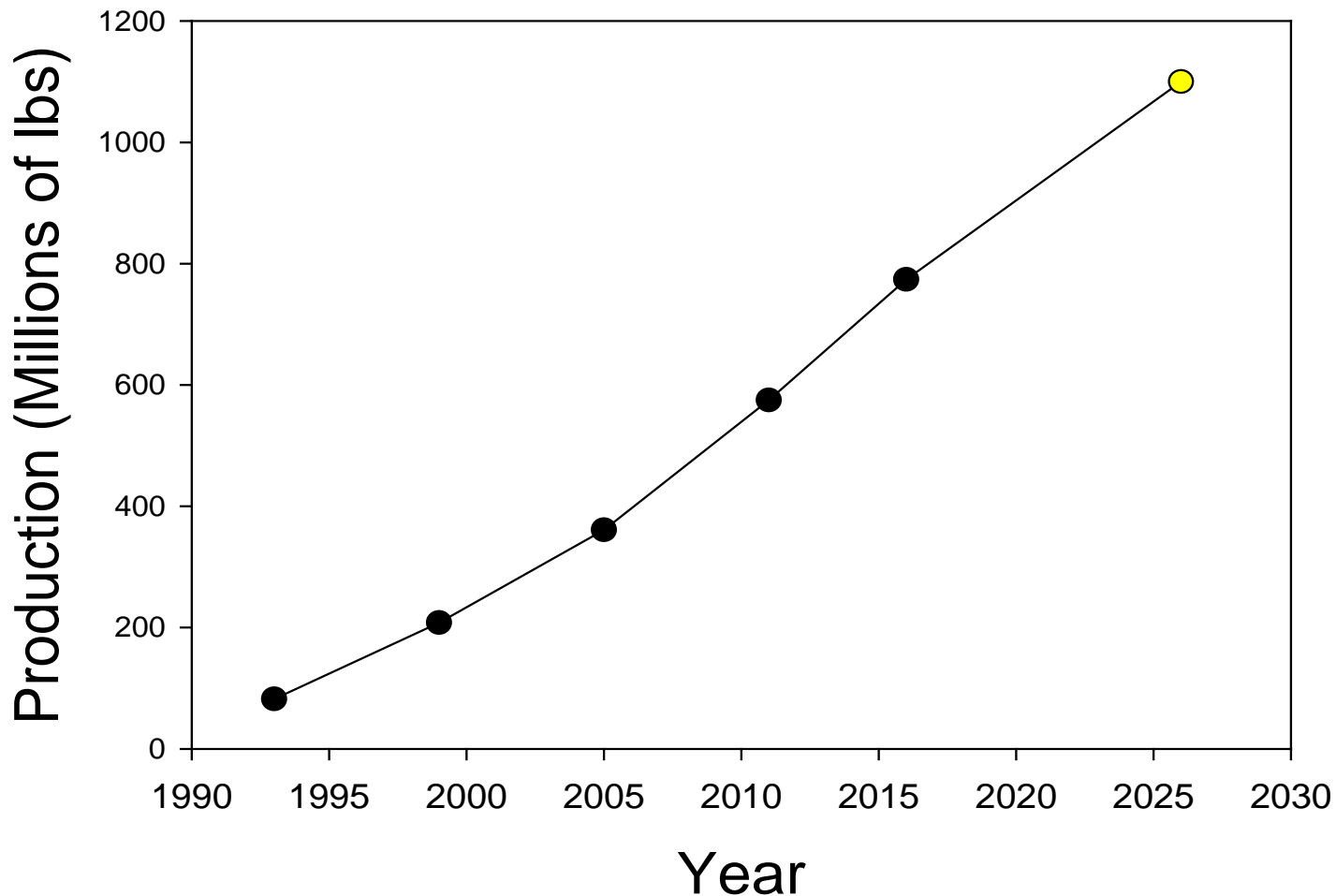
10,254 Wisconsin jobs
created by dairy exports

\$685 million
in dairy exports

\$1.5 billion Wisconsin
economic impact from dairy exports



Wisconsin Specialty Cheese Production Continues to Increase and Could Top 1 Billion Pounds Within 10+ Years

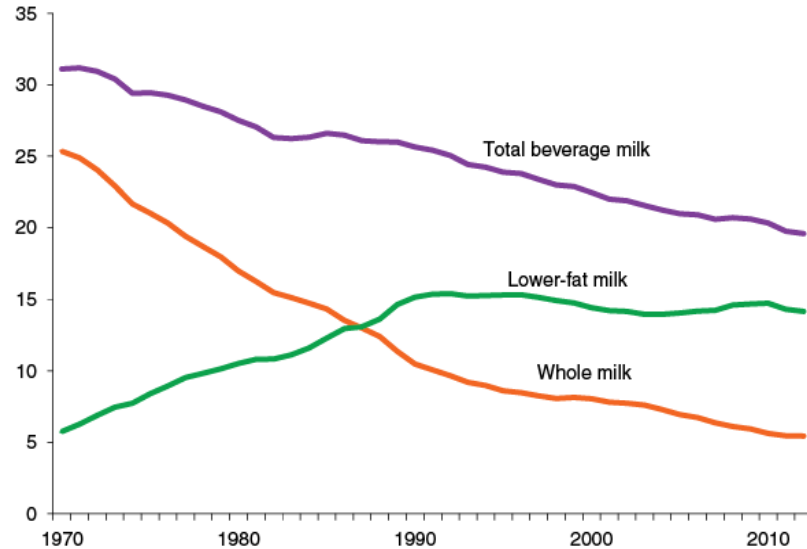




Traditional Milk Consumption is Declining, Opportunity For New Dairy Beverages

Milk availability down 37 percent since 1970

Gallons per person



Beverages with high protein/Calcium and lower lactose, e.g., Fairlife (sales >\$87M)



Beverages containing dairy proteins

Source: USDA, Economic Research Service, Food Availability (Per Capita) Data System.





CDR Operating Budget

Dairy Farmers of Wisconsin (FY19)	\$2.156	44.0%
NDC (National Dairy Council) (2018)	\$1.279	26.1%
Industry (Projects, Ind. Team)(2018)	\$0.907	18.5%
Other (e.g., Short Courses) (FY18)	\$0.371	7.5%
UW/State (FY19)	\$0.190	3.9%
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	\$4.903 million	

70% of our funding comes directly from dairy farmers via the check-off program.



CDR Challenges

- Lack of State/UW support (4% of operating budget)
- Lack of UW Extension staff supporting dairy foods (0.75 FTE, Rankin but he is dept. chair)
 - CDR staff is doing traditional dairy foods extension work (on checkoff dollars)
- Lack of faculty doing dairy foods research
- Funding from DFW is for staff not new research projects, we rely on competitive grants (DMI) to do most research
- Many demands on CDR staff time to assist industry (training, technical assistance), less time to focus on long-term research



What Role will CDR Play in Driving Innovation and Developing Solutions?

- **Our Vision:** *“World Class Research and Education: Advancing the North American dairy industry by generating new knowledge and transferring insights to the industry”*
- **Our Strategic plan** involves 4 key goals:
 1. To become the world’s leading provider of dairy foods **education/training** (transferring insights to industry) (train next generation of dairy leaders)
 2. To conduct **excellent quality dairy research** that provides solutions to industry problems or generates new knowledge
 3. To provide **expert product development** and technical services to the dairy and food industry
 4. To **support entrepreneurship** and startups related to dairy/food (TURBO) (leveraging business & economic development partnerships)



Enhanced Dairy Foods Research and Training Facilities

- Renovation/expansion of Babcock Hall/CDR
- Partnership between State of WI and Dairy Industry donors (funded over 50% of cost)
- Total Project is \$47M
- Construction started Summer 2018
- Goal: World Class Dairy Research and Education Facility



How do we maximize the impact of this new facility to help grow the WI dairy sector?



Challenges (Dairy Manufacturing)

- **Need for increased dairy foods research efforts to promote innovation and to stay competitive internationally**

– Ireland

€35M innovation investment in Irish dairy processing industry jointly announced by Minister Bruton and Minister Coveney

2nd February, 2015

€25M invested in new Enterprise Ireland funded Dairy Processing Technology Centre

– New Zealand (\$124 million)

Readying the Dairy sector for future growth
Combining efforts to support farmers

Other areas of focus:

- Transforming the Dairy Value Chain**
This seven year, \$170 million Transforming the Dairy Value Chain (TDC) programme seeks to work with the industry to increase productivity to value added markets. Achieving this will deliver higher profits and reduce volatility caused by price fluctuations in commodity dairy markets.
The government-industry partnership is providing farm financial management training for farmers and building the capability of New Zealand's rural professionals. Already over 3,000 farmers and 17,000 farmers have been supplied through the programme.
- MPI's Sustainable Farming Fund**
Investing in projects at the regional level to better assist all farmers, large or farm. For example, the Feedright project aims to develop training for rural professionals which will provide farmers with expertise and advice on food safety, while the Recycling Initiative and Incentive Fund project aims to investigate the feasibility of your closed loop systems in New Zealand.
- Market access**
MPI, MFAT, and the wider industry are also working together to increase overseas market access for exporters, reduce trade barriers, and maximize the confidence of New Zealand's trading partners. The Trans-Pacific Partnership Agreement is expected to lead to increases in the trade of agricultural products with some of the world's largest economies.
On Friday 10 March 2015, the New Zealand Government signed a Memorandum of Understanding with the United Arab Emirates on health and safety procedures for agricultural and food material trade. The arrangements are a significant trade diversification process for New Zealand and exports to the UAE which provides the UAE with the agricultural resources that New Zealand offers in products of high value foods.

What Hua - New Dairy Products and Value Chains
This TDC programme is investing \$3.8 million in value added dairy products and aims to develop innovative, high-value dairy ingredients for multiple markets.
The programme, involving the government in partnership with Aburama Maize Incorporated, Havelock Limited, and Farmgate, New Zealand, will provide an estimated \$8.6 million a year in economic benefits to New Zealand by 2021.

Working with your bank
The most important thing for any farmer facing change or financial challenges is to talk to their bank early and often. The case communications is essential. Bank relationships change so work very closely with their main clients. They understand individual farmers' situations and will work with them based on their individual needs.
Responsibility and resilience are critical to successful agricultural ventures and that's why banks will help farmers work with other external advisers to develop a plan. Before that is, they should, if possible, review their accounts on 'business as usual', taking in your bank use in much more realistic if some financial information and/or a plan is available.
How can your bank help?

- Banks can be able to provide assistance during these challenging times, depending on the terms, conditions, circumstances.
- Farmers should talk to their bank to discuss what solutions or potential measures are best suited to their needs.
- The key is acting early. Having a plan and a budget in place, and keeping your banker and advisers in the loop.
- Discuss all, remember and be real on your part.

- **Unnecessary regulatory barriers to innovation (e.g., ultrafiltered milk)**
- **Adequate supply of trained workforce**



Enhanced Sustainability in Dairy Manufacturing

- Lot of emphasis on how to reduce, reduce and recover:
 - Energy
 - Water
 - Cleaning chemicals
 - Packaging materials, etc
- Increased use of automation and controls
- Some regulatory issues about reusing “water” derived from milk back into products (often used for cleaning)
- Sustainability efforts by many dairy companies
- Non-thermal technologies being explored (high pressure, aseptic, etc)

Possible Opportunities (to add value and/or take additional volume)

Product Innovation

- Specialty cheese
- Improved functionality
- Nutritional ingredients
- Uses for by-products
- High protein snacks
- Products for export
- Products made with blends of other proteins
- New cultured products

Process Innovation

- Filtration technologies
- New cheesemaking approaches
- New dryers
- Fermentation technologies
- Sensors and controls
- Use of big data
- Non-thermal processes (high pressure, etc)



Other Ideas

- **Tackle Big Challenges or Big New Ideas**
 - Designer Milk (enhanced with a minor protein, or reduced allergenicity, etc) (consumers are interested in A2 milk)
 - Collaboration on topics linking milk production and product side (prohibited by checkoff)
 - improved milk quality
 - sustainability
 - impact of diet on product quality/nutrition
- Leverage world-class UW campus experts to help with dairy (e.g., engineering, fermentation, big data, genomics, etc)
- Fellowship program supporting dairy science (both production/products)
- A University Park space for dairy/food startups to support entrepreneurship
- Using the ethnic communities at UW to study/understand consumer insights in key export markets



Conclusion: To Ensure a Vibrant Dairy Industry in Wisconsin

- **Farms:** profitable, produce high quality milk, responsive to consumer concerns
- **Dairy Plants:** profitable, produce products meeting consumer needs, produce the safest/highest quality products
- **University:** provide new innovation and technical extension support, industry training and excellent graduates



Thank You for the Continued Support!

- **Wisconsin and US dairy farm families**
- **Dairy Farmers of Wisconsin**
- **National Dairy Council**
- **WCMA**
- **CDR Industry Team**

