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A2 Milk Market Assessment

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AURI's mission is to accelerate the expansion of the agricultural economy by empowering expanded uses and markets of agriculturally derived products.

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Introduction

The dairy case has experienced a variety of innovations over the past several years. Those include functional products like probiotic milk, ultrafiltered products like Fairlife®, lactose-free products, and products with specialized marketing claims ranging from grass-fed cows to value-added ingredients like omega-3 oils and DHA, to A2 milk. While some of the above examples resulted from innovations at the processing level, others, like A2, begin with the adoption of different practices at the farm level.

Farmers began learning about A2 milk in the 1990's and the A2 Milk Company, founded in New Zealand, entered the U.S. market in 2015. Nearly 10 years later, the company's website says it "is currently in 27,000 stores including Kroger, Walmart, Publix, Safeway, Whole Foods, Sprouts, Ahold, ShopRite, Wegmans, and Target" (The A2 Milk Company, 2024).

What is A2 Milk?

Whey and casein are the primary protein components in milk. According to U.S. Dairy, the national dairy checkoff organization: "There are two common forms of beta-casein: A1 and A2. Most milk contains a mix of both A1 and A2 beta-casein" (U.S. Dairy, 2017). A2 milk is a result of breeding exclusively for A2 so that no A1 beta-casein is present in the milk. Anecdotally, A2 milk is believed to be more gut-friendly, but there is insufficient research to support this claim conclusively.

"When we consume milk, there are enzymes in our stomach that start to chop up caseins into pieces because we can't absorb the whole protein as is. What people are interested in is if this difference in one amino acid in A2 milk can make a difference in how that protein is chopped up during digestion,"

–Dr. John Lucey, PhD, professor of food science at the University of Wisconsin-Madison and director of the Center for Dairy Research.

Purpose of this Study

This study was prompted by AURI's observation of increased interest in A2 genetics among dairy farmers in Minnesota, with some actively converting their herds. To illustrate, one genetic company indicated that 75% of their young sires only have the A2 gene, and they often receive requests from dairy producers for more information about A2 and whether or not converting to A2 genetics would be worth it.

To date, no studies have illustrated the market potential of A2 milk in Minnesota. As a result, dairy farmers lack foundational data and information to help with the breeding decision associated with the A2 trend. To address this gap, AURI conducted this study to highlight the market opportunities of A2 milk to help industry stakeholders. Findings from this study provide dairy producers, genetic companies, processors, and retailers with empirical evidence about the supply and demand of A2 milk in Minnesota to help them make data-backed decisions on potential investment into the A2 milk marketplace. Finally, this study does not address scientific evidence to support the improved digestion claims surrounding A2 milk.

Supply of A2 Milk in Minnesota

To understand the state's supply of A2 milk, AURI worked with several industry stakeholders to develop and distribute a survey for dairy farmers. In addition, AURI examined public data available from leading genetics companies. To begin this section, AURI provides a background on the structural changes the industry has undergone over the past few decades.

Minnesota's Dairy Farms

Minnesota is a leading dairy state, generating over $29 billion in economic impact in 2023 (International Dairy Foods Association, 2023). From 1992 to 2022, the state's dairy industry substantially increased milk production while maintaining the same cow numbers as those of the early 2000s (Figure 1) (USDA-ESMIS, 2024). This illustrates an increase in productivity per cow. According to CoBank Knowledge Exchange, the U.S. dairy herd today is just 1% larger than in 2008 but produces 19.2% more milk and 32.2% more butterfat (CoBank Knowledge Exchange, 2024). Meanwhile, Minnesota dairy farm numbers have been on a long downward trend (Figure 2), mirroring a national trend toward consolidation in the industry (USDA-ERS, 2020). The average herd size of a Minnesota dairy farm went from 46 cows in 1992 to 210 in 2022. (USDA-NASS, 1992 and 2024).

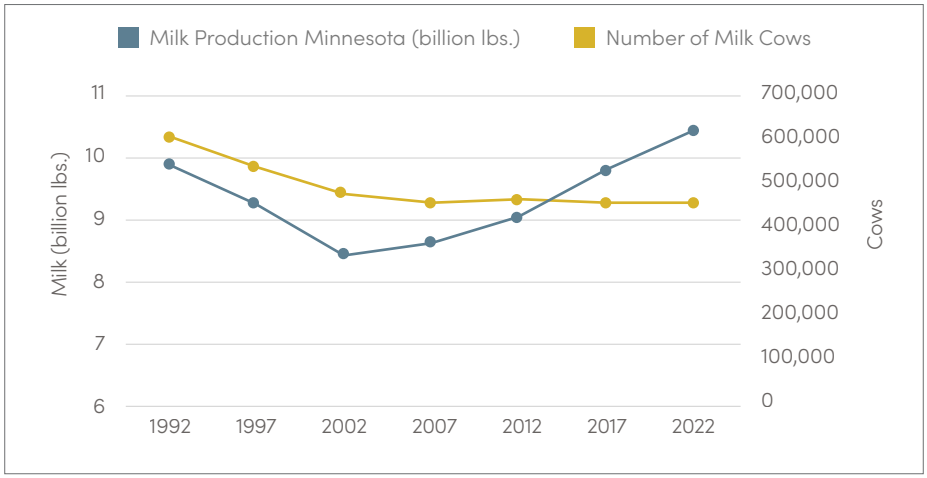

Figure 1. Milk production and number of cows in Minnesota, 1992-2022 (USDA-ESMIS, 2024)

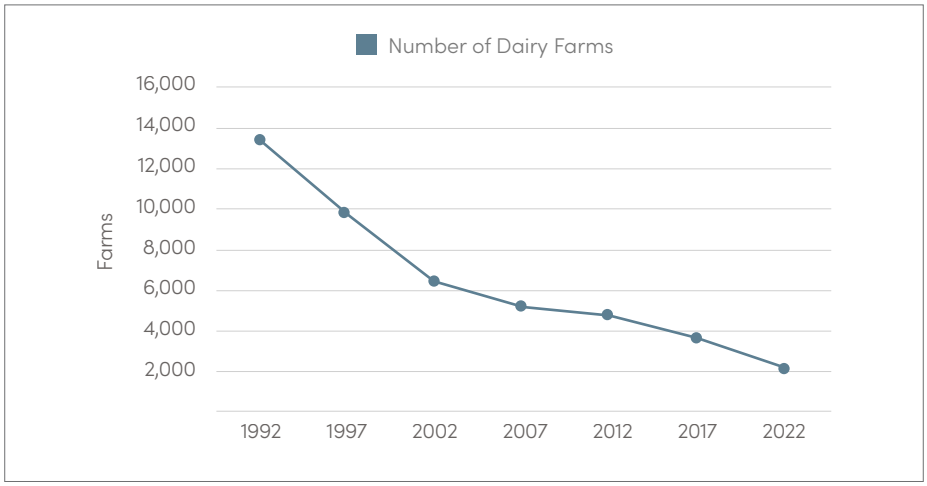

Figure 2. Number of dairy farms in Minnesota, 1992-2022 (USDA-NASS, 2024)

Given milk's commodity nature, producers have limited opportunity to control the price they receive for their raw product. For dairy herds of less than 500 cows, average net returns were negative between 2005 and 2018 with few exceptions, (USDA-ERS, 2020). Dairy farmers, eager to improve their farm's economic outlook, seek opportunities to improve competitiveness, which are often limited to controlling input costs, increasing productivity, and/or improving economies of scale. Additionally, premiums received on components such as protein and butterfat can yield a better return. CoBank's Knowledge Exchange recently released a report on milk components illustrating that after decades of stable milk composition, components such as butterfat and protein began to grow in 2011. This matters for many processors since value-added dairy products depend on these components. "More than 80% of U.S. milk production goes into dairy food products that rely on milk components while less than 20% goes into the fluid beverage category," (CoBank Knowledge Exchange, 2024). While the presence and quantity of components continue to be important, the unique component benefits, such as the type of protein in A2 milk, may bring increased added value.

A2 Genetics

Sire selection is the starting place for converting a herd to A2 genetics. CentralStar Cooperative hosted a webinar (CentralStar Cooperative, 2023) on A2 genetics which included Chuck Sattler, vice president of genetic programs at Select Sires, a leading dairy genetics company. Sattler's comments were noteworthy. In the early days, genetics companies were skeptical of the market opportunity of A2 genetics. This evolved as dairy producers began to demand more and more access to A2A2 beta-casein genotypes. According to Sattler, in 2015, 33% of Holstein bulls in the Select Sires program were A2A2. By 2020, that number had increased to 56% and grew further to 70% by 2023. Sattler stated that producers can select A2A2 sires with minimal sacrifice of other genetic traits. Select Sires tests all incoming bulls for their beta-casein genotype before adding them to their lineup. All publications, directories, and their website include this genotype information.

The Bullvine reported that Select Sires has the largest market share among dairy genetics companies with 31% of the market, while STgenetics follows with 25.5%, (The Bullvine, 2024). STgenetics offers genomic testing for its customers and includes the option to select beta-casein as a trait in its sire directory. A November 2024 review of this directory indicated that 317 of 421 Holstein sires (75%) were A2A2, while 62 of 72 Jersey sires (86%), and 5 of 5 Guernsey sires (100%) were A2A2.

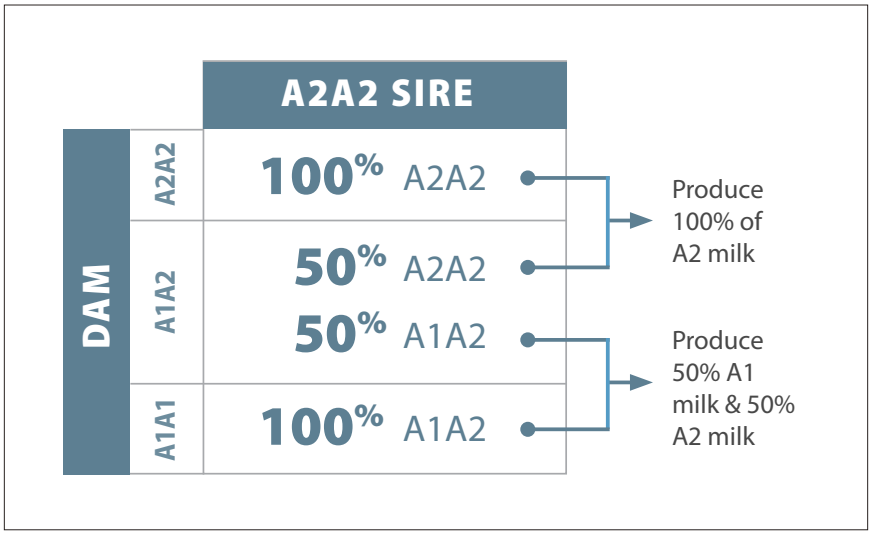

Figure 3. Breeding for A2 Milk (Holstein Canada, 2015)

DNA testing of an animal's blood or a tissue sample is needed to confirm conversion. Holstein Canada states that with an intense breeding strategy, 100% conversion can be achieved within three to four years. As a point of interest, some genetics companies are also testing for the b-variants of both kappa-casein and beta-lactoglobulin genotypes for potential benefits in downstream dairy product processing.

Survey

AURI conducted a Qualtrics survey of dairy producers to understand the supply of A2 milk in Minnesota. The objective of the survey was to collect foundational data on producers' interest in producing A2 milk, as well as their perceptions and breeding choices. Please refer to the appendix for a detailed methodology.

The data collection period lasted a month (mid-August —mid-September 2024). The survey received 75 completed responses and had dairy farm participants from 36 counties in Minnesota. The survey represents roughly 4% of the number of dairy farms in Minnesota. Figure 4 presents the data broken out by county and number of respondents. Most A2 farms in the sample have between 100 and 199 cows in their herd. From those 75 responses, 92% of producers in the data sell milk to dairy processing cooperatives.

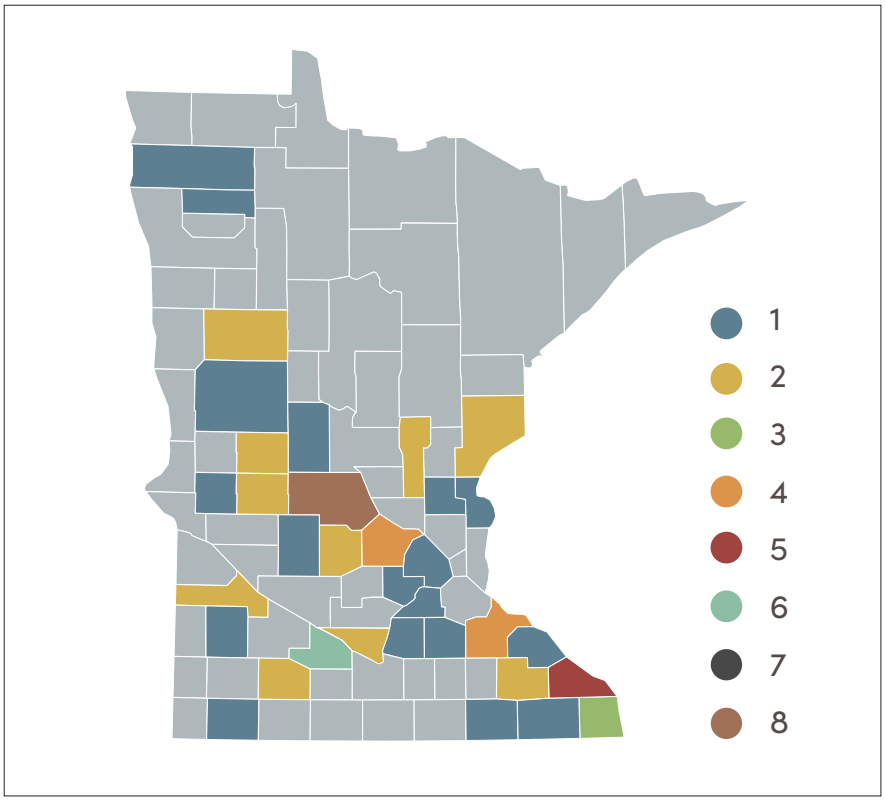

Figure 4. Counties and number of participants represented in the data

Key Findings

Survey results show that as of 2024, 44% of survey respondents had converted cows to A2 genetics; of those, 35% were in the process of converting, and 9% had completed their conversion process. Meanwhile, 48% of respondents had not converted cows in their herd into A2 genetics, while 8% of farms in our sample were unaware of A2 milk. See Figure 5 below.

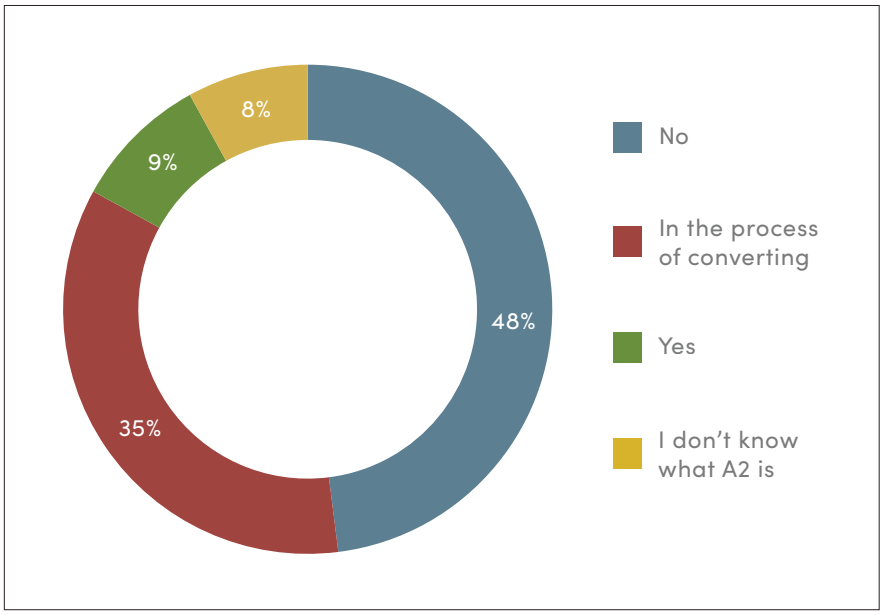

Figure 5. Percentage of Minnesota dairy farms surveyed who are converting cows to A2 genetics

The survey was used to capture information on the number of cows that producers have converted within their herds. On average, A2 farms have converted 66% of their cows to A2. In total, 4,062 cows have been converted to A2 out of 17,512 cows in the sample, resulting in 23% of cows converted to A2 genetics.

Reasons for Converting

AURI asked dairy producers why they were converting cows in their herds to A2 genetics. Producers were asked to select reasons for their decision from a preset list. The results show that 82% of A2 producers converted cows because of perceived consumer interest in A2 milk, 76% because of market opportunities, and 64% because A2 milk is trending.

In addition, almost half of the A2 farms surveyed in Minnesota (42%) converted their cows because they believe A2 milk is healthier than conventional milk. The survey indicates that dairy processors in Minnesota are not asking for A2 milk, and higher prices for A2 milk appear to have a limited impact on farmers' decisions to convert their herd (see Figure 6).

> I think everything will be A2 soon. Protein is more digestible. Non-A2 milk will be discounted.
>
> *–Survey Respondent*

> I would love to make some extra income from A2, but I don't think our co-op wants to sell A2 milk.
>
> *–Survey Respondent*

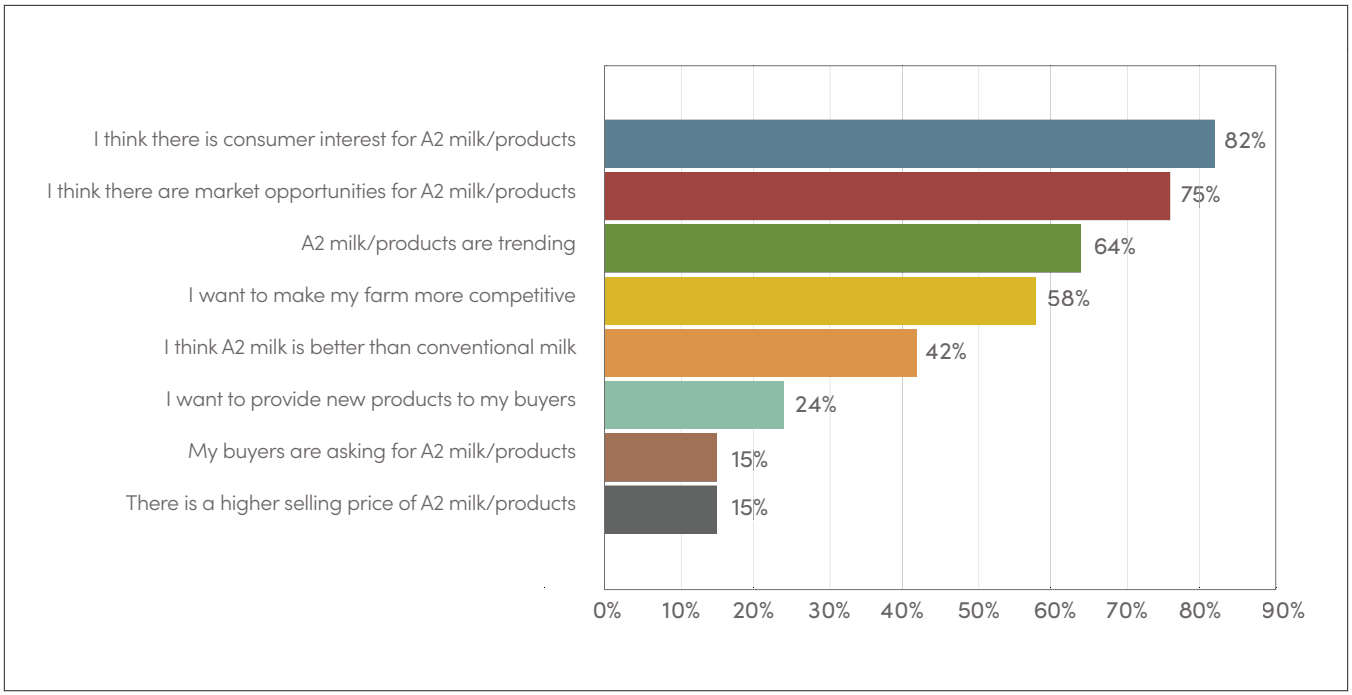

Figure 6. Reasons why dairy farms in Minnesota are converting cows to A2 genetics

Future Conversion Plans

AURI asked the non-A2 farms in the survey about their interest in converting their herds to A2 genetics. The results show that 31% of non-A2 farms in Minnesota are interested in future conversion (see Figure 7), with most desiring to do so in the next three to five years.

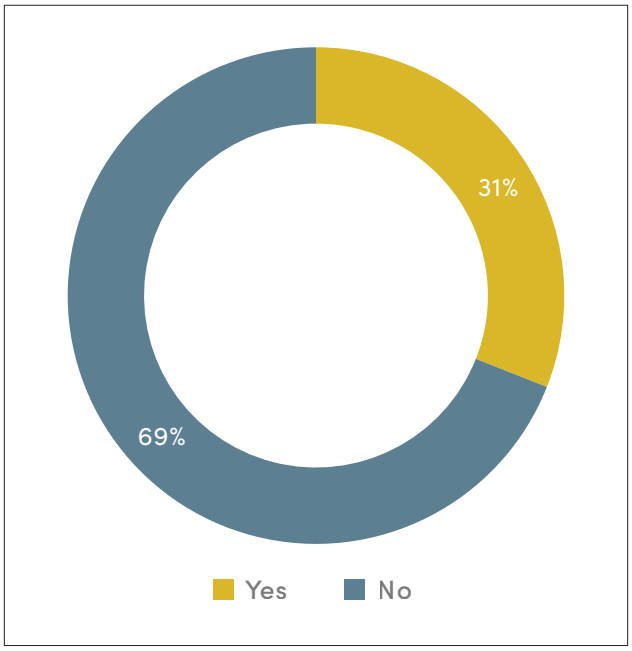

Figure 7. Percentage of non-A2 farms who are interested in converting their cows to A2 genetics in the future

Why are some non-A2 farms interested in converting cows to A2 genetics?

As shown in Figure 8, non-A2 producers are primarily interested in converting their herds because:

1. **A2 milk is trending**
2. **A2 milk can make their farm more competitive**
3. **Market opportunities exist for A2 milk**

> With the way the young generation is starting to crave all-natural products that fit their personal lifestyle, we view that younger people are going to find A2 milk as a safer form of dairy.
>
> *–Survey Respondent*

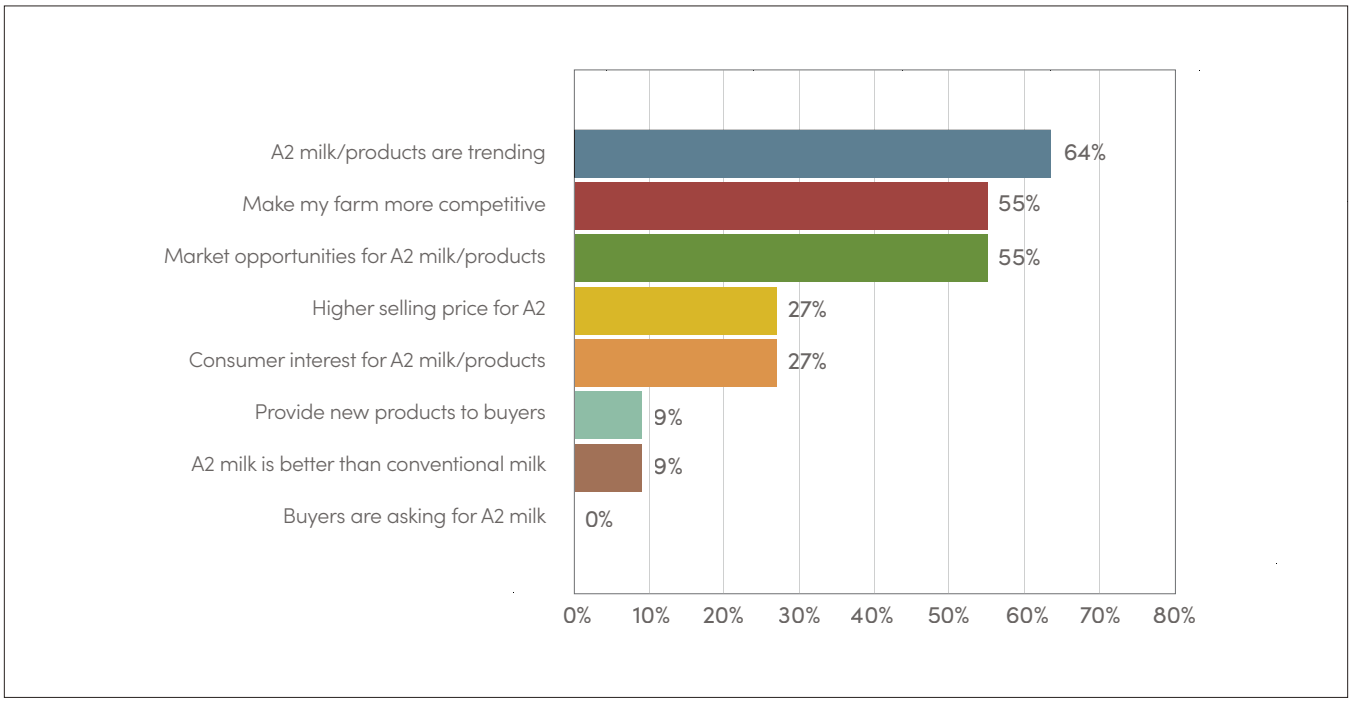

Figure 8. Reasons why non-A2 dairy farms in Minnesota are interested in converting cows to A2 genetics

The AURI survey asked farmers who are not currently A2 producers and not interested in A2 conversion to provide insight on that choice. The results shown in Figure 9 illustrate two primary reasons dairy producers are not interested in A2 conversion:

1. **They don't think market opportunities exist (60%)**

2. **The additional cost of herd conversion (50%)**

Thirty percent of these respondents did not consider themselves knowledgeable enough about A2 to respond.

> Currently, I do not know of a market for A2 milk. I don't see the need to switch without market or premium prices.
>
> *–Survey Respondent*

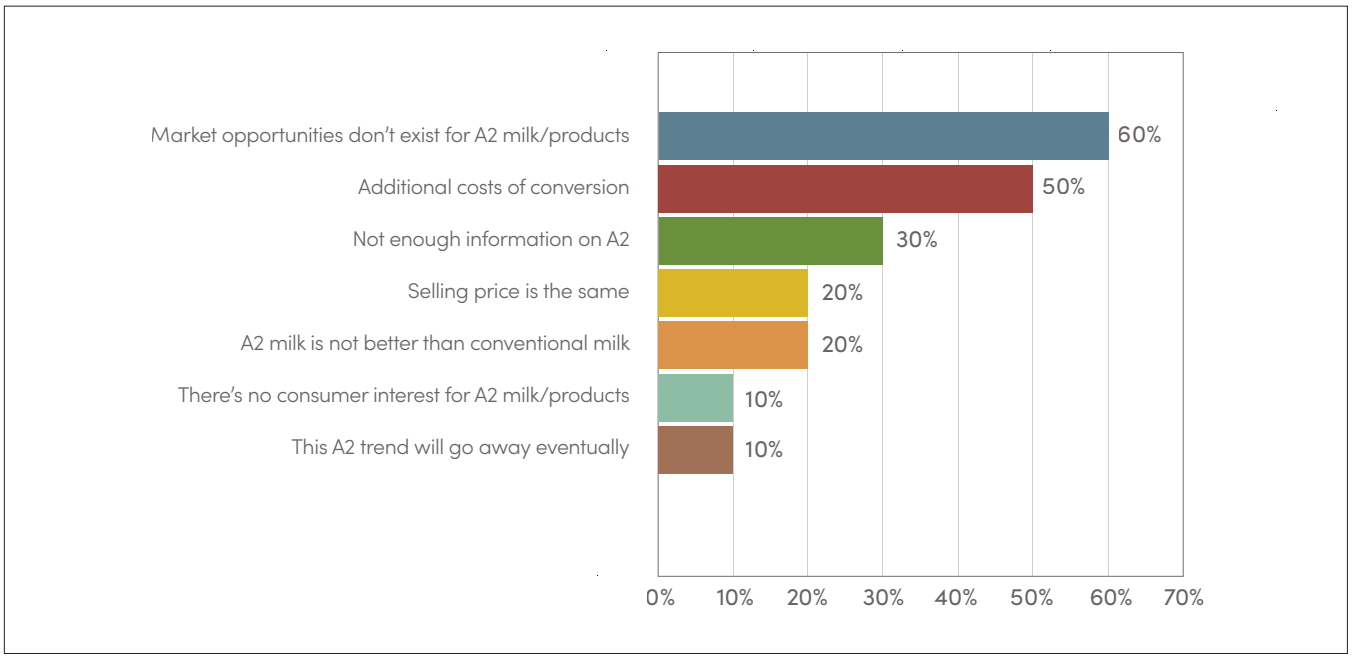

Figure 9. Reasons why non-A2 farms in Minnesota are not interested in A2 genetics

Takeaways

- Based on the survey results, AURI expects an increase in the number of cows that will be converted to A2 genetics in Minnesota over the next five years. This is primarily due to the number of dairy farms currently converting and the non-A2 farms interested in doing so in the foreseeable future.

- Dairy *producers* see A2 as a trending market opportunity despite not receiving a premium price for A2 milk.

- Survey respondents indicated that dairy *processors* in Minnesota have not driven interest in A2 milk. Additional market research is needed to understand this finding, as dairy processors' procurement decisions greatly impact producers' sales opportunities.

Demand for A2 Milk

To understand the demand for A2 milk in the state, AURI interviewed local retailers in Minnesota to learn about their experiences with A2 and purchased data from SPINS to analyze retail sales of A2 dairy products.

Retailer Interviews

AURI interviewed senior dairy category managers from two regional retail chains in Minnesota in August and September 2024. The questions that AURI used in these interviews included:

- What factors drive your decision to carry A2 fluid and/or value-added milk products in your stores?
- How long ago did you start carrying A2 fluid and/or value-added milk products?
- How do A2 fluid and/or value-added milk products perform relative to conventional fluid and/or value-added milk products?
- Does geographic location impact the performance of A2 fluid and/or value-added milk products?
- What does the future look like for A2 fluid and value-added milk products in the retail environment?

Both interviewees understood the basic premise and consumer appeal of A2 milk products and indicated their stores had been carrying A2 milk for at least five years. Both respondents acquire A2 milk from independent distributors as well as directly from dairy producers. In addition to fluid milk, these retailers carry some A2 value-added products, such as ice cream and flavored fluid milk, and are actively exploring additional products, such as yogurt.

When asked about their decision to carry A2 dairy products in their stores, the interviewees cited four main factors influencing their decision:

1. **A2 milk is trending with consumers.** A2 is a consumer-relevant innovation in a somewhat stagnant category. The innovative aspect of A2 is the primary reason for carrying it.

> **"It was driven initially by new trends research at [industry] trade shows, and it has stuck around." –*Retailer B***

2. **Consumer request.** The interviewees indicated that increasing consumer requests were another reason they allocated shelf space to A2 milk and milk products.

> **"It helps to have a starting base of customers when launching a new product." –*Retailer A***

3. **Price premium.** A2 milk products bring a new benefit to the dairy category, as they can be priced at a premium relative to conventional milk products. As a result, consumer selection of A2 milk products over conventional products increases the total revenue each shopper delivers to the retailer.

> **"A2 milk can offer a value to our milk category, bringing a margin advantage over traditional milk." –*Retailer A***

4. **Brand Support.** Finally, interviewees indicated that the brands they carried on their store shelves were willing to provide financial support (marketing support) to drive consumer trial by increasing in-store awareness.

A2 Milk Versus Conventional Milk

Interviewees were asked about the differences in sales performance between A2 and conventional milk at their stores. Each interviewee indicated a significant disparity between A2 and conventional milk regarding sales, on-shelf price, sales velocity, and sales growth.

- Total A2 milk sales are less than 1% of total fluid milk sales, and A2 milk is sold at 60-70% premium compared to conventional milk.

- A2 milk sales velocity is significantly slower than that of conventional milk, with conventional milk turning on the shelf approximately 15-18x faster than A2 milk. However, the conventional milk turn rate is declining. A2 milk sales have grown 15% annually during the last five years, while conventional milk sales have declined.

One interviewee noted that these differences do not mean that A2 milk displaces conventional milk on the shelf; rather, the category can share space between A2, conventional, and non-dairy milk.

Impact of Geography on Sales

Interviewees indicated no definitive correlation between geographic purchase location and A2 milk sales. However, one interviewee noted, "In Minnesota, rural store locations tend to sell more specialty and certified products, like A2, than metro locations."

What Does the Future Look Like for A2 Milk?

Interviewees articulated a bright future for A2 in the dairy category. Interviewees also noted that consumers' interest in wellness products and climate-friendly claims will continue to drive demand for products that claim unique benefits, such as those claimed by A2 milk products.

In addition to fluid milk, retailers indicated interest in introducing more A2 value-added dairy products, such as ice cream and yogurt, to their shelves.

> **I expect these numbers to grow as awareness and education improve.**
>
> *–Retailer B*

Retail Data for A2 Milk

Market demand for A2 milk and milk products is best quantified by evaluating point-of-sale (POS) scanner data from a syndicated data provider or market research firm. These companies collect, curate, and sell comprehensive retail sales data and consumer insights to help businesses understand market trends, consumer behavior, and sales performance. For this study, AURI purchased scanner data for A2 milk and milk products spanning September 2021 to September 2024 from SPINS, however, the analysis is provided on an annual basis (2022-2024). This data covered 13,000 retail stores in the North Central Region of the United States, including Minnesota, Wisconsin, Ohio, Indiana, Nebraska, Ohio, and North and South Dakota.

Key Findings

Data analysis reveals that the A2 market consists of multiple local, national, and international brands selling A2 dairy products, including fluid milk, yogurt, ice cream, sour cream, and cheese. An example of a local Minnesota brand selling A2 milk to retailers is "Ten Finns Creamery;" national brands include Alexandre Family Farm, and international brands include the A2 Milk Company and Zeal Creamery. For the analysis, AURI used a generic naming convention (Brand A, Brand B, Brand C, etc.) to refer to the brands in the A2 marketplace. From 2022 to 2024, sales of all A2 dairy products increased by 161%, and AURI expects this growth to continue as supply increases and retailer interest continues to rise.

Supplementary product claims also appear to drive sales. The best-performing brands seem to have found sales success by combining the benefits of A2 milk with claims such as "Grass-fed," "Certified Regenerative Organic," "Organic," and "Fresh Grassfed."

A2 vs Non-A2 Products

Table 1 presents the sales of A2 and conventional dairy products to understand how A2 is changing the sales dynamic within the dairy industry. In 2024, A2 dairy products represented 1.3% of the total dairy market (milk, yogurt, ice cream). Interestingly, both A2 and non-A2 products show absolute sales growth over the last three years, although A2 products have grown faster. This finding is consistent with retailer's comments including that A2 products do not necessarily replace conventional dairy products on store shelves.

	2022	2023	2024
A2	0.5%	0.8%	1.3%
Conventional	99.5%	99.2%	98.7%

Table 1. Sales of A2 vs. conventional dairy products in the North Central region of the U.S., 2024

A2 Product Segmentation

Figure 10 presents the segmentation of A2 dairy products sold in the Northern United States in 2022-2024.

- In 2024, A2 fluid milk was the largest segment of the total A2 milk products market (63%). A2 fluid milk's dominance over yogurt and ice cream has gradually decreased from 80% in 2022 to 63% in 2024.
- Yogurt and ice cream are the second and third largest A2 dairy product categories, respectively, in 2024. Both product categories are gaining market share relative to fluid milk.
- The remaining 3% goes to cheese and sour cream, with significantly fewer sales.

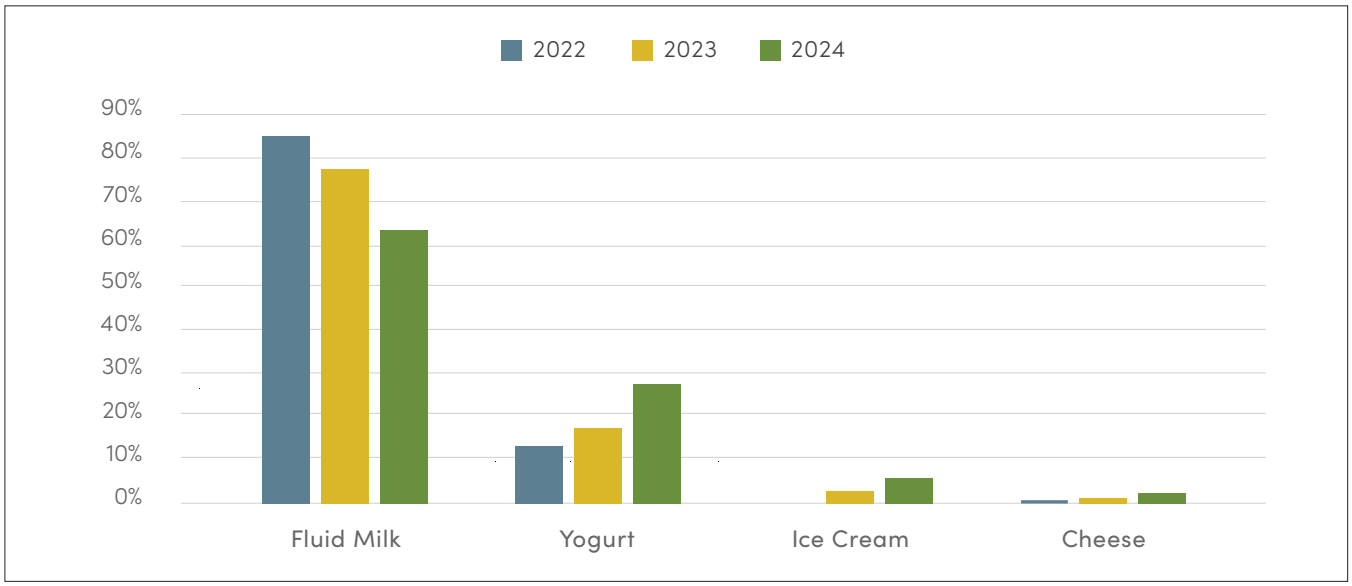

Figure 10. A2 fluid milk market segmentation in the North Central region of the U.S., 2024

A2 Fluid Milk

Fluid milk is the dominant category in A2 dairy products regarding sales and units sold. Data analysis shows that four brands (The A2 Milk Company, Alexandre Family Farm, Zeal Creamery, and Origin) control more than 90% of the A2 fluid market. Small and local brands (Clover Meadows Family Farm, Family Tyme, Ferndale Organic, Tenn Finns Creamery) fill the remainder of the market in the North Central region (see Figure 11).

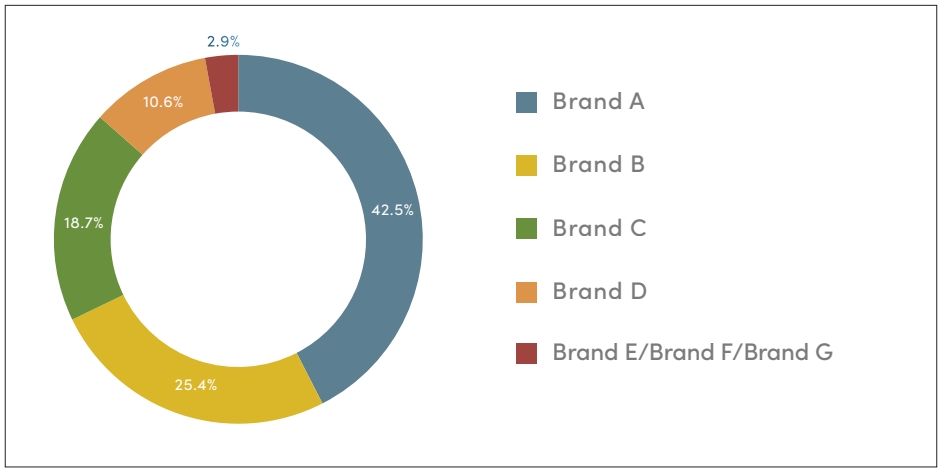

Figure 11. A2 fluid milk market segmentation in the North Central region of the U.S., 2024

Table 2 further characterizes A2 fluid milk market performance. From 2022 to 2024, A2 milk sales grew by 43% in 2023 and 36% in 2024. The average price of a half gallon of A2 fluid milk increased by 20% over the last two years, from $5.11 in 2022 to $6.10 in 2024. Sales velocity increased by 68% between 2022 and 2024, reaching 131 A2 fluid milk items sold per store per week in 2024.

	2022	2023	2024
Annual Sales Growth Rate (%)	-	43%	36%
Price ($/half-gallon)	$5.11	$5.71	$6.10
Sales Velocity (Units/store/week)	78	87	131

Table 2. A2 fluid milk trends in the North Central region of the U.S.

A2 Yogurt

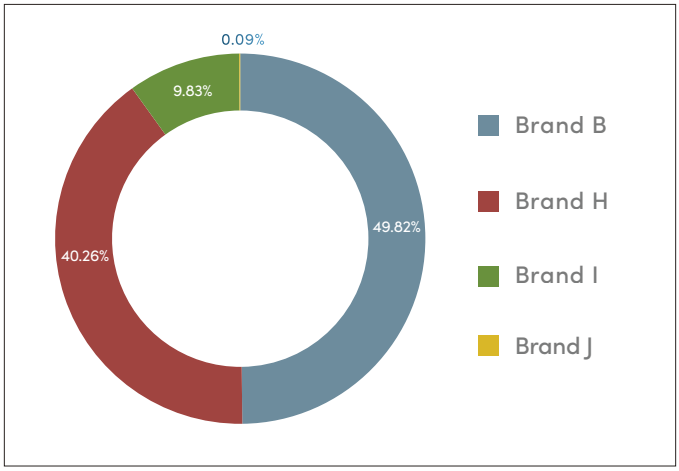

Figure 12. A2 yogurt market segmentation in the North Central region of the U.S., 2024

In 2024, yogurt was the second-largest A2 dairy product, representing 28% of all A2 product sales. Data shows that only four brands sold A2 yogurt in the North Central market for the same year. Alexandre Family Farm, based in California, is one of the largest brands selling A2 yogurt. Other companies include Bellwether Farms, Trimona, and Cremily. Figure 12 presents each company's relative market share.

As a segment, yogurt grew by 160% in 2024. The price of yogurt increased from $3.26 per item in 2022 to $4.52 per item in 2024. In 2022, 31 yogurt items were sold per store/week, which increased to 59 in 2024.

	2022	2023	2024
Annual Sales Growth Rate (%)	-	106%	160%
Price ($/item)	$3.26	$4.49	$4.52
Sales Velocity (Units/store/week)	31	52	59

Table 3. A2 yogurt market trends in the North Central region of the U.S.

A2 Ice Cream

Table 4 presents the market trends of A2 ice cream. During 2023-2024, the price of A2 ice cream increased by more than 100%, from $3.58 per item in 2023 to $7.43 in 2024. Despite the increase in sales in 2023, sales velocity of A2 ice cream slighltly decreased because of the increase of the number of stores where it were sold.

	2022	2023	2024
Annual Sales Growth Rate (%)	-	2069%	223%
Price ($/item)	$3.19	$3.58	$7.43
Sales Velocity (Units/store/week)	4	3	8

Table 4. A2 ice cream market trends in the North Central region of the U.S.

A2 Cheese

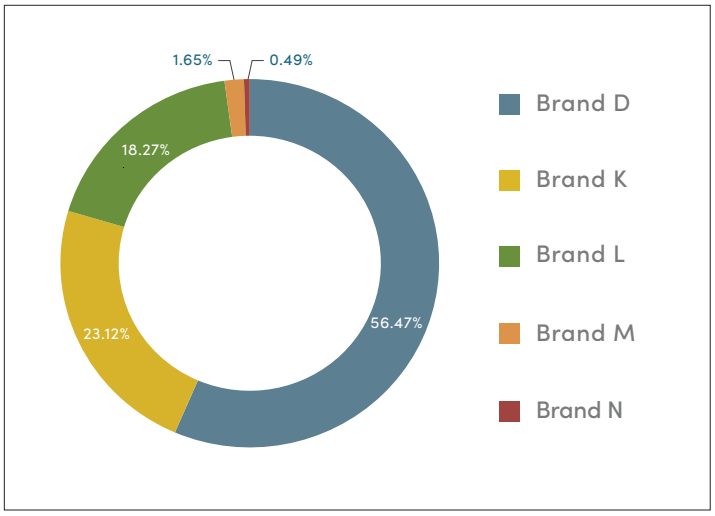

Figure 13. A2 cheese market segmentation in the North Central region of the U.S., 2024.

Cheese is another dairy product sold as A2 in the data. Despite the lower overall sales compared to milk, yogurt, and ice cream, the A2 cheese market is very fragmented. The largest brands in this segment include Origin, Nordic Creamery, Snowville Creamery, Jersey Valley Cheese, and Bunker Hill (see Figure 13).

Table 5 presents the market trends of A2 cheese from 2022-2024. Data shows that the price of A2 cheese has skyrocketed, from $2.16 per item in 2022 to $7.05 in 2024. Sales velocity increased from 7 weekly cheese items sold per store in 2022 to 21 in 2024.

	2022	2023	2024
Annual Sales Growth Rate (%)	-	213%	319%
Price ($/item)	$3.75	$2.16	$7.05
Sales Velocity (Units/store/week)	7	5	21

Table 5. A2 cheese market trends in the North Central region of the U.S.

A2 Sour Cream

Only one brand is selling A2 sour cream in the North Central region of the U.S. Sales were first recorded in 2024, which indicates it is a newer product line. The average price is $5 per item, and two units were sold per store per week.

Takeaways

1. On the retail side, A2 fluid milk's growth is slower than other value-added A2 dairy products, notably yogurt and ice cream.
2. A2 fluid milk is the highest velocity A2 product, with 131 units sold per store per week.
3. Ice cream was the fastest-growing A2 dairy product from 2022-2024, with an annual growth rate of more than 3000%. Ice cream is still a small volume market compared to fluid milk and yogurt.
4. Data shows sour cream as the most recent A2 dairy product introduced in the market.
5. Data indicates growth in all A2 milk product categories, but the greatest market opportunity is in value-added A2 milk products.

Case Study

AURI interviewed one of the early adopters of A2 in Minnesota to understand their experiences with producing and marketing A2 milk. This section presents the story of Ten Finns Creamery, located in Menahga, Minnesota. During the August 2024 interview with the owner, Joel Hendrickson, shared details of his:

- **Motivation to produce A2 milk**
- **Market positioning strategies**
- **Market development strategies**
- **Plans for the future**

Ten Finns started converting cows to A2 in 2014. It took approximately three years to achieve 100% conversion. In 2019, Joel built an on-farm creamery inspected by the Minnesota Department of Agriculture to bottle and sell milk. The farm currently milks 140 cows, of which 40-50% of the milk production goes directly to institutions and retail markets. The other half is sold to their local dairy cooperative.

The Decision to Convert Cows to A2 Genetics

When asked why he started producing A2 milk, Joel responded, **"I am convinced that if all the cows in the United States were A2, humans would be healthier."**

Joel capitalized on the perception that A2 milk is healthier than conventional milk and may ease A1 protein intolerance. He wanted to provide a product that he perceived to be healthier and not necessarily because the market indicated a major opportunity. Following a conversation with a fellow dairy producer, Joel began investigating A2 milk. He primarily used word of mouth and publicly available research cited by the A2 Milk Company. Consumer testimony on their improved ability to digest A2 milk without gut distress drove his desire to expand into A2 milk processing.

> When I first started, no one was doing it. Now, more people are converting their cows because they see it coming. 10 years from now, we will see more A2 cows in the market.

Marketing Strategies

Ten Finns Creamery is currently selling A2 milk to institutions and retailers.

Direct-to-institutions

Ten Finns sells to 10 Minnesota school districts. However, Ten Finns does not charge a premium price because schools are state-funded and do not have the budget to pay a higher price for A2 than they would otherwise pay for conventional milk. These school districts have become strong advocates for Tenn Finns Creamery, enabling opportunities with other districts.

Direct-to-retailers

Ten Finns Creamery also sells to local retailers in Minnesota and surrounding states. He revealed that retailers carry his product at a premium price because of local consumer demand. Joel facilitated market entry by directly contacting retail managers and conducting in-store demonstrations of Tenn Finns' products. As a result of his market success, Joel is very positive about the impact of A2 on the fluid milk market, though he is quick to point out that this success may be due to the local nature of the business and the increasing cost of competitive products bearing somewhat similar digestion claims (lactose-free).

Challenges

Joel recalls that one of his first major challenges was product identity. Ten Finns Creamery decided to move forward with a cream line, or non-homogenized milk, due primarily to the high capital cost associated with homogenization. While this decision hasn't seemed to restrict his local market access, he acknowledges that sales velocity is likely slower.

The direct-to-institution market has been challenging. Joel acknowledges that the time invested in this channel has been substantial in developing and maintaining relationships, as well as the need to develop sales strategies to keep growing in this market.

Joel highlighted a final challenge: margin improvement. While packaging automation will substantially lower labor costs and speed up the process, the capital investment required is significant. Despite this, efforts to improve packaging efficiency are underway.

Future Plans

Joel is actively exploring additional value-added dairy categories as Ten Finns Creamery continues to expand the distribution of its fluid milk lineup, particularly in institutional markets. In particular, Joel is actively pursuing A2 butter as the next product in his portfolio, and he is exploring A2 ice cream. Expanding Tenn Finns Creamery's product line will require feasibility exploration, including market potential, capital investment financing, supply chain (manufacturing and distribution) strategy, and product development.

Future Considerations

In this A2 milk market assessment, AURI set out to understand the supply and demand for A2 milk in Minnesota. The study's findings will build awareness among farmers and industry stakeholders regarding A2 milk supply and demand and inform future business development opportunities. This study presents some limitations; as such, AURI has identified several areas for future work.

- The observed proportion of A2 farms in the survey sample may not be representative of the true conversion rate among all dairy producers in Minnesota. Further studies can analyze the A2 market opportunities by considering a larger sample of dairy producers.
- Of the 75 responses, 92% of producers sell milk to dairy processing cooperatives, which may skew the supply results towards that category. Future studies could examine where segregated A2 milk could be processed, including small-scale dairy processing, to understand the potential for direct-to-consumer marketing.
- This study lacks information on dairy processing cooperatives. Future studies can investigate dairy cooperatives and their position on A2 milk, processing, and market opportunities.
- While the retail sales numbers indicate robust growth of A2 products, the overall absolute and relative size of A2 sales is extremely small compared to the whole dairy product market.
- Although AURI presented retail sales of A2 dairy products, future studies should investigate consumer perception and behavior by analyzing their awareness of A2 milk and dairy products.
- Consumers purchase A2 milk and dairy products primarily because of potential digestion benefits, offering an alternative for those who experience discomfort with conventional milk but still want to enjoy the benefits of dairy products. However, scientific evidence does not conclusively prove the link between improved digestion and A2 dairy consumption. Future scientific studies are needed to increase the body of scientific evidence to prove the existence of a causal relationship.

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Appendix

Survey Methodology

AURI conducted a Qualtrics survey of dairy producers in Minnesota to understand the supply of A2 milk in Minnesota. The objective of the survey was to collect foundational data on producers' interest in producing A2 milk, as well as their perceptions and breeding choices. Before delivering the survey, AURI used cognitive interviewing to pretest the questionnaire. Pretesting entailed delivering the questionnaire to experts working in the dairy industry or sample members and asking them to complete it and report any problems they experienced.

To deliver the survey, first, AURI asked dairy stakeholder partners to share it with their members and/or networks. Organizations contacted in this phase included Minnesota Milk, the Minnesota Dairy Initiative, the Minnesota Department of Agriculture, Midwest Dairy, and the University of Minnesota. In the second phase, AURI published the survey on its social media platforms (LinkedIn, Facebook) and monthly e-newsletter. Finally, AURI published a full-page ad in the Dairy Star newspaper with a QR code that allowed dairy producers in Minnesota to participate.

The questionnaire took, on average, 30 minutes to complete. Participation in the survey was voluntary, and five $100 gift cards were offered as an incentive to increase survey participation. Following best practices for data collection, two reminders were sent at a 2-week interval. The data collection period lasted a month (August- September 2024). The survey received 75 completed responses and had dairy farm participants from 36 counties in Minnesota. Most A2 farms in the sample have between 100 and 199 cows in their herd. From those 75 responses, 92 percent of producers reported selling milk to dairy processing cooperatives.