A Survey of Pennsylvania Value-Added Dairy Processing

This article summarizes a "state of the industry" survey on enterprise level production, business, and marketing practices being utilized by Pennsylvania small-scale and farmstead value-added dairy processors. The survey was conducted in early 2020.

The Pennsylvania dairy industry has experienced several shocks during recent years. Decreasing fluid milk consumption, evolving demand for processed dairy products and productivity increases lead to an oversupply of dairy milk resulting in price volatility (Image 1).

Image: bigstockphoto.com/Alex9500

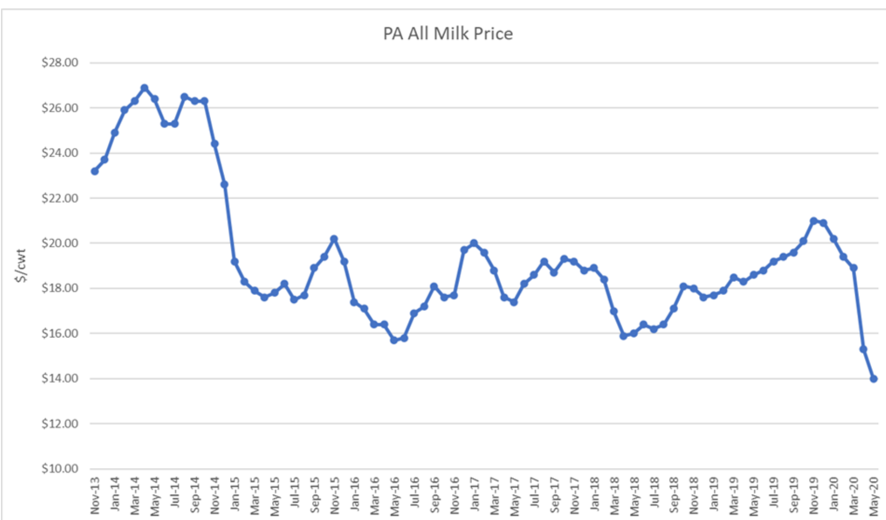

Image 1. Pennsylvania All Milk Price, November 2013 to May 2020. Data Source: USDA, National Agricultural Statistics Service

In response to the fluctuating fluid milk commodity market environment, some dairy farms have either started or investigated starting their own value-added dairy processing enterprise as a means to capture a greater share of the consumer dollar. Small-scale and farmstead value-added dairy product processing is a growing segment of the Pennsylvania dairy industry as evidenced by the increase in permits for raw milk producers (increase of 5), bottlers (increase of 9), and cheese manufacture (increase of 5) from 2017 to 2019 (PA Dept. of Agriculture). Yet little information exists regarding this segment's business and marketing practices and financial status. To try to understand the enterprise level production, business, and marketing practices being utilized by these farmer processors, we conducted a baseline "state of the industry" survey of Pennsylvania small-scale and farmstead dairy

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processors.

317 surveys were sent by mail to Pennsylvania dairy processors in March 2020. There were 39 responses. Respondents had the option to skip questions that they did not wish to answer. 30 respondents (77%) indicated that they actively dairy farm. Summary statistics for the survey respondents are presented in Table 1.

Descriptive statistic category	Sample
Number of farms	39
Farms milking (n=29)	
Cows	69%
Goats	24%
Sheep	7%
Source of milk (n=38)	
Own herd only	50%
Purchased only	21%
Both	29%
Gross Income, Whole Farm (n=34)	
Less than $10,000	3%
$10,000 - $24,999	6%
$25,000 - $49,999	3%
$50,000 - $99,999	12%
$100,000 - $249,999	32%
$250,000 - $499,999	18%
$500,000 - $749,999	3%
$750,000 - $999,999	9%
$1,000,000 - $1,999,999	12%
$2,000,000 - $4,999,999	3%
Greater than $5 million	0%
Gross Income, Value-Added Enterprise (n=35)	
Less than $10,000	9%
$10,000 - $24,999	3%
$25,000 - $49,999	9%
$50,000 - $99,999	14%
$100,000 - $249,999	37%
$250,000 - $499,999	17%
$500,000 - $749,999	9%
$750,000 - $999,999	0%
$1,000,000 - $1,999,999	6%
$2,000,000 - $4,999,999	3%
Greater than $5 million	0%
Employees	

Full-time	3
Part-time	5
Age Range	
< 25	5%
25 - 34	15%
35 - 44	18%
45 - 54	33%
55 - 64	21%
> 65	8%
Years processing dairy products	19
Gender (% male)	79%
Education	
High school	45%
Some undergraduate	13%
Undergraduate degree	32%
Professional certification	3%
Graduate degree (e.g. MBA, MS, PhD)	8%

Table 1. Summary Statistics of Small-Scale and Farmstead Dairy Processing Farms

Geographically, the majority of respondents indicated that their value-added dairy business was located in southeastern Pennsylvania with the most responses coming from Lancaster county.

Motivation to Start Value-Added Dairy Venture

Starting a value-added dairy enterprise requires significant motivation and drive, even if the owner is experienced with operating a dairy farm business. Survey respondents were asked why they started their value-added dairy business (Image 2). They were able to choose as many of the options presented that applied.

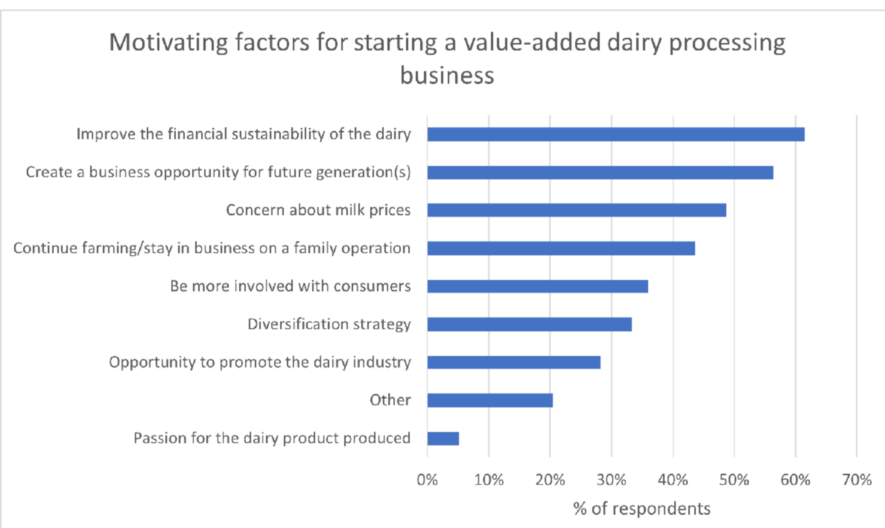

Image 2. Motivating factors for starting a value-added dairy processing business

As a desire to "Improve the financial sustainability of the dairy" was cited by a majority of respondents (62%) as their motivation for starting their value-added dairy enterprise, it is key to note that a similar percentage of respondents (69%) agreed or strongly agreed to a later question asking whether the overall profitability of their business had improved as a result of starting the enterprise. The second highest-rated motivating factor was to "create a business opportunity for future generations" (56%), and indeed, a later question found that 82% saw a future for themselves and their family in Pennsylvania's dairy industry.

While the desire to create an opportunity for future generations and to continue the family operation were among the top motivating factors to start a value-added processing enterprise, interestingly, only 46% agreed or strongly agreed that their family's quality of life has been improved as a result of producing value-added dairy products.

Finally, while "passion for the dairy product(s) produced" was selected least often (5%) as a motivating factor, another question found most respondents reporting that they take pride in providing quality products. An internal lack of passion for the specific dairy products respondents are processing could be cause for concern because product quality is a critical factor in consumer purchasing decisions and in the long run, for customer retention. To illustrate, in a consumer survey conducted by Mintel, 88% of respondents indicated that taste is a driving factor for their cheese purchases. Additionally, in a study regarding consumers' preferences for pasteurized and raw milk cheese, flavor was the top reason indicated by consumers for their stated preference (Colonna, Durham, and Meunier-Goddik). Taste and flavor are surrogate descriptors for food quality.

Additional motivating factors that were provided by respondents included "change of career and lifestyle," "want to farm and can't afford a large enough farm to produce milk for a large company or co-op," and "to revolutionize Italian cheese in the U.S." Whatever their motivating factor(s), 85% of respondents agreed or strongly agreed with the statement that they were satisfied with the decision to start a value-added business.

Product Processing

Small-scale and farmstead dairy processors must be strategic in their decision on which dairy products to make. In addition to technical processing knowledge, an understanding of dairy product consumption trends, and the local and regional consumer markets is essential. The changing landscape of consumer consumption trends offers an opportunity for those interested in pursuing product processing. At the household level, dairy expenditures are approximately one-third fresh milk and cream and two-thirds other dairy products, which includes processed dairy products such as cheese, ice cream, yogurts, etc. (Statista).

Among the small-scale dairy processors that responded to the survey, cheese, fluid milk (raw and pasteurized), yogurt, and ice cream were the top dairy products being processed (Table 2). While the survey did not ask for more specific product information (e.g. whole vs. 1% vs. 2% for fluid milk or cheddar vs. swiss vs. brie for cheese type, etc.), a few of the respondents provided that information.

Product Type	**Number of Processors**
Cheese	
Fresh, <60 days aged	9
Aged, raw milk	12
Aged, pasteurized	6
Fluid Milk	
Raw	16
Pasteurized, creamline	3
Pasteurized, homogenized	6
Flavored	4
Yogurt	
Drinkable	6
Spoonable (traditional, Greek, etc.)	9
Ice Cream	
Mix only	2
Finished product	10
Butter	8
Buttermilk	3
Cottage Cheese	3

Sour Cream	2
Cream Cheese	0
Kefir	4
Quark	0
Cream	2
Half & half	1

Table 2. Products Produced and Number of Processors

National data on dairy product consumption can be used as a guide when making initial product choices as well as an indicator of how local and regional markets are changing. When it comes to changes in value-added dairy per capita consumption (Image 3), butter takes the lead, increasing by 25% (from 4.9 to 6.2 lbs/ person) from 2010 to 2019. Over this same time, American type cheese consumption increased by 17% (from 13.3 lbs/person to 15.5 lbs/person), other than American cheese consumption increased by 17% as well, (from 19.4 lbs/person to 22.8 lbs/person), while yogurt remained stagnant with consumption standing at 13.4 lbs/person in 2010 and 2019.

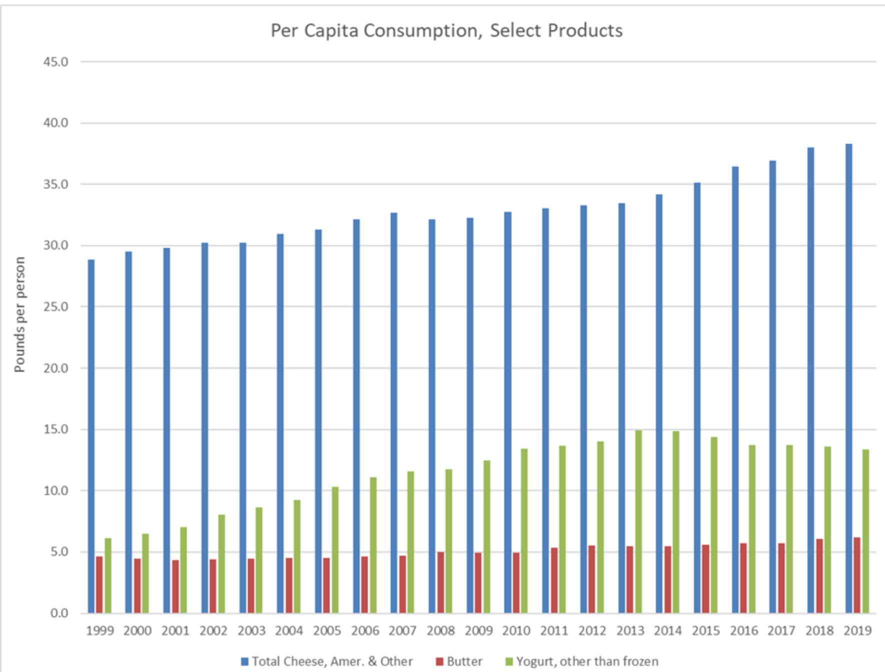

Image 3. Per Capita Consumption, Cheese, Butter, Yogurt. Data Source: USDA, Economic Research Service

At the national level, looking only at the decline in total fluid milk consumption fails to reveal shifts occurring at a milk type level. If we look at fluid milk sales by type, we see that whole milk and flavored milk are increasingly being purchased and consumed (Image 4). From 2014 to 2018, whole milk consumption increased by five pounds and now stands at 49 lbs/person. Consumption of 2% milk has decreased and is now less than whole milk (48 lbs/person). Meanwhile, consumption of flavored milk was 13 lbs/person in 2000 and rose to 14 lbs/person in 2018. For the year July 2018 to July 2019, USDA Agricultural Marketing Service (AMS) reported that sales of conventional whole and whole flavored milk increased 3.6% and 10.4% respectively.

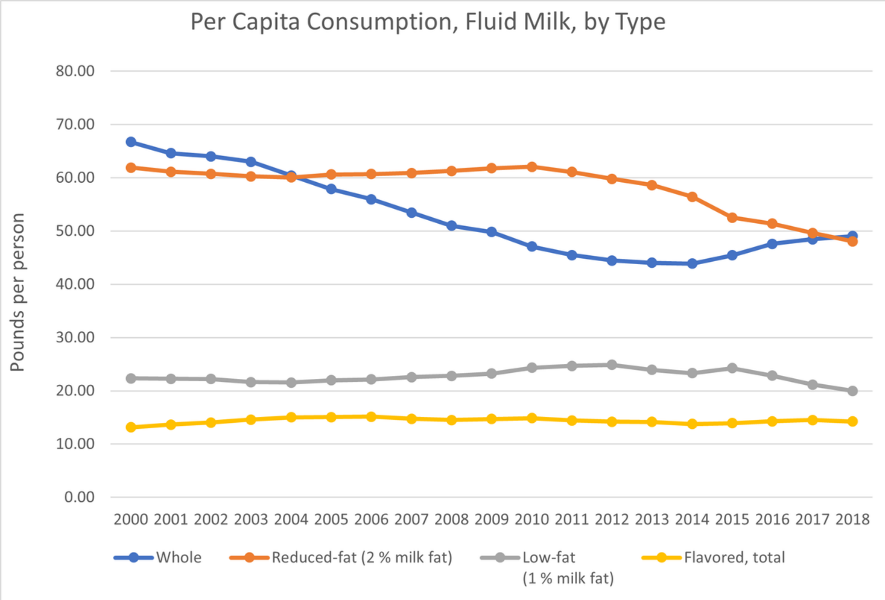

Image 4. Per Capita Consumption, Fluid Milk. Data Source: USDA, Economic Research Service

Marketing

Marketing is key to the success of small-scale value-added dairy businesses, no matter the specific products processed or whether choosing to sell through wholesale channels or direct to consumer. Small-scale dairy processors need to identify the customers for their products and how to reach them for product sales and communication.

Survey recipients were asked to indicate the marketing channels they used through which to sell their dairy products and the percentage of their sales that each marketing channel represented (Image 5). On-farm stores were the most reported marketing channel followed by farmers' markets and direct to specialty retailers. Hard-copy catalogs, cooperatives, direct to institution, CSA/box programs, and internet/online stores were the least utilized marketing channels.

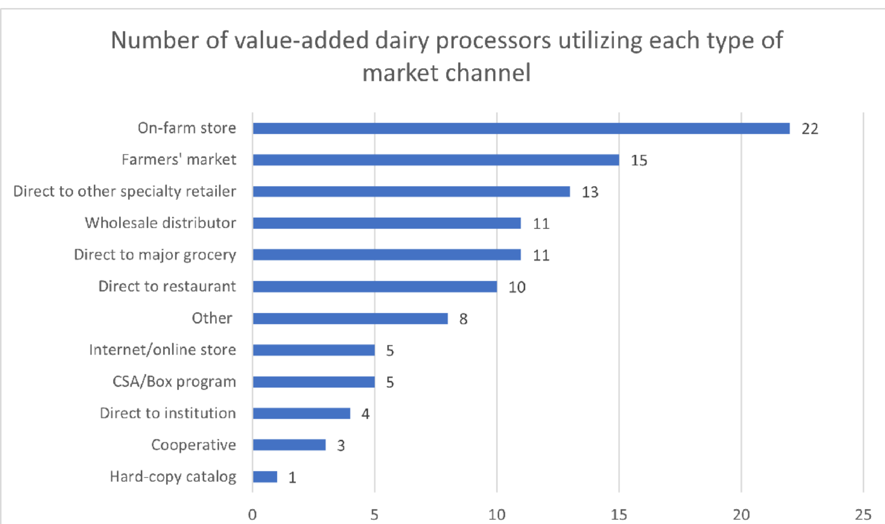

Image 5. Market Channels Utilized

The majority of small-scale processors reported using a combination of market channels, however, a few used one market channel exclusively for the sale of their dairy products. Market channels that had exclusive use included direct to restaurant, direct to major grocery store, and wholesale distributor. The fact that most processors utilized multiple market channels however reinforces the need for small-scale processors to be knowledgeable about building relationships, trends, and marketing through each type of channel. This became particularly important when markets shifted in response to COVID-19 as marketers of all types saw their restaurant, institution and wholesale sales dramatically drop or disappear altogether, forcing them to quickly pivot to alternative channels.

Recipients were asked to rate the usefulness of different marketing tools on a five-point scale from extremely useful to not useful at all. If they did not use a marketing tool, respondents were able to indicate such. Word of mouth was rated by the most respondents

(32) as being extremely or very useful, followed by sampling and social media, 16 and 12 respondents, respectively. The use of hardcopy marketing materials (brochures, rack cards, mailed newsletters, etc.) was reported to be the least effective with 15 respondents rating this tool as moderately useful and 10 rating it as either slightly useful or not useful at all. E-newsletters were the least used digital marketing tool. Email newsletters were not used by 23 respondents, the greatest number of respondents indicating that they did not use a listed tool. Eleven respondents did not have a website and 10 respondents indicated that they did not use social media. The sizable number of respondents not having websites or using social media could be reflective of the potential that a substantial number of respondents were plain sect (e.g. Amish, Mennonite), however, the survey did not ask about this.

There are several certifications that dairy processors can apply for and use on their product labels. The certification most cited as being on the labels of dairy products is PA Preferred, indicated by 12 respondents. Other certifications being used, but by fewer respondents include Organic (6), Non-GMO Project Certified (4), Kosher (2), and Animal-Welfare Approved (1).

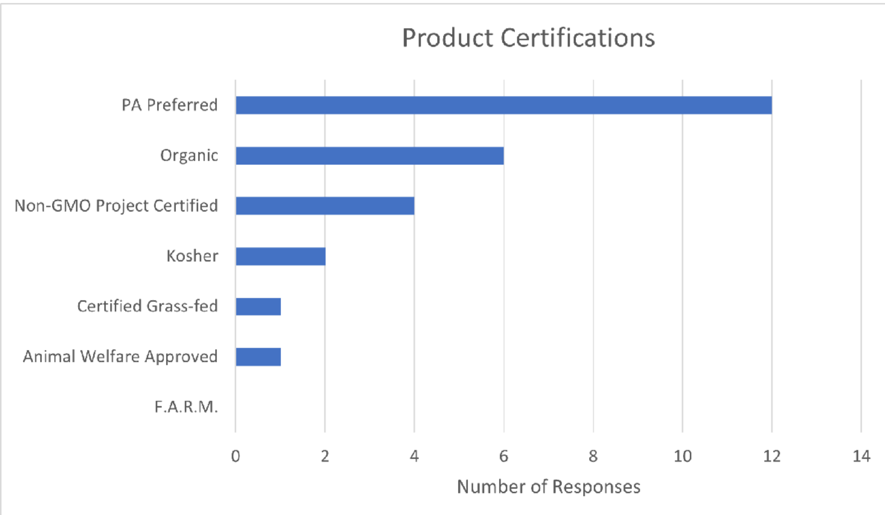

Image 6. Product Certifications

Words and phrases can be used by processors on product labels and packaging in an attempt to connect with the customer as long as claims are presented within the regulatory statutes set forth by the Food and Drug administration. These words and phrases can address aspects from how animals were cared for, production practices used, to values held by the farm business, and so forth. The National Dairy Council has published a Quick Reference Guide to Nutrition Claims for Dairy Products that addresses not only health and nutrition claims, but also the use of claims such as "fresh," "natural," and "grass-fed" among others.

Dairy processors were asked to indicate, from a provided list, the words or phrases they used to promote their products. "Local" was used by the most (34) respondents. The six next most used words or phrases were family farm (18), artisan (17), healthy (17), hand-made (15), PA Preferred (13), and grass-fed (11).

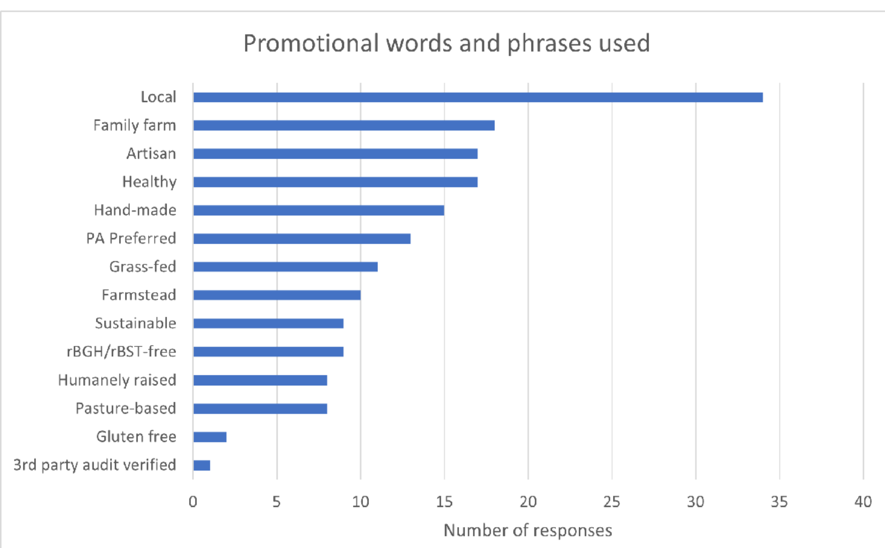

Image 7. Words and Phrases Used for Product Promotion

The high use of the word "local" is well justified by consumer research. For example, in a study from the University of Vermont that looked at consumer preferences for various cheese attributes, the researchers were able to group consumers into either a price-sensitive group or a quality-seeking group. Both groups had the highest willingness-to-pay (WTP) for cheese marketed as local, even though the premium percentage they were willing to pay for the local attribute differed (26.5% estimated WTP premium for the quality-seeking group and 7.3% estimated WTP premium for the price-sensitive group) (Wang, Thompson, and Parsons).

Respondents were invited to indicate words or phrases that they used but that were not on the list supplied. Some of the additional promotional words and phrases included "natural," and "free-from" claims such as preservative-free, no artificial colors, GMO-free, artificial hormone-free. When asked for promotional words or phrases they would like to use, but can't, two respondents indicated that they would like to market their milk or products as A2 (a gene found more predominately in colored breeds such as Jersey).

Challenges

Operating a value-added dairy enterprise, particularly if being done in addition to dairy farming, requires processors to juggle and manage numerous responsibilities. Survey recipients were provided a list of business operation aspects and asked to rate how challenging they found each on a five-point scale from "not challenging at all" to "extremely challenging." The three most challenging aspects, rated as either extremely or very challenging were reported to be:

1. marketing planning (14 respondents),
2. financial management (13 respondents), and
3. knowing/understanding regulations, distribution, and understanding consumer preferences and trends (each at 11 respondents).

Conversely, the least challenging aspects were reported to be product labeling, packaging, human resource/labor management, product pricing, and differentiating products from the competition.

Additionally, 16 of 37 respondents (43%) agreed or strongly agreed that they had access to all needed resources to undertake a value-added dairy business venture in Pennsylvania, highlighting the need to provide more support to this growing subset of the Pennsylvania dairy industry.

Guidance and Financial Assistance

Almost all respondents (36 of 38/95%) indicated that they received outside assistance before undertaking their value-added dairy business. Most, 30 respondents, reported that they spoke with other producers already processing value-added dairy products. This was followed by working with an independent consultant and performing online research, which 9 and 7 respondents reported doing respectively. Sources of assistance not listed on the survey but reported by respondents included summer internship/apprenticeship, S.C.O.R.E, and Pasa field day events.

Starting a value-added dairy business is capital intensive and 26 of 35 (74%) respondents indicated that they had received financial assistance at some point during the past five years. Traditional business loans were the most utilized form of financial assistance, by 15 respondents. Low interest loans were utilized by 6 respondents while USDA value-added grants, PA Dairy Investment Program and Small Business Administration were sources of funding for three respondents each. Finally, three respondents provided written in answers of financial assistance being provided to them by shareholders, family, or private individuals.

Production Outlook and Advice for Other Dairy Farmers Considering Starting Small-Scale Processing

Overall, survey respondents had a positive outlook for their businesses for the next five to ten years. 31 respondents indicated that they felt the amount of value-added dairy products they will produce will increase, 7 respondents, anticipate production to remain stable, while 1 predicted a decrease.

Recipients were asked what advice they might office to other dairy farmers considering on-farm/small scale dairy processing. Most comments stressed the importance of marketing and expense management; this aligns with the areas that they indicated as being most challenging. Comments included the following:

- Be sure you have sufficient market potential
- Don't overspend before you find a market
- Do your research. Understand marketing is a full-time job. If possible, start small. Low overhead. Low debt and grow as markets develop.
- Make sure you have outlets through which to market and sell your products before beginning.

- Be optimistic, but also realistic. Start small and plan for growth. Don't make more debt than what you can afford to lose should your venture fail.

Summary

This survey, while limited by the number of responses, provides a unique view of Pennsylvania's value-added dairy industry. On the one hand, value-added processing is providing a vision and opportunity for the vast majority of respondents to remain in Pennsylvania's dairy industry. However, it's concerning that less than half felt that their family's quality of life has been improved as a result of processing value-added dairy products. With marketing and financial issues topping the list of challenges faced in operating their businesses, as well as dominating the advice for other dairy farmers considering value-added dairy processing, it may be these relatively new-to-them and time intensive responsibilities are affecting their view on the quality of life. However, survey responses indicate that while the processors find marketing and understanding consumer preferences and trends challenging, their decisions regarding types of value-added products to produce and language used in their marketing is on target with national consumption trends and consumer research findings.

Reader Survey

Please provide your feedback on your take-aways from this article.

References and Resources

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