

MINNESOTA DEPARTMENT
OF AGRICULTURE

Minnesota Dairy Research/Education and Consumer Outreach Facility



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Executive Summary

This report is a compilation of the efforts of stakeholders for one of the key economic engines in the state, Minnesota's dairy industry. Minnesota's dairy industry is positioned to contribute to the Minnesota economy by adding to the tax base and producing new jobs. After consecutive years of increased dairy production and a gradual increase in the number of dairy cows, Minnesota is positioned to continue its strong tradition as a significant competitor in the production of dairy products for the country and the world's growing population. Minnesota's place in the future of the dairy industry has yet to be determined and will depend largely on the planning and preparations made today for the dairy producers of tomorrow.

While there are differing views on how Minnesota should strengthen and support the industry, a common theme seems to have emerged Minnesota needs to continue to define its plans for a Dairy Research, Consumer Outreach and Education Facility, keeping in mind the importance of animal health, environmental protection and benefits to dairy stakeholders and citizens of the state.

Modern dairy management practices use one-third of the natural resources that dairying required in the 1940s and 50s. Today's dairies use 21 percent of the animals, 23 percent of the feedstuffs, 35 percent of the water and only 10 percent of the land to produce the same amount of milk. A dairy research facility will enable Minnesota dairy producers to continue this trend-- increased production while requiring fewer resources in an environmentally sound manner.

A public-private operating model that utilizes the strengths of each to keep operating costs in line with sustainable models is essential. While size of the operation remains fluid, it is agreed the benefits of the new facility need to balance the needs of all dairy operations, regardless of size or style of production. The facility needs to be large enough to incorporate multiple research projects simultaneously and be located within a reasonable distance of major metropolitan areas to facilitate educational program coordination.

An operating model has been proposed to create a public-private entity that would allow the utilization of both state bonding and private resources in the building and operations of such a facility. Other financing options have been used in Dairy Research facilities in Wisconsin (three-phase dairy initiative funded by Wisconsin legislature at multiple sites); Iowa (partnership of Community College, Iowa State and private sector and the development of a dairy foundation); and Idaho (utilization of funding from 1/3 state, 1/3 university and 1/3 industry).

Next steps will include the pre-engineering phase where land availability, siting considerations, education needs, consumer-friendly access and community outreach will be more clearly defined. A pre-bonding request for approval of pre-design and facility requirements have been estimated at \$300,000 - \$500,000.

Introduction and Background

In response to a request by the House and Senate Agriculture finance committees, the Minnesota Department of Agriculture (MDA) has prepared this report addressing the need and financing options for a Minnesota Dairy Research/Education and Consumer Outreach facility.

Sec. 35. **DAIRY RESEARCH AND EDUCATION FACILITY; COLLABORATION.**
The commissioner of agriculture shall convene one or more meetings with milk producers, other industry stakeholders, and representatives of the University of Minnesota and Minnesota State Colleges and Universities System whose work relates to the dairy industry to consider the elements of a dairy research and education facility which would represent a partnership between higher education institutions and the dairy industry. No later than February 1, 2011, the commissioner shall provide a report on facility and financing options to the legislative committees with jurisdiction over agriculture finance.

The MDA conducted a series of stakeholder meetings to gather input on the potential creation of a dairy research and education facility. Those stakeholders participating in the meetings included representatives from dairy processors, agricultural lenders, farm organizations, dairy equipment suppliers, educators, nutrition and farm suppliers, dairy organizations and dairy producers. (See Special Acknowledgements).

Initial meetings focused on the background and history behind the efforts for such a project by the Minnesota Milk Producers Association and the University of Minnesota. The group drafted a mission statement that reflected a common vision for this project.

Build and support a dairy research, teaching and consumer education facility that meets the balanced needs of a dynamic dairy industry that combines market and community expectations for high-quality milk to be produced with minimal environmental impact and sensitivity for animal care. The facility will enable important future research and development to optimize profitable production practices for high quality milk products and ensure cow comfort, health and care while benefiting our natural resources and the people of Minnesota.

Dairy policy expert Mark Stephenson, University of Wisconsin College of Agriculture and Life Sciences, emphasized the advantages that the Midwest has in the future of dairy production.

“Farms here average an acre-and-a-half or two acres per cow. A California farm may have 10 or 12 acres altogether. They buy all of their feed. We buy part of our feed, but we grow an awful lot of it. That means that in times of price volatility we have more stable input costs.”¹

Is the timing right for consideration of this project? Is this Minnesota’s window of opportunity? Other Midwest dairy states have taken steps to meet the needs of future dairy families in their states. With the opening and growth of global markets, Minnesota needs to take a position of leadership before other states or entities gain that advantage.

Minnesota’s dairy industry has experienced growth the past 5 years. The State of Minnesota has benefited from this growth. It can continue to gain from dairy’s growth. One step is to enhance the dairy industry’s research and teaching capacities. Doing so will better position the dairy industry for sustained growth for generations. In turn, this means more jobs and more economic development for rural and urban areas.

¹ Wisconsin’s Magazine for the Life Sciences, “On Dairy, He’s a Bull”, December 2010

Special Acknowledgements

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Brant Groen, Form-A-Feed

Jason Vavra, Associated Milk Producers
Incorporated (AMPI)

Tim McNamara, AgStar

Greg Jans, CoJo Dairy

Chris Sukalski, Reiland Farms

Pat Lunemann, Twin Eagle Dairy

Rick Rugg, Lely USA

Troy Cameron, Bremer Bank

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Dr. Bev Durgan, U of M Extension

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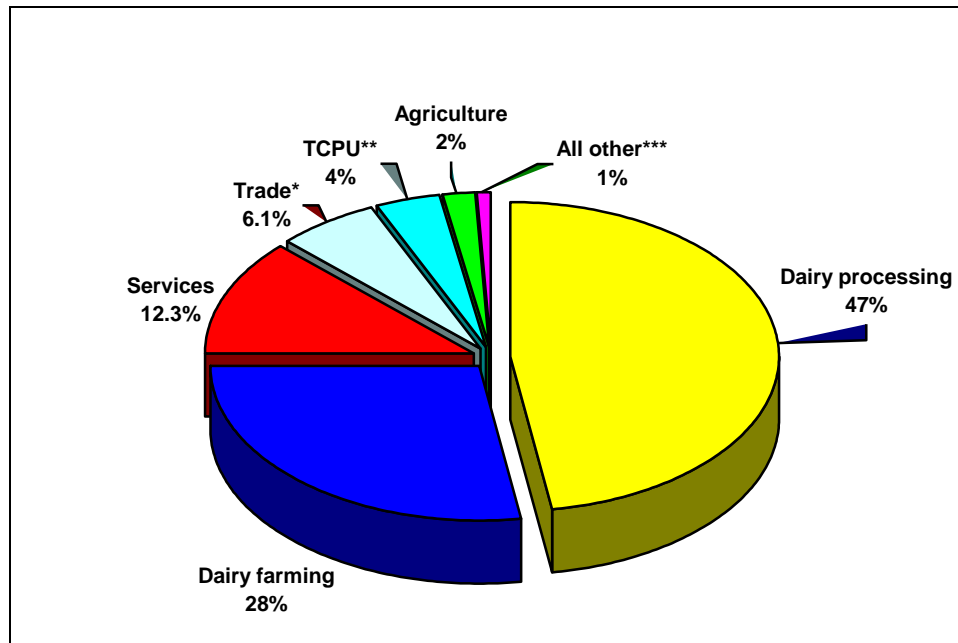
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Current Status of Minnesota's Dairy Industry

Minnesota has approximately 4,475 dairy farms with 470,000 cows. These milk producers and their cows are the foundation of an industry that reaches across the state to nearly every person. Every cow on a Minnesota milk farm generates over \$25,000 of annual economic activity. In total, the state's livestock industry contributes \$11.5 billion in economic impact and is responsible for over 40,000 jobs. These activities include adding value to basic crops grown on the land; equipment and suppliers needed to support the dairy; owner and employees of the dairy operation; milk processors and retailers; and lenders. Everyone in the supply chain is focused on delivering wholesome quality dairy products to the consumer.

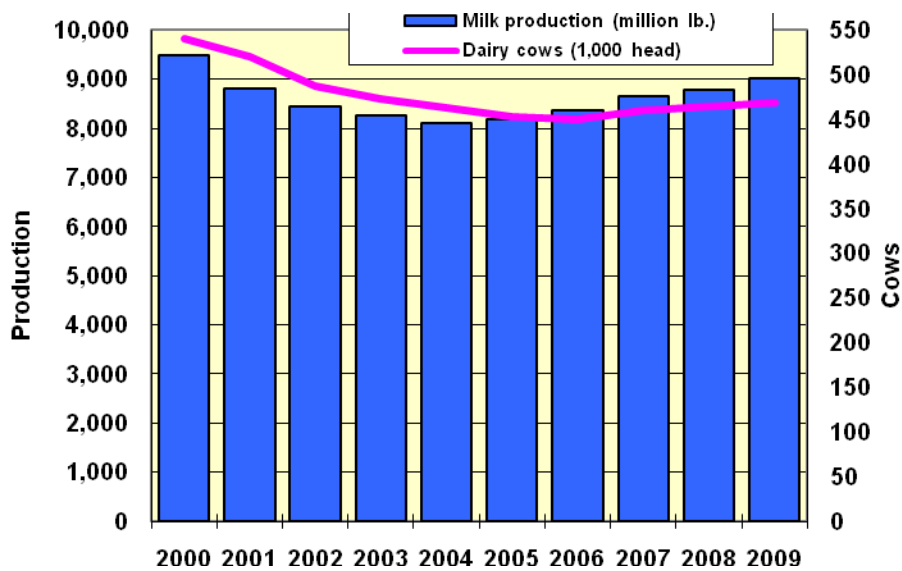
The Economic Multiplier Effect of One Cow = \$25,000

(Estimated with the IMPLAN Model and 2008 data – latest available)

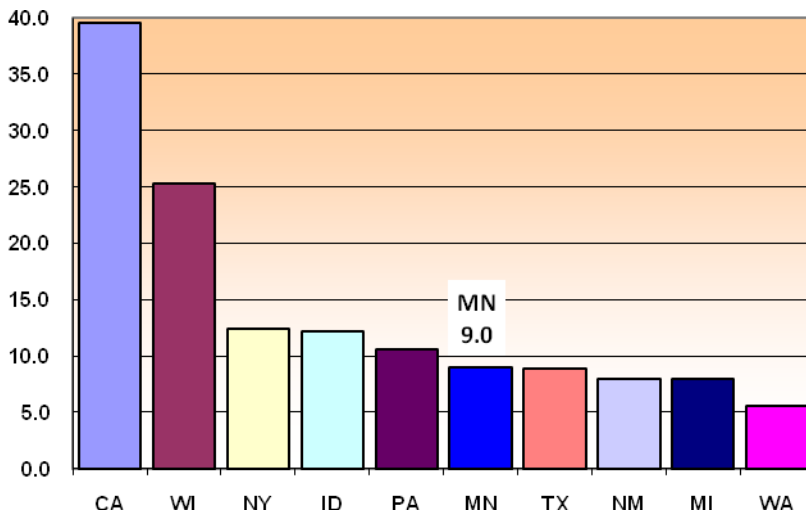


Minnesota's dairy industry is growing and is poised to be a world leader in quality milk production and dairy products. In 2009, milk production exceeded 9 billion pounds which was **the fifth straight annual increase in production and over an 8 percent increase from 2004**. Processors are re-investing in their facilities via capacity enhancements and improved production efficiencies. As milk production increases, so does the need for human capital. Enrollment in dairy programs is growing at the University of Minnesota and Ridgewater College at Willmar and more post-secondary students are entering careers in the dairy industry.

Minnesota Dairy Production and Dairy Cows 2000-2009



²U.S. Top 10 Milk Producing States (2009)—Billion lbs



As Minnesota's dairy industry looks to the future, the dairy industry must focus on dairy systems that:

1. Support and promote profitability in all segments of the industry, regardless of herd size, for continued economic benefit to Minnesota's economy.
2. Efficiently produce high quality, nutritious dairy products that promote human health and fitness.
3. Sustain our natural resources and environment through minimizing dairy's carbon footprint.
4. Optimize animal care and well being.

² Charts prepared by Su Ye, Minnesota Department of Agriculture, Minnesota Dairy Industry Profile, 2010

The success in achieving the goal of Minnesota being a viable world dairy industry leader involves research and teaching programs that address the aforementioned components. To be the next generation leader in research and education issues on sustainable production and consumption of high quality dairy products, new investments in dairy research and teaching facilities are vitally needed.

The University of Minnesota has a strong tradition of serving the dairy industry with exceptional dairy production and dairy food research education and outreach programs. Many new technologies (such as artificial insemination, genetic improvement of animals, establishing feeding and nutrient requirements of dairy animals, enhancement of animal housing and care through better facilities and management practices) have been developed at the University of Minnesota aiding the dairy industry to grow and develop into the efficient high quality food production system it is today. Accompanying new production technology at the University of Minnesota has been enhancements to the processing and manufacturing of dairy foods and the development of many new dairy food products.

The Minnesota State Colleges and Universities (MnSCU) system also has contributed substantially to the growth and development of Minnesota's dairy industry through an outstanding farm business management program. Advanced Farm Business Management and other related degrees are taught at numerous colleges within the system. The Dairy Management Program at Ridgewater College in Willmar is one of MnSCU's premier Diploma and AAS programs, drawing students from across Minnesota and other parts of the country. This program is one of the largest 2-year programs in the country. Education is a cornerstone to the future of the dairy industry and both the 2-year program at Ridgewater College and the 4-year Dairy Science Program at the University of Minnesota in St. Paul continue to grow with students from both dairy and non-dairy backgrounds. More non-farm students are becoming interested in a career in the dairy industry and need practical experience as well as academic training.

Importance of Research – Today and Tomorrow

Long term investment in research facilities must be made with special attention given to what future benefits will result from research conducted today. Agricultural research is like farming where decisions made today affect outcomes tomorrow. according to Bev Durgan, Dean of Minnesota Extension and Director of the Minnesota Agricultural Experiment Station.

“Farmers plant a crop in the spring and wait until fall to see how the crop turns out. They build a new livestock facility and wait years for the investment to pay back. They select the genetics of a dairy herd and wait three, four or five years to see the results in the bulk tank. It is much the same story for agriculture research. An agricultural research project that begins today often takes time before the results are ready to share. Scientists wait for results of laboratory studies, field trials and other analysis to discover the best solution to a problem. In both agricultural research and farming, it takes patience to wait until investments made today make a difference in years to come.”³

Economists from the University of Minnesota and University of California recently responded to the question of how long it takes to see the results and benefits of research investments today.

The average peak return on agricultural research isn't realized until 24 years after the research was conducted with the range in return being almost immediately for some research to more than 50 years for other research. They also showed that marginal increments of state invested agricultural research returned between \$2 and \$58 per research dollar invested. Specifically for Minnesota, the

³ Dr. Bev Durgan, University of Minnesota, in an opinion piece, entitled, “Investing in the future”.

*benefit-cost ratio was 41 to 1 for every state dollar invested in research and if the benefit measures were expanded outside of Minnesota to a national level, the return increased to 55 to 1 for every dollar spent on research.*⁴

Due to the lack of research animals, the University of Minnesota and MnSCU dairy cow facilities are inadequate to address future research and educational needs. Current and future research requires a statistically viable number of animals to detect differences in treatments within studies. Study in the areas of genetics, reproduction, animal behavior and the environment, require large numbers of animals to answer questions and apply the research findings to the size and scale of today's dairies.

Current facilities also lack the capability to conduct research on the environmental impact or carbon footprint of dairy production because the facilities are too small. New research facilities must accommodate environmental, air quality and nutrient management research.

Large numbers of animals will also be necessary to produce specialty nutraceutical and/or pharmacological dairy products that will likely be in our future. Because the nutritional or pharmacological properties of these milks are likely to be a very small component of the total milk produced, more animals will be needed to adequate quantities of these properties.

Current Teaching and Research Facility Review and Limitations:

University of Minnesota St. Paul Campus facility – 90 cow tie stall barn with a parlor:

The St. Paul barn was built in 1987. It is adequate to conduct a limited number of small animal studies, Retaining a small dairy on campus is essential for student teaching opportunities and for student research. Students often have a limited amount of time for hands-on learning and the convenience of the campus dairy is essential to accommodate class schedules. Initial learning activities, such as judging, animal handling, management techniques and system evaluation tools, can begin on campus but must move to a larger dairy operation which will provide the diversity needed for study in required areas. Dairy cattle judging has a strong and rich heritage at this campus and its dairy facility helps attract students and ensure this tradition continues. The intensive fundamental nutrition research done at this facility is a critical component for exploring new ideas and limiting the cost of initial research, but production scale research is needed to help dairy farmers adopt the results of the research.

University of Minnesota West Central Research and Outreach Center, Morris – certified organic dairy with grass-based herd of 150 cows:

Organic dairy consumption is a fast growing niche market. Currently, Minnesota has 109 certified organic dairy operations. To date, little scientific research has been conducted comparing organic and conventional dairy production. In this unique, one-of-a-kind research facility, half of the dairy herd is managed using organic standards and the other half is managed as a conventional grazing herd. In both cases, milk production will be substantially below that of cows on a concentrate feed diet in a modern free-stall barn. However, results of research in this area will help consumers make purchasing decisions. In addition, producers will learn better management practices allowing them to improve animal care, product quality and natural resource sustainability based on scientific research in a controlled environment. While an important management system for a few producers, grass based dairies alone will be inadequate to produce the quality and quantity of milk needed to feed a growing nation and world population.

⁴ Comments from University of Minnesota economist Philip Pardey and University of California's Julian Alston

University of Minnesota – Southern Research and Outreach Center, Waseca– calf raising facility, 650 baby calves per year:

The University of Minnesota has an excellent dairy calf and young heifer facility at Waseca in partnership with Ridley Inc., and several dairy farmers. All calves raised at this facility are currently owned by commercial dairy producers. This facility provides sufficient applied calf research and extension education, but is limited in the scope of research conducted because animals are future replacement animals owned by commercial dairy producers. Therefore, all research conducted at this facility must focus on optimizing animal health and growth and doesn't allow for research studies where marginal animal performance is anticipated as the future milk production of an animal begins with raising healthy calves. Also, it is difficult to conduct lifelong studies on animals that move to different farms and demonstrate the impact of early nutrition on future cow performance.

Dairy Veterinary Education Facility: The public/private partnership integrating an academic center with a state-of-the-art commercial dairy will make the University of Minnesota the foremost dairy veterinary teaching institution in the country. Dairy veterinarian students receive hands on experience and practicing veterinarians use the facility for continuing education. This facility will help to resolve the shortage of well-trained food animal veterinarians. Some observational research is conducted for the College of Veterinarian Medicine which is within the Academic Health Center. It is significantly limited in its ability to conduct controlled research due to the fact that the veterinarian teaching center is a part of an operating commercial dairy operation. With a Dairy Research, Education and Consumer facility and Dairy Veterinary Teaching facility, Minnesota would be the premier place to come for dairy education and research. No other state could compete with the research potential and educational opportunities offered in Minnesota.

Assessment of Need and Benefits

In assessing the need for a dairy facility, MDA's stakeholders discussed various aspects of what a dairy research and consumer education facility could mean to Minnesota's dairy industry and state taxpayers. A sampling of the committee's comments included:

- The idea of having a facility that can serve existing dairy farmers was well received. Being able to accomplish group research will be an important component that will be more appropriate to today's type of operations.
- A digester could be incorporated into the site thereby allowing the operation to be green as well as allowing additional research possibilities.
- 25 years ago the research was more about cow management and nutritional affects. Today the emphasis is more towards efficiency as well as environmental impacts. Maintaining a balanced research and teaching approach that serves all types of dairies equally will be important as well as incorporating best management practices for carbon footprint reduction, green technology and optimum animal care and housing.
- A facility that incorporates valuable training in labor and personnel management along with cow research and management is needed. Partnership possibilities included labor curriculum development at the University of Minnesota and similar program at Ridgewater.

Need for dairy research facilities

- Future requirements will only increase in the areas of animal care, environment, and for larger groups of animal units. Some areas of research such as reproduction require large numbers of livestock to show meaningful data.
- A critical mass of lactating cows is needed to optimize research in areas of genetics, nutrient management and environmental issues.
- Many states have a disconnect between university research in the 80 to 100 cow size operations as compared to today's growing dairy industry needs.
- Other research facilities in the US range from 100 to 700 head with a USDA 350 lactating herd near Prairie du Sac (30 miles from Madison), Wisconsin.
- Facility size should be in line with optimum research results in the area of nutrition research, renewable energy (manure digesters), and waste management.
- Nutrition research is important and valuable to producers of all sizes. A facility doing research on a wide variety of balanced rations and feed sources should be beneficial to dairy producers by:
 - Utilizing Minnesota's advantages in access to nutrition and ability to grow much of our feed locally – compared to the rest of the country
 - Focusing on maximizing the use of self-produced feeds.
 - Encouraging studies that help producers store, treat, process, and feed as many feed sources as possible.
 - Encouraging nutrition studies on Minnesota's abundant low cost bi-products that expand their limits without detrimental impact to production.
 - The facility should keep in mind the proximity of available feed bi-products.
 - Testing feed additives in the diets of animals raised in the Midwest.

- Other research needs included dairy bedding options and manure handling best management practices (sand bedding pros and cons versus digester challenges).
- Outstate equipment vendors could be invited and encouraged to participate in research projects (beneficial to outside revenue sources). The group felt that air quality modeling /research should be a required and focal part of the new facility.

Consumer Education

- Locating the facility within a reasonable distance of major population centers was felt to be important in the area of access to consumer education.
- Travel times of 2 hours or more were considered restrictive to most research projects including access to potential international partners and visitors.
- Access to available labor should also be considered in site locations.
- Degree of access to research areas should be considered, such as limiting the public viewing area (milking area, 'Miracle of Birth' site, and cat walk over free stall housing, etc.). These public viewing (videos, diagrams, etc.) or access areas should also include nutrition and animal care professionals.

Dairy On-Farm Processing Research

- Processing research needs include milk handling practices and on-farm processing, a growing interest area.
- On-farm ultra filtration of milk is as an example of on-farm processing.
- Current U of M dairy research facility is outdated and is in need of technology upgrades.
- From a dairy product and safety perspective, laboratory space should be included to test milk quality and safety (both micro and chemical methods of analysis).
- The ability to monitor udder health, effects of feeding and housing on milk quality, animal drug residues, etc. would require a lab with bench space, electrical utilities, hoods, and analytical equipment.
- There should also be a micro lab to monitor milk safety and the cleanliness of the facility. The emphasis should be placed on having a space that is flexible so things can change as technologies change.
- The transfer lines in the milking parlor should be designed in a way where in-line monitoring of milk can be included to monitor milk quality, udder health, fertility and the effects of feeding trials on individual cows.
- A small facility that would allow for research into on-farm processing should be considered. This could include the ability to heat treat or filter the milk on the farm. To build this in, a small food-grade facility would be required which would have steam, electrical and milk cooling capabilities, as well as additional bulk tanks to store processed milk and different filtration streams.
- The benefits of on-farm processing could be to reduce the amount of product transported to a processing plant (to enhance sustainability efforts) or to improve or maintain milk quality prior to arrival at the plant (heat treatment or filtration).

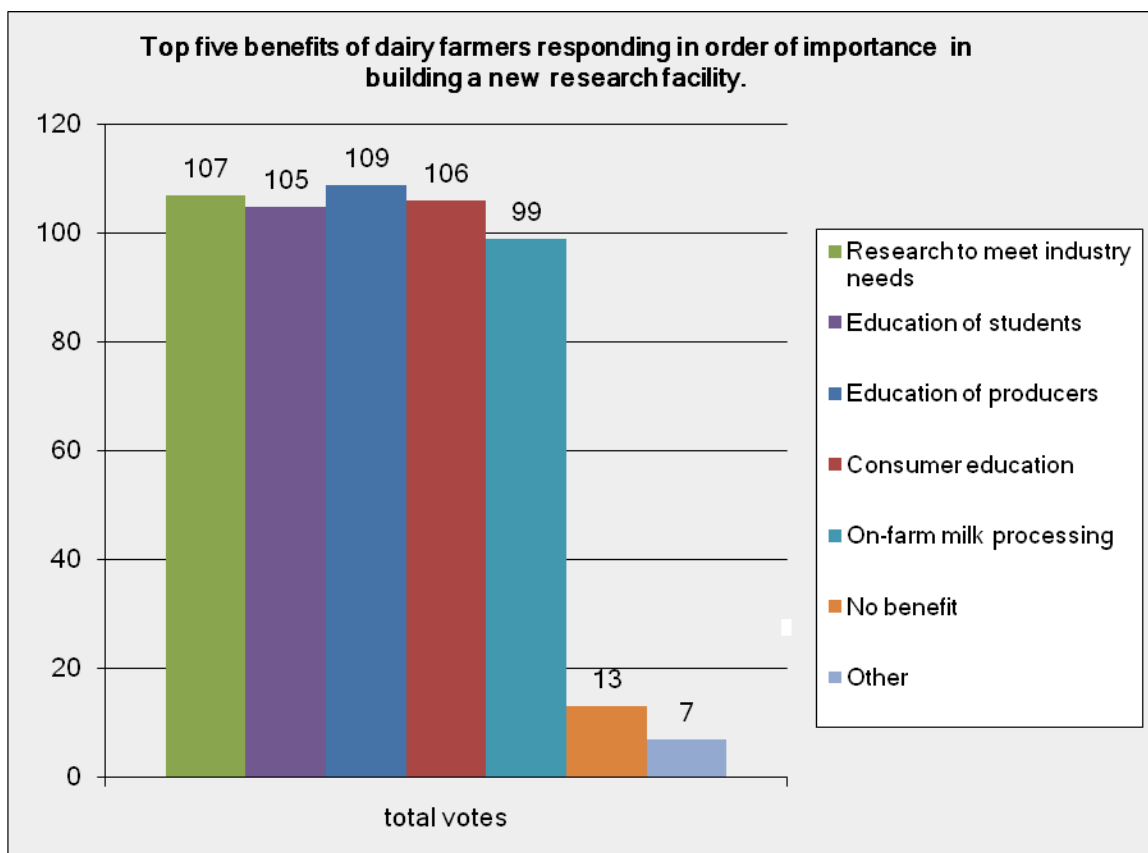
Retail Marketing Education

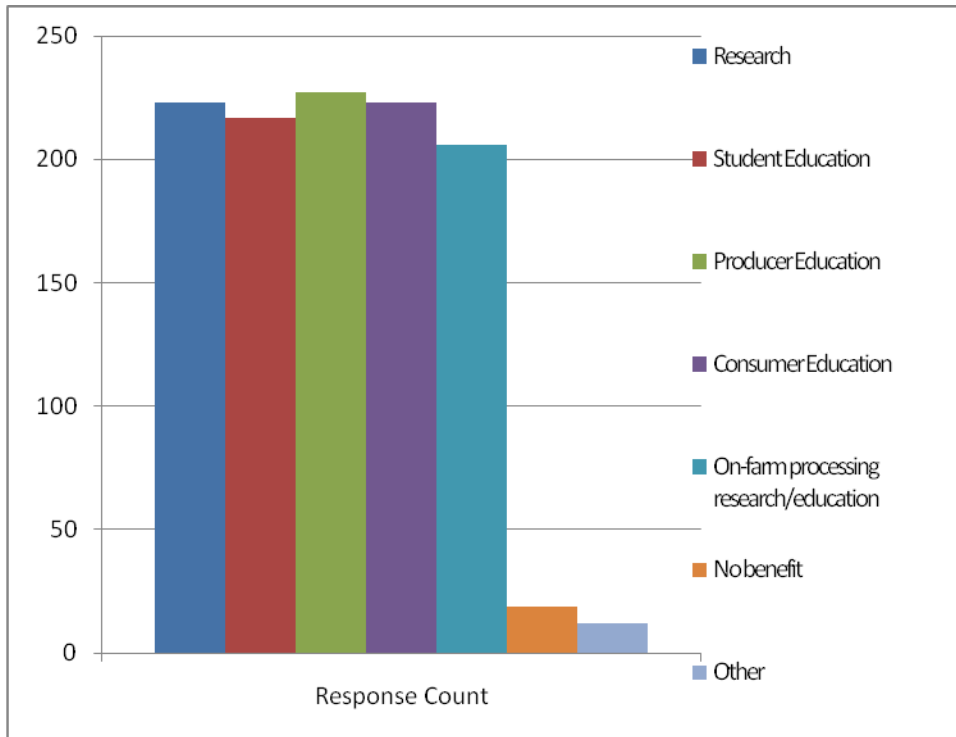
Discussion followed on the possibility of retail selling of milk/ cheese and dairy products from the facility's milk production.

- Some locations (Wisconsin and Penn State) have experienced some success, (Bongards' Creameries recent retail expansion and Le Sueur Cheese retail outlets were mentioned as possible models).

- The new facility could cooperate with existing marketing education efforts, but would require development of a business model to examine staffing needs, etc.
- It was suggested the outlet store be used to sell all types of dairy products produced commercially throughout the state.
- This marketing avenue has the potential to be successful but has a separate set of challenges.
- It was also suggested that the dairy processing facilities at the U of M St. Paul Campus be used for product research and have a transport system to deliver milk to the campus to avoid competing with existing commercial dairy processing plants.

To broaden the response to the question regarding the need for such a facility, a survey was developed and conducted to gather input from as many stakeholders as possible. Nearly 250 responses were received on various topics including, level of interest, production versus research emphasis, and willingness to financially contribute to such as facility. A summary of the survey results follows:

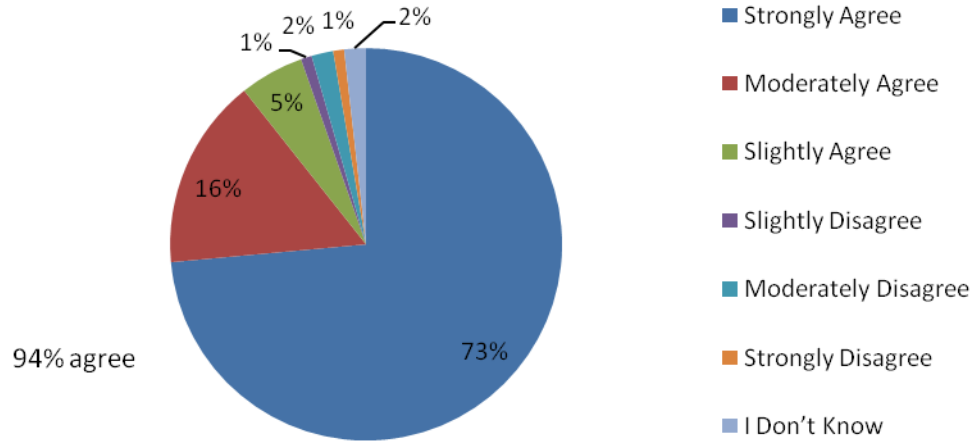




“For me number one would be better educated students and dairy farmers. It is tough to gain experience in a classroom. Demands on a dairy farm are great and many times the most experienced applicants are going to get the jobs. It must be set up for giving tours and such things like that. This facility will breed innovation and create or cement new ideas that will provide opportunities for farmers, processors, students, local economies, and consumers alike.” Survey respondent

A new facility should be able to accommodate multiple researcher studies and student learning activities simultaneously.		
Answer Options	Response Percent	Response Count
Strongly Agree	73.7%	174
Moderately Agree	16.1%	38
Slightly Agree	5.9%	14
Slightly Disagree	1.3%	3
Moderately Disagree	0.8%	2
Strongly Disagree	0.8%	2
I Don't Know	1.3%	3
Comments		11
<i>answered question</i>		236

A new facility should accommodate multiple research studies and student learning activities simultaneously.



“I believe a facility should be designed to meet multiple needs at the same time. Genetic & production research can be occurring at the same time and consumer education and tours should be encouraged at the same facility. We need to show the public what we are about and create an exciting and real image of our industry.” Survey respondent

A new facility should be financed, built and operated as a (please rank each funding option):

Answer Options	Strongly Agree	Moderately Agree	Slightly Agree
Private-Public Partnership	96	76	35
All-Public Facility	51	42	42
All-Private Facility	8	11	31

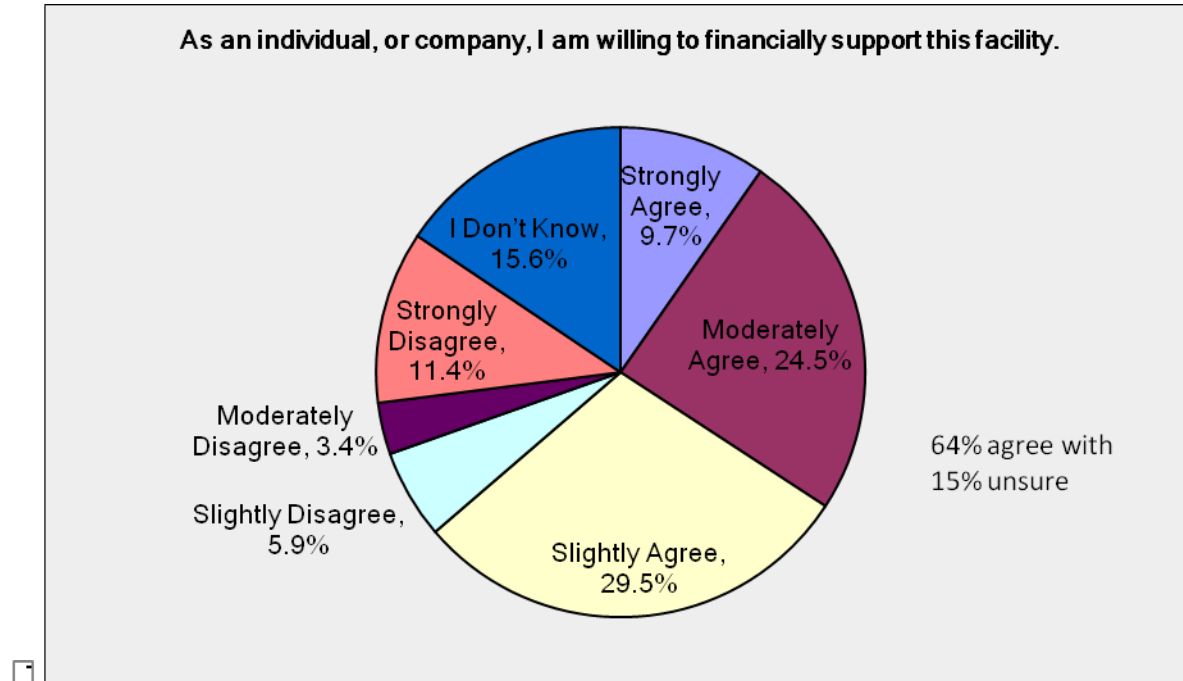
“The dairy industry has provided the State of Minnesota with tremendous economic benefits. It’s time we recognize the opportunities that exist by making a significant investment in a facility as the one that is being proposed.”

As an individual, or company, I am willing to financially support this facility.

Answer Options	Response Percent	Response Count
Strongly Agree	9.7%	23
Moderately Agree	24.5%	58
Slightly Agree	29.5%	70
Slightly Disagree	5.9%	14
Moderately Disagree	3.4%	8
Strongly Disagree	11.4%	27
I Don't Know	15.6%	37
Comments		24

<i>answered question</i>	237
<i>skipped question</i>	3

Survey indicated that 65 percent of respondents would provide some level of support for the construction and/or the operating needs of such a facility.



Facility Location and Size Options

Location

Each of the sub-committees emphasized the importance of locating the facility in an area of the state to maximize education and research efficiencies, and provide the public with outreach access and learning opportunities.

- Dairy research and education facility should be within reasonable driving distance of the University of Minnesota and Ridgewater.
- Siting concerns would be an important part of the selection process.
- Important to locate facility to meet the needs of Extension in the area of dairy research. The new facility needs to address the following:
 - environmental issues
 - be in close proximity to available feed sources (bi-products)
 - located far enough away to limit pressures from urban sprawl issues
 - be located near major highway(s)
 - have access to cropland for manure application
 - be accessible to the public for consumer education
 - consider NPDES permit requirements

- located in area of the state that reflects a growing dairy industry
- have access to manure digester technology and application (fuel source for nearby industry)
- facility should feature design flexibility to meet the changing needs of Minnesota's dairy industry
- Locating the facility in an area that was easily accessible to international visitors was also seen as beneficial. The actual financing of the facility will likely determine the operating model for the structure (who will be making the determination of facility use and access). Concern was voiced over the operating budget and how the new facility will meet the financial obligations after the facility is completed.
- Some interest has been shown from county economic development staff in providing financial incentives to the project, once a location is finalized.
- Design planning is important for a multi-site or multi-building approach to accommodate various dairy technologies known today and be adaptable for changing future needs. This facility will focus on lactating cows; heifer growing and replacements, and calf raising could be discussed in phased planning in the future.

Size

- Various size facilities with expansion capabilities for the future was discussed, a larger facility should be studied to accommodate multi-research dairy projects. It was felt that it would be beneficial for a building/design team from Minnesota to tour other research facilities to observe their layout, cattle comfort, climate considerations, etc. Discussions also included the need for the new facility to cash-flow and be self sustainable as outside operating funds will likely be difficult to secure in the future. A larger facility enables multi-research projects to be run concurrently which would provide for additional revenue. The research and education conducted in large facilities will have translational benefit to dairies of all sizes and styles of operation.
- The new dairy facility could benefit (and hopefully bolster) University dairy educators role in future Minnesota dairy-related education needs. A suggestion was made to consider easing credit transfer capabilities between 2 year dairy programs with the University (NEICC and ISU operating agreement model).
- It was felt that the size of the new facility be included in a public relations effort to explain the benefits to all size dairies in the state and tell the story of reasons for desired size. This should be considered as early as possible in the process.
- Some discussion was held on the possible strategy for a phased approach to the facility with the project planned in stages.
- To conduct relevant and scientifically sound research, a critical mass of dairy cows is need. For example, if a study with 4 treatments needs 25 cows per treatment (100 total for the study) with all cows in 2nd lactation or greater and between 90 and 120 days in milk at the start of the study, approximately 110 cows starting their 2nd or greater lactation would need to calve over a 4 week period to get enough animals to enable all cows to start the study at the same time.

Recent Dairy Research Facility Comparisons

University of Wisconsin, Madison/ Arlington Ag Research Station

Initial planning began in 1994 as part of U of W research mission to study dairy animals from birth through lactation. The Wisconsin legislature provided initial funding as part of the Wisconsin Dairy Facility Initiative. Project included a new heifer research/housing facility, a lactating cow dairy and improvements to dairy facilities at the Madison campus.

Calmar, Iowa—Northeast Iowa

This Dairy Center facility for dairy education, applied research and demonstrations was the result of a partnership of NE Iowa Community College and Iowa State, ISU College of Agriculture, College of Vet Medicine and ISU Extension. The first concept meeting was held in 1998 with an open house held in 2000 followed by dedication of a grazing center in October 2005.

Iowa State Dairy Facility

This \$15 million facility began with the sale of Iowa State University property as directed by the Iowa legislature in 2002. The dairy center includes a visitor's center, viewing area of milking parlor, classrooms and meeting rooms. Facility also includes a special needs/hospital barn, dry cow/transition, calf research barn for nutrition and husbandry research and manure handling systems. Center is part of Animal Science Corridor that includes seven other ISU livestock facilities including swine, beef, sheep, poultry and horse operations.

Idaho dairy facility—located near Twin Falls and College of Southern Idaho

The \$30 to \$37 million project has plans to build a lactating cow facility with a doubling (2 parlors) and 1,000 acres of cropland. \$10 million would originate from State of Idaho, \$10 million from the University of Idaho, and \$10 million from industry (spread over 5 years with commitments based on cow numbers). Idaho Dairy Association created IDEAL Foundation (501 3C) to handle donations.

Funding Options and Operating Models

Funding options and operating models centered on the pros and cons of proceeding with an all private entity, an all-public model and a combined public/private framework. The focus of the committee was a combined public/private funding model. The needs survey asked the specific question of which funding option and operating model were preferred. 77 percent of those responding indicated that they moderately or strongly agreed that a public private partnership was preferred. Less than 5 percent felt that an all private model was ideal.

While both private and commercial research are important, performing commercial research in a public/private partnership allows researchers to stay current with the constantly changing dairy industry applications as well as improving the knowledge base that can lead to future benefits for the next generation. Private funded project results have the perceived pressures of being slanted toward the source of funding. All public options were seen as less than cost effective in both construction and operating efficiencies.

- Funding scenarios continue to focus on building the facility as low-cost and efficiently as possible, yet keeping in mind the size necessary to maximize returns for the dairy industry, research project effectiveness and education outcomes.
- Committee members have been investigating other research facilities in Wisconsin (involvement of Dairy Business Association) and matching funds and the Idaho model (1/3 State, 1/3 University and 1/3 Industry).

- It was agreed that the operating model is as important as the construction financing options.
- Concern was voiced over having institutional infrastructure higher costs versus private options (operating contract obligations for on-campus dairies). Current breakevens for campus research dairy operations are well above \$20/cwt with some subsidized labor not included in this cost.
- Discussion continued on a more passive approach to funding research projects. Cows could be purchased from an existing dairy as needed when research projects were finalized, resulting in lower operating costs. Research project (i.e. bedding options, animal care/well-being, etc.) would be responsible for cow costs during this time period.
- Another operating budget area was the possibility of shifting or transferring people resources from current budget areas (U of M and MNSCU) to the new facility personnel needs. Discussion continued on timing of this decision but that option was a possibility for consideration in the future.
- Private bonding sources were discussed with current bonding options being offered at a 5.5% guaranteed rate for 30 years.
- The importance of projecting the amount needed to financially support the operating costs of the facility was discussed. While some lenders are looking at a \$2 to \$2.50/cwt debt service on current commercial dairy loans, it was noted that the actual debt service by the industry is somewhat less.
- The group agreed that it is important to seek an ownership/management model to reduce the cost of operation to a reasonable level (\$15 to 17/cwt).
- One option may be private industry ownership with a contract relationship with University research partnerships.
- A preliminary operating budget would be important to explore the funding option necessary to maximize research efforts. This could possibly be an important piece in the next step (pre-engineering phase) for a clearer direction for funding options.