

The Status and Prospects for the Wisconsin Dairy Goat Sector

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Any errors or misunderstandings in the report are solely the responsibility of the author.

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Executive Summary

The Wisconsin dairy goat industry is a diverse, vibrant and robust sector that has grown rapidly over the last decade. Goat milk output has increased several-fold in the last ten years, and retail markets for goat cheese appear to be increasing at double-digit annual rates. The most recent data shows just over 200 licensed farms in Wisconsin in 2009. According to 2006 numbers, Wisconsin dairy goat farms were milking an average of 118 does that produced 1,416 lbs. On average, Wisconsin dairy goat farms were both larger and more productive on a per animal basis than farms in any other state except Iowa.

Despite the strong growth of goat dairy farming in Wisconsin, producers face significant challenges. While some producers report adequate levels of earnings to sustain their enterprises, recent detailed farm financial analyses suggest that many farms are unlikely to generate consistently competitive returns to farm operator's labor, management and capital. Producer interviews highlight a number of particular obstacles to improving the production and marketing of milk. Production obstacles include a lack of reliable production records in the industry, the unavailability of clean and productive goats to start new goat operations, and herd health and milk quality problems. On the marketing side, producers find a lack of strong competition for farmers' milk among regional commercial processors, difficulty developing breeding stock markets due to unwillingness of producers to pay premium prices for quality genetics, and challenges in finding markets for or economically viable methods to dispose of billy kids.

Like its producers, Wisconsin's goat milk processors make up a strong and diverse sector. While three main commercial processing plants in the area provide markets for the vast majority of Wisconsin's goat milk, the state likely has more goat milk buyers and processors than anywhere else in the US, many of which are smaller artisanal or specialty cheese plants and farmstead cheese producers. Moreover, most processors appear to be financially successful, and markets for goat cheese continue to be strong (despite the recent economic downturn). The concerns facing goat milk processors are: a high rate of turnover among dairy goat farms, difficult economics of dealing with many small producers, and milk quality problems that can affect the quality and yield of cheese products.

The future of the Wisconsin dairy goat industry will rely on resolving a number of key issues. Those issues include high producer turnover rates, low and seasonal production, a milk pricing system that does not encourage innovation, and a lack of research and outreach support from the University and Extension. The recent hiring of a goat dairy Extension Specialist is a very positive step towards resolving this issue.

INTRODUCTION

Published data suggest that Wisconsin has the largest dairy goat herd inventory in the United States, and this industry has seen significant growth in production of goat milk-based cheese in recent years. However, there are three key uncertainties that will determine the future expansion of this sector. First, there appear to be difficulties coordinating goat producers to provide a consistent supply of goat milk of predictable quality to dairy processors. Second, the prices received by producers for their products may be below full economic costs of production, threatening the long-term viability of larger commercial production units. Finally, there are questions about the impacts of the current national economic crisis on demand for goat milk products. To the degree that these products are consumed as luxury or premium products by consumers, there is a serious (and as yet undocumented) risk that recent growth in goat product markets may be reversed.

The research described in this report sought to address these three uncertainties by conducting qualitative interviews with a number of key actors in the dairy goat product chain – including producers, processors and distributors. The interviews assessed current conditions and recent trends in the goat dairy industry, and invited respondents to discuss their expectations for changes in these markets in the near future. Results from these in-depth interviews were combined with a review of previous studies and data to identify important opportunities and obstacles to the expansion of this industry in Wisconsin. The report is also designed to provide guidance to university researchers and extension staff who want to direct more of their efforts toward supporting the needs of the dairy goat industry.

STUDY METHODS

This study used a wide range of data sources to support the findings and recommendations discussed in the report.

Secondary Data

Initially, a number of published public data sources were used to create a record of the historical evolution and current profile of the U.S. and Wisconsin dairy goat industries. These sources included data from the periodic U.S. Census of Agriculture, annual estimates published by the USDA National Agricultural Statistics Service, and special research reports conducted by industry groups, state agencies and university researchers. While information is available from a diverse array of sources, there are no single reports or easily accessible datasets that can be used to trace the development of the Wisconsin dairy goat industry. In the next section of this report, data from these various sources are combined (often for the first time) to provide a more consistent and comprehensive picture of the industry. A full list of data sources and reference articles is included in the bibliography.

Fieldwork Methods

The various sources of secondary data were complemented by interviews with key actors in the Wisconsin dairy goat sector. The initial interviews involved exploratory background conversations with selected individuals who have detailed knowledge of the history and current status of the industry. Next, systematic field interviews were conducted with key informants

representing different segments of the industry. A list of potential key informants was compiled during the exploratory phase of the project, and individuals were selected for interviews using a purposive sampling strategy. Specifically, the sample was designed to represent a diverse range of dairy goat farms (in terms of size, geographic region, and marketing strategy), representatives of the major goat milk processing businesses active in the state, and other individuals who have deep and long-term familiarity with the state goat dairy sector.

The field interviews were conducted both face-to-face and over the telephone using a semi-structured interview schedule. Each respondent was given a background sheet describing the project, informing them of risks and benefits of participation, and confirming that their participation was voluntary. The individual identity of interview respondents is not reported here to protect the confidentiality of their information. Interviews typically lasted 90 to 120 minutes.

Interviews focused on a range of topics including:

- 1) The respondent's current and past relationship to the Wisconsin goat dairy industry;
- 2) The motivations for the individual's decision to get involved in the goat dairy sector;
- 3) Perceptions about the current status and future of the Wisconsin goat dairy industry;
- 4) Information about the current importance of university research and extension programs for key actors in the goat dairy sector, and ideas about possible research and training projects that would benefit these actors.
- 5) In addition, goat farmers were asked detailed questions about:
 - a. Characteristics of their goat dairy farms, including size, trends, and production practices
 - b. A list of major production, marketing, and other challenges.
- 6) Individuals working for the goat milk processing industry were also asked about the current status and prospects for growth in goat product markets.

Brief Profile of Interview Respondents

Detailed interviews were conducted with 16 individuals during the spring and summer of 2009. These individuals included the following categories (numbers do not add up since some people are listed in more than one category):

- 2 state agency employees
- 9 active dairy goat farmers – with herd sizes ranging from 8 to 480 milking does
- 1 retired producer
- 5 representatives of major goat milk processing companies or farmstead cheese producers
- 1 veterinarian

Generalizability

The small sample size and non-random sampling approach means that the results of this study cannot be used directly to estimate characteristics of the full population of Wisconsin goat dairy industry participants. However, the in-depth nature of the interviews allows us to understand the motivations of key actors, the relationships among various segments of the industry, and the nature of key challenges and opportunities facing the sector (often better than could be done using large-scale random sample surveys). Fortunately, recent surveys of the industry allow us to contextualize the findings of this study and were used to ensure that key subgroups were represented in the interviews.

HISTORICAL DEVELOPMENT OF WISCONSIN DAIRY GOAT SECTOR

Emergence and Growth of the US and Wisconsin Goat Milk Industry

Goats are widely used in livestock systems throughout the world, and world production of goat milk exceeded 12.5 million tons in 2001 (FAO 2001). In some developing countries, goats are more important than cows, pigs, or sheep as a source of meat, milk, fiber or leather (Haenlein 1996). Worldwide, goat numbers and goat milk production has increased much more rapidly than other livestock species, though goat milk only represented 2.2% of total world milk output in 1999 (Table 1).

Table 1: Worldwide importance of goats and other mammalian farm animals, 1980 and 1999.

	1980	1999	% Change	% 1999 total
Animal Numbers				
(Million animals)				
Goats	458	710	55.0	16.9
Buffaloes	122	159	30.3	3.8
Pigs	796	913	14.7	21.8
Cattle	1,216	1,338	10.0	31.9
Sheep	1,096	1,069	-2.5	25.5
Total	3,688	4,189	13.6	100.0
Milk Production				
(1,000 Metric tons)				
Goats	7,720	12,161	57.5	2.2
Buffaloes	44,296	60,334	36.2	10.8
Cattle	423,034	480,659	13.6	85.7
Sheep	7,887	8,026	1.8	1.4
Total	482,937	561,180	16.2	100.0

Source: Adapted from Haenlein 2004, data originally from FAO, 2001.

Goats have always been a relatively minor part of the U.S. agricultural sector overall, and the overwhelming majority of goats in the United States have been raised for meat production, which is largely targeted at Hispanic and other ethnic markets (Dubeuf et al. 2004). For example, in 2009, milk goats comprised just 11 percent of total goat inventories in the U.S. Texas is by far the most important goat meat producing state, with roughly 40% of the U.S. inventory in 2009 (NASS 2009).

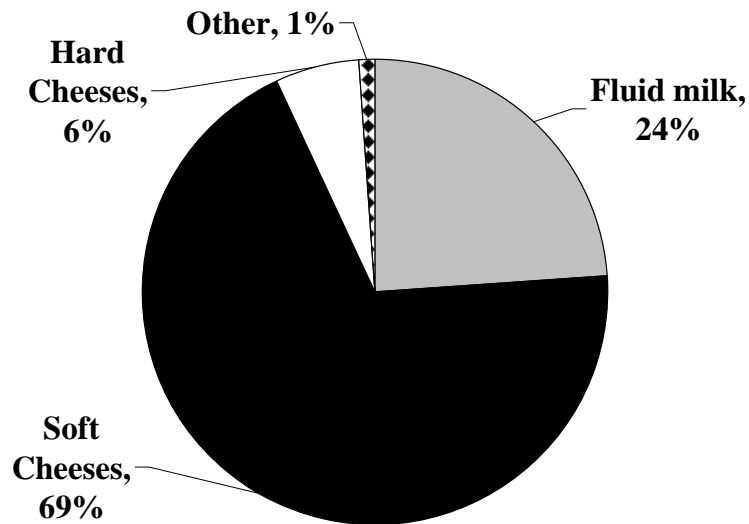
Beginning in the 1960s, a small but growing segment of U.S. producers became interested in goat milk as a health substitute for cow milk, particularly for people with cow milk allergies or other digestive afflictions (Haenlein 2004). However, the market for fluid goat milk in the United States has always remained relatively small. Serious growth in demand for goat milk really began in the 1980s, with the rise of interest in gourmet foods, particularly specialty and artisan cheeses. Growth in the raw milk and goat cheese markets in developed countries helped create a critical mass of goat producers in Europe and the United States, and has led to the formation of several formal dairy goat farmer associations, and significant progress in the

development of more highly productive dairy goat breeds and efficient milking management practices (Haenlein 2007). By the mid-1990s an estimated 50 percent of U.S. goat milk was used to produce cheese, with the rest consumed as fluid milk on-farm or through specialized goat milk market channels (Haenlein 1996).

The specialty goat cheese market has continued to expand in the United States and accounted for an estimated 75% of the goat milk processed and sold in 2008 (See Figure 1). Most goat cheese produced in the United States is soft cheese (often called 'chevre'), though hard 'aged' cheeses are becoming more popular. Soft goat cheeses have long been sold locally at farmers markets and natural foods stores, but recent years have seen rapid growth in the handling of soft cheese by major food distribution companies and are now available in most retail grocery store chains. Hard goat cheeses are most widely available in specialty stores, high-end groceries, and used by gourmet chefs at upscale restaurants in major metropolitan areas. Changes in federal law have allowed the production of 'mixed' cheeses, which combine goat milk with sheep and/or cow milk to produce blended milk products similar to popular European varieties.

A recent survey of U.S. goat milk processors indicated that goat milk products are being made across all regions of the United States, though regional differences exist in the scale of processing operations and the mix of products (NASS 2008). Goat milk processors in the United States obtain most of their milk within 100 miles of the processing plant, which suggests that geographically concentrated clusters of goat farms are an important component of a viable goat milk processing industry. By contrast, other than small farmstead operations that produce their own milk and cheese, most commercial goat milk products are sold more than 100 miles from the processing plant. The survey also suggests that most goat processors are optimistic about their future, with the overwhelming majority reporting plans to increase plant capacity in the next five years. Reports from key informants in this study suggest that the market value of goat milk product sales has increased roughly 20 percent annually for several consecutive years, and that market sales appear to be strong despite the recent economic downturn.

Figure 1: Utilization of Goat Milk by Processors in the United States, 2008

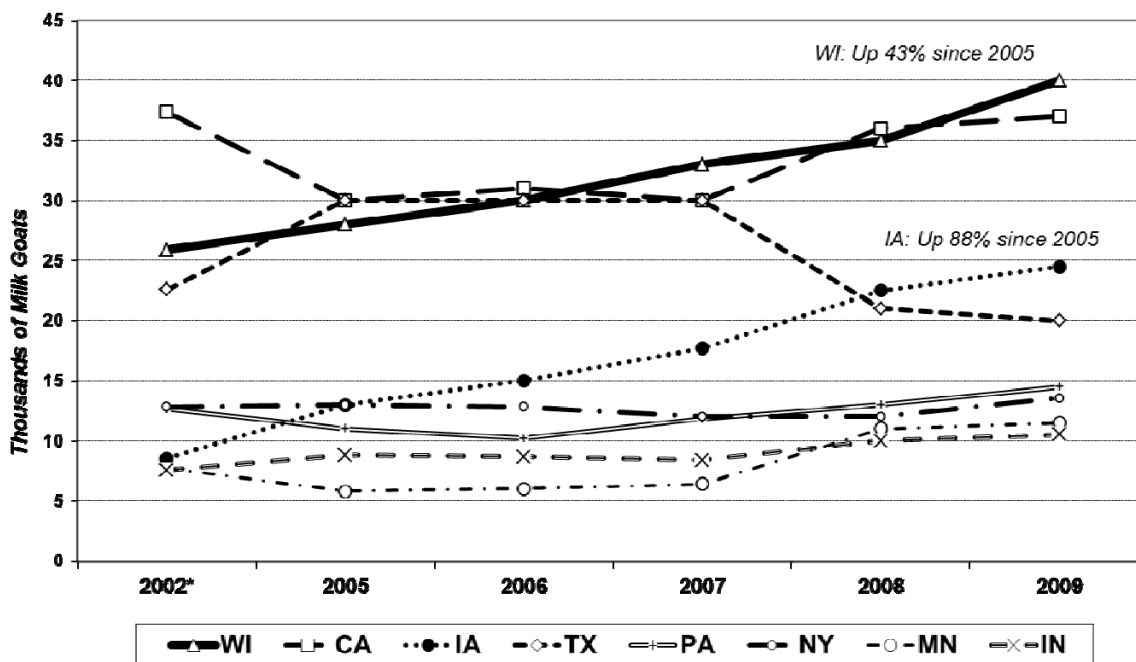


Source: NASS 2008.

The growth in goat cheese markets is also associated with a rapid rise in the number of farms with milk goats, milking goat inventories, and the gallons of goat milk produced in the United States in recent years. Estimates from the U.S. Census of Agriculture suggest that total milk goat inventories increased almost 4-fold between 1978 and 2007 (Table 2). While data on goat milk sales have not been reported in over a decade, U.S. goat milk sales increased by over 400% between 1978 and 1997 alone, and rough estimates suggest that it has more than doubled between 1997 and 2007 (to over 20 million gallons).

Wisconsin has long been an important part of the national goat dairy industry, though its prominence has increased significantly in the last 10-15 years (See Appendix I). In 1987, for example, Wisconsin ranked 7th in the nation for the number of farms reporting goat milk sales, 4th in total milk goat inventory, and second (to California) in total gallons of goat milk sold. By 1997, Wisconsin's total goat milk output was approaching California, and while published data are hard to find, it is widely accepted that Wisconsin became the nation's top producer of goat milk in recent years. One indication of the growing significance of Wisconsin's goat dairy farm sector is the trend in total milk goat inventories for the top six states between 2002 and 2009 (Figure 2). Recent government estimates suggest that Wisconsin had more milk goats in January 2009 than any other state in the United States. Moreover, their rate of growth is more consistent and more rapid than most other important states. Figure 2 also shows the rapid growth of the dairy goat sector in Iowa, which has increased more rapidly (in percentage terms) since 2005 and is now the 3rd ranked state for milk goat inventory. A seven-state region centered on Southwestern Wisconsin (WI, MN, IA, MO, IL, OH and MI) now contains one-third of all U.S. milk goats.

**Figure 1: Milk Goat Inventories by State, 2002-2009
Top 8 US Goat Dairy States**

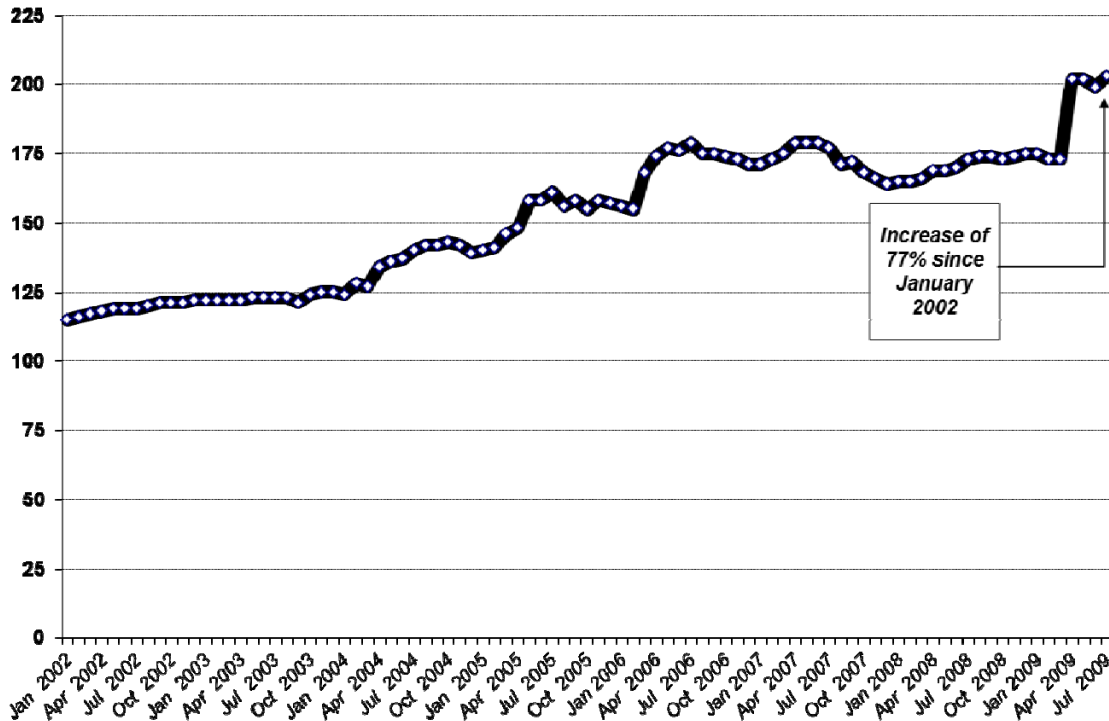


The size and diversity of the Wisconsin dairy farm sector was summarized in a recent study by the Wisconsin Agricultural Statistics Service (2006). This study suggested that there were 165 farms producing and selling over 27 million pounds (or roughly 3.4 million gallons) of goat milk in 2006. Of these farms, roughly half were relatively small farms, milking fewer than 100 does. Herds with over 100 milking does, however, accounted for over 70% of the milking doe inventory and almost 80% of the total goat milk production. The results also suggest that most goat milk is sold to commercial processing plants with operations in Wisconsin.

There appear to have been many new entrants into the goat milking business in recent years. The WASS study found that forty percent of dairy goat farms had been in business for two years or less. However, most of these recent entrants are relatively small operations. Most of the larger goat herds are farms that have been in business for more than 5 years. When asked about their future plans, very few Wisconsin operators indicated plans to downsize or discontinue production in the next five years. At the same time, few farms indicated a desire to continue milking at the same scale. Rather, almost three-quarters of the farms overall (and over 90 percent of farms with more than 200 milking does) reported plans to increase their herd size by at least 10 percent.

Recent trends in the Wisconsin goat dairy sector also can be seen in monthly reports of the number of farms with a license to sell goat milk (Figure 3). The total number of licensed goat dairy farms increased by 77 percent (to over 200 operations) between January 2002 and July 2009, though small seasonal increases and decreases are seen in most years. Given that 65 Wisconsin farms reported selling goat milk in the 1978 US Census of Agriculture, total goat milk farm numbers can be said to have more than tripled over the last 30 years.

Figure 3: Monthly Total Number of Licensed Goat and Sheep Milk Dairy Farms in Wisconsin, 2002-2009



Source: Wisconsin Department of Agriculture, Trade and Consumer Protection.

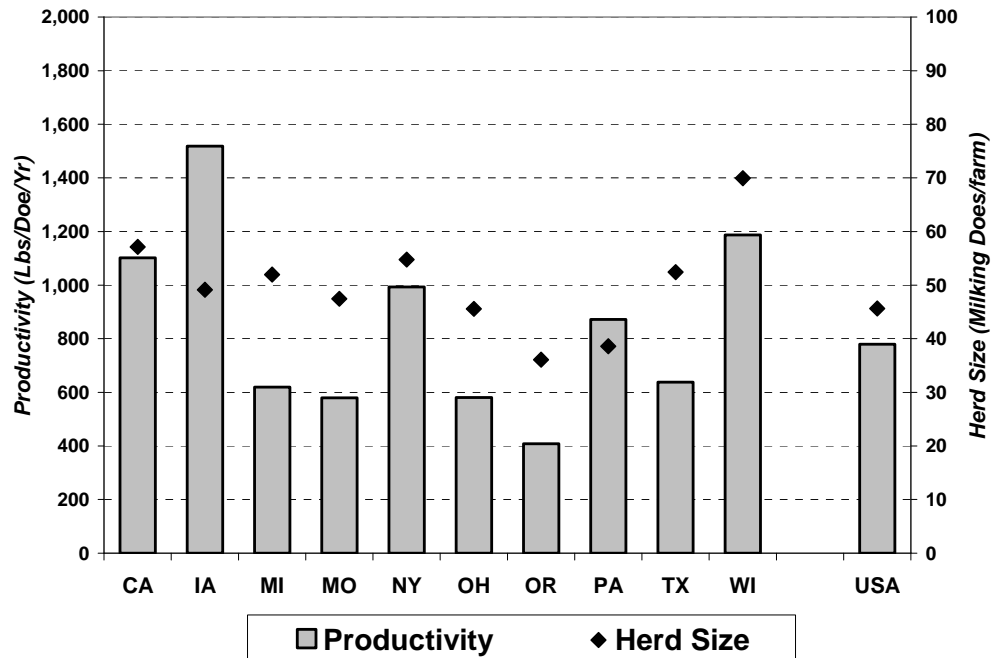
Wisconsin dairy goat farms appear to have larger herd sizes and be more efficient and productive (on a per farm and per milking doe basis) compared to producers in most other important dairy goat states. The WASS study estimates that the average Wisconsin dairy goat farm milked 118 does and produced 1,416 pounds of milk per doe in 2006. Larger operations had higher herd averages; farms with over 200 does produced an average of 1,621 lbs/year. By contrast, a recent survey of dairy goat farms in New York State (NYSDAM 2007) suggested that typical farms milked just 35 does and average annual production per goat was close to 1,000 lbs in 2004 (the largest farm size category averaged just 1,280 lbs/doe/yr). Wisconsin's relative advantage in herd size and productivity is also apparent in historical reports of farm inventories and output. For example, rough estimates based on data from the 1997 Census of Agriculture (Figure 4) suggest that Wisconsin's per doe average was close to 1,200 lbs/doe in 1997, higher than every other dairy goat state except Iowa, and more than 50% higher than the national average¹.

While average goat milk producers in Wisconsin may be larger and more productive than most other states, it is clear that the statewide average of 1,416 lbs/doe/year is much lower than is technically possible. For example, herd averages achieved by the state's top farms are reported to regularly exceed 2,000 lbs/doe. Similarly, data from dairy herd production testing

¹ Estimates of productivity from 1997 Census data require the assumption that milking does comprise 63% of the total milk goat inventory in the state. The estimated U.S. average of 780 lbs/doe/year is consistent with levels of productivity reported in Haenlein (1996) and reports.

records² in the 1990s suggests that most important dairy goat breeds were already producing an average of 1,600-2,100 lbs/does, and record production levels for individual animals were more than three-times that amount (Haenlein 1996).

Figure 4: Relative Milk Goat Herd Size and Productivity, Various States, 1997 Census



State Goat Industry Initiatives

Wisconsin’s dairy goat producers organized their first producers group in the 1930s. The Wisconsin Dairy Goat Association (WDGA) now claims more than 75 members, maintains a website and newsletter to share resources and news about dairy goat industry topics (www.wdga.org), and sponsors field days, research projects, and regular goat industry conferences and dairy goat shows.

The growing size and importance of the Wisconsin dairy goat milk industry led to several major initiatives to encourage the further growth and expansion of the sector. Specifically, in 2005 the Wisconsin Department of Agriculture, Trade and Consumer Protection (WI-DATCP), in partnership with the WDGA and with federal funding from the Wisconsin Value-Added Dairy Initiative, established a “Wisconsin Dairy Goat Initiative” (WDGI). The goal of the WDGI was to develop a statewide plan for information, education, and support of the industry, including university research and extension programs, curriculum development by the Wisconsin Technical College System, and other outreach and education programs for farmers, processors, lenders, veterinarians, and others who work with the industry. The WDGI was facilitated by

² It is important to note that a very small fraction (approximately 1%) of the U.S. goat dairy herd participates in dairy herd improvement testing programs (Haenlein 1996).

staff at the Wisconsin Farm Center in the WI-DATCP and experts at the Dairy Business Innovation Center, a nonprofit dedicated to growing specialty, farmstead, and artisan dairy processing businesses.

The WDGI created a steering committee of producers and processors, and in February 2006 held a meeting of steering committee members and partners to identify concerns and needs of the Wisconsin dairy goat industry. Although dozens of concerns were listed by producers and processors, the topics voted as highest priority were (a) milk price too low to cover costs of production; (b) a need for education/research on dairy goat nutrition (since most research is on cows); (c) a need for expanding marketing of goat milk products; and (d) problems with somatic cell count tests for goats. In response to these concerns, representatives of various public and private agencies and organizations outlined possible resources or actions that could be used to assist Wisconsin's dairy goat industry. This information was used to develop a list of projects that could be energized through the WDGI.

In July and August 2007, the WDGI sponsored a series of 'Discovery Sessions' with producers and processors around the state. The goal of these sessions was "to share information about the goat industry in Wisconsin, identify existing resources that could be tapped to support this emerging and growing industry, and discuss ideas for creating additional infrastructure. A total of 48 people participated in three Discovery Sessions.

The published report from these sessions listed the following findings:

- Producing isn't a problem, its marketing
- Don't push people to produce more, let the demand push the supply
- Volume is not the goal, quality is
- Avoid herd health problems by knowing and watching animals

Recommendations included a wide range of possible projects or activities, including:

- Develop better infrastructure, including building connections among producers, developing marketing networks, and increasing producer knowledge of industry norms
- Expand the knowledge base of goat dairy production practices, by finding experienced farmers to serve as mentors, facilitating producer networks, and developing public education programs. Some possible topics might include grass-based production, low-cost disease prevention techniques, information on drug dosages for goats, and nutrition.

In the ensuing three years, the WDGI and WDGA developed and implemented a number of important projects to address the needs of the industry. This included organization of an annual statewide dairy goat industry conference, first held in February 2007, organizing an extensive series of on-farm field days with goat dairy producers, working to develop and maintain current information about dairy goat topics on the WDGA website, creating regional producer networks, and hosting an electronic email list-serve for the exchange of information among Wisconsin dairy goat producers. In addition, the WDGI facilitated working meetings among goat dairy industry representatives and university researchers to develop a proposal for creating a research dairy goat herd within the University of Wisconsin system.

The WDGI also facilitated the development and publication of two detailed resource guides for goat dairies. These include a report on "Starting a Dairy Goat Business" that includes

articles written by various industry experts (WDATEP 2008) and an extensive guide to “Best Management Practices for Dairy Goat Farmers” (Hedrich, Duemler and Considine 2008). Both reports have been made available through the WDGA website.

In addition to the activities of the WDGI, a number of producers have received funding for dairy goat-related projects through the state Agricultural Diversification and Development (ADD) grant program. Since 1989, a total of 6 projects received over \$82,600 in seed grant funding to develop dairy goat milk markets and products. Another \$31,400 was spent on 2 projects to improve markets for goat meat products.

Economics of Wisconsin Goat Dairies

Three or four major commercial buyers (see processing section) dominate the Wisconsin commercial dairy goat milk market, and virtually all producers are paid on annual or multi-year contracts. This system provides stability and predictability to producers and processors, who set pay prices, quality and component premiums, and transportation charges on an annual basis. While detailed information is not publicly available, most respondents indicated that the average pay price for goat milk has increased only modestly since the 1990s. Estimates of U.S. national goat milk wholesale prices at the farmgate ranged from \$12 to \$44 per cwt in 1991 (Haenlin 1996). Meanwhile, the two detailed financial studies of Wisconsin goat farms listed below report average pay prices of \$27.48 in 2004 and \$32.30 in 2007, while a statewide survey of goat dairies in 2006 reported an average pay price of \$27.90 (WASS 2006). Dramatic spikes in feed and energy costs in 2007 and 2008 contributed to an increase in average pay prices to between \$32 and \$34 per cwt in recent years (Hendrickson, 2009). Most processors pay a significant bonus (up to \$6/cwt.) for winter milk when most herds dry up for a few months.

There are only a few research studies that do a full accounting of the economics of the goat dairy industry in the upper-Midwest. This is in part due to the small number of producers and in part the lack of focus from research universities in the region until recently. In addition to the small sample sizes of most studies (including this one) there are many difficulties from an economic standpoint of measuring the true economic costs of operations such as goat dairies that use family labor and farm assets (barns, land, dwellings) that has costs and returns for the individuals that differ from local prices.

The WDGI conducted a recent detailed financial analysis of ten experienced Wisconsin dairy goat herds. Results from the first year of data (based on the 2007 calendar year) were published in October 2008 (Dietmann and Tranel 2008). Results of the profitability analysis which accounted for full labor and investment costs showed that most producers had very low financial returns in 2007. The average goat dairy received \$32.30 per hundredweight (cwt.) for milk. However, this income barely covered cash expenses, and the estimated total ‘economic costs of production’ (including charges for unpaid labor and capital investment) were over \$49.00 per cwt.³ There was considerable variability in the performance of individual farms, but only two of the ten dairies in the study reported positive economic net returns.⁴

³ A similar study by McDonnell and Rainey (n.d.) of 14 Wisconsin dairy goat herds using data for the 2004 calendar year generated estimates of gross farm income of \$31.84 per cwt, with cash expenses of \$26.88 per cwt. After adjusting for depreciation of capital investments, net farm income to unpaid labor and management was close to zero among their study farms.

⁴ It should be noted that most small-scale family run cow dairy farms would also be found to have low to negative profits by the metrics used in these studies. And yet, the small dairy sector continues in Wisconsin reasonably well.

Some of the explanation for low economic performance was attributed to high costs of feed and energy inputs in 2007, but the authors conclude that milk prices are probably too low to cover economic costs for even the most efficient producers in the study. Their report concludes that efforts to improve goat genetics and record keeping are essential to raising per-doe production and farm profitability. However, they also believe that the high rate of turnover and low barriers to entry mean that there is a continuous stream of inexperienced producers who are willing to subsidize their farms with off-farm income, which inhibits the development of better industry production practices and provides sufficient milk for processors without having to raise milk prices. Overall, they conclude that “the industry is in trouble...there are some fundamental issues in the goat dairy industry that are detrimental to its financial health.” The evidence presented below from our interviews with dairy goat producers, however, suggests a fair amount of vitality and staying power within the industry.

To help producers develop better business plans and identify areas for improvement, the Center for Integrated Agricultural Systems at the University of Wisconsin developed sample goat dairy farm budget spreadsheets. These spreadsheets have been posted to the WI-DATCP website (http://www.datcp.state.wi.us/mktg/business/business_resources/index.jsp).

RESULTS FROM FIELD INTERVIEWS

FARMER PERSPECTIVES

Farmer Respondent Profiles

Nine of the field interviews involved people who actively milked goats. These goat farms represented a wide range of scales, came from diverse backgrounds, and have developed different production and marketing strategies to ensure their survival.

Scale

The interviewed farms included two *small scale farms* (8-20 milking does) that tend to emphasize on-farm processing and marketing of farmstead cheeses. In each case, there is a much greater focus on capturing value from cheese production than in generating sufficient income from the sale of milk.

Most farms in the sample milked larger herds and sold their milk under annual contracts to commercial milk processors. These farms tended to fall into two sub-groups: *medium-sized farms* (140-200 milking does) that generally emphasize high productivity per doe, but which tend to produce seasonally; and *large farms* (440-480 milking does) that are built to produce high volume either from expanding herd size, increasing per-doe output, or both, and which more frequently emphasize the importance of breeding some of their herd out of season to facilitate year-round production.

Backgrounds

People in the Wisconsin goat industry come from a diverse set of backgrounds and experiences. Almost all of the interviewed goat farmers had some type of farm background, though one farm involved people with no farming experience prior to milking goats. While six of the farms had operators that had grown up on a cow dairy farm, only two of the respondents

actually milked cows prior to beginning a goat dairy operation. Another operation consisted of a family that had extensive grain farming experience, but that had not run a dairy before. Several respondents (including both of the ex-cow dairy farmers) felt that people with experience in cow dairying had some advantages over people that did not have this background. These advantages include familiarity with the nuances of dairy production practices and livestock management, more personal connections to farm input or service suppliers, and – most important in most people’s minds – a more realistic set of expectations for the income levels and lifestyle associated with running a goat dairy business.

Pathways to Goat Farming

Several of the interviewed farms first got involved in goats as a hobby (often when their children raised goats for showing at county fairs or as part of a 4H project). However, most of the farms in the study began milking by actively purchasing one or more goat herds from another farmer with the intent of developing a commercial goat milk business. This path is not surprising since most large processors restrict the number of goat milk contracts, and the easiest way to get access to these markets is to pick up an existing herd and contract from an outgoing farmer. Almost all producers initially grew their herds by purchasing additional does from other flocks, and everyone has purchased new bucks to improve the genetics of their herd. Except for the two largest herds – that are both engaged in major expansions – most of the farms in this study have stopped bringing in outside does, and intend on building their herds by keeping their own doe kids as replacements.

Most farmers indicated that they had spent significant time touring other goat farms before they started milking in order to get ideas about the best way to set up housing and milking facilities. However, they also expressed the view that they had to learn by trial and error many of the details of managing herd rations and animal health, developing an efficient milking routine, and fine-tuning their housing and manure management arrangements.

Positive Aspects of Goat Dairy Farming

All of the farmers interviewed expressed a number of very positive aspects of milking goats for a living. Some of these involved generic benefits associated with being a family farmer – such as the ability to be your own boss, to live in the country, to work alongside a spouse, or to teach children the values of hard work and responsibility. A number of goat milk farmers had given up off-farm jobs or careers in order to return to a farming way of life.

In addition, there were aspects of goat farming, specifically, that were appealing to these respondents. Many people mentioned that goats offer several advantages over cows as a dairy animal. These include less physical work and a reduced risk of injury, much lower capital investment for buildings and equipment, and lower land requirements associated with a viable sized goat milking operation. In addition, the nature of goat milk markets, which is dominated by fixed annual contracts, provides less risk and more predictability than cow milk markets. Several respondents indicated that the fact that the goat sector is relatively new and undeveloped represents a challenge and creates a strong sense of accomplishment among those who are able to succeed in the industry. As one person said, “there is nobody to tell you the right or wrong way to do it.”

While all respondents expected their farm to make a profit, only one of the respondents entered goat farming because they felt they could make more money than they could doing other types of farming or from nonfarm jobs. Most respondents expressed a mix of financial versus non-financial motivations for evaluating their reasons for milking goats. For example, one producer noted that they “wanted to farm and live in the country, to spend time working with my spouse and kid...we don’t plan on getting rich, just supporting the family; it’s a great life – both of us can be home. We really like the goats and it never gets boring – we are still learning stuff.”

Challenges Associated with Goat Dairy Farming

While everyone listed a number of positive aspects of being a goat dairy farmer, the respondents also identified a number of current and future challenges that affect their short- and long-term viability. These challenges generally fell into two categories: production practices and market conditions.

Production Challenges

Interestingly, most of the producers interviewed in this project initially indicated that they were generally satisfied with their production management systems. They tended to feel that they had solved the most difficult production problems that had plagued their early years in the business. However, when pressed, there were several continuing production problems that emerged as common themes in the interviews.

Genetics

Easily the most common problem discussed by these goat farmers involved the difficulty in finding good genetics or breeding stock. This issue was manifest in several ways. Initially, most of these farms had great trouble building their initial herd without bringing in many animals that had health or production problems. This is because most goats available on the open market are cull animals or from herds that were unable to survive. Several people indicated that their biggest ‘mistake’ was unintentionally purchasing goats that had chronic diseases like caseous lymphadenitis (CL), caprine arthritis encephalitis (CAE); and johne’s disease. In most cases, producers blamed themselves for not asking enough questions about the goats they were buying, or not being willing to pay more for tested or ‘proven’ goat genetics.

A second problem with milk goat genetics reflects the fact that few producers in the industry keep good production records on individual does. As such, producers who purchase does or doe kids from other herds are usually unable to know what kind of milk production level to expect from these animals. It is interesting, therefore, that only two of the herds in this study have enrolled their does in a regular herd testing program. Several people noted that the cost of

“Starting with good breeding stock, that’s the biggest problem that I’ve seen over the years...they want to get into it and they buy the first group of goats they can come up with and ignore all the health issues that come with those goats that somebody is getting rid of. That puts most of those commercial dairy goat people behind the 8-ball with health problems that are going to basically make them get frustrated or financially force them out.” – long time industry observer

participating in a dairy herd improvement (DHI) testing program is much higher for goats than cows. The lack of good production records in the industry makes it very difficult to identify good breeding bucks. This is a problem since most of the case study farmers have decided to move towards a 'closed herd' where they find replacements or grow from within. To avoid inbreeding problems, these producers are anxious to find good bucks from other clean herds that can improve the milk production genetics of their own herd.

Milk Productivity and Scale

Related to genetics was a concern among most producers that they needed to find ways to improve their average milk output per doe. Most of the herds in the study reported production averages ranging between 6 and 8 lbs/doe/day. However, a couple of operations report average output that is nearly double this level. In all but the largest operations, the operators in these interviews felt that their milking herd size was quickly reaching the limit of what they could handle given their facilities and labor force. In these cases, it was widely acknowledged that their best way to improve profitability or net income was to get more milk from each doe in their milking string.

The three largest farms in the study combined an interest with improving productivity (per doe) with a desire to continue to increase the scale of their operation to a point where they could afford to bring other family members into the operation or to hire full-time help for the milking barn. These farms were all planning expansions to between 600-1,200 does. One of the mid-sized herds is also considering a major expansion in herd size that would require completely new facilities. Several of the other mid-sized farms expressed the view that they were not willing to expand since they did not want to borrow the necessary capital to build facilities and did not want to manage hired employees. It is clear that there is a particular herd size range, perhaps between 200-250 does, that represents a major threshold point in terms of growth and expansion. Beyond that point, most producers would likely need new facilities and full-time hired help, which would require milking many more does (perhaps 500-750) to be economically viable.

The smallest herds in the study milked less than 20 does and focused on farmstead cheesemaking as their economic profit center. Although there were no herds in the study that milked between 60-100 does, many of the processors and industry experts interviewed for this study indicated that herds of this size range did not tend to be viable economic operations, and were usually hobby farms that had major production and management challenges.

Out-of-Season Breeding

Milking goats naturally breed in the fall and have kids in the spring. As such, the bulk of goats on these study farms are lactating for the first 9 or 10 months of the year. From the producers' point of view, this leads to dramatic shifts in milk supply throughout the year (with surplus milk in the summer months, and excess plant capacity in the winter months). To encourage year-round production, most processors pay a significant premium (averaging \$5-\$6 per cwt.) for milk in the winter months.

From the producers point of view, the seasonality of goat milk production offers advantages since it allows them to concentrate their kidding season into a relatively short period of time (kidding season is one of the most demanding and stressful times of the year for family labor). There are several techniques that can be used to encourage goats to breed out of season (including using artificial lighting, extending lactations, and hormone treatments) but several

farmers indicated that it would be difficult to transition their existing herds to breed out-of-season. A few of the producers in the study did milk year round, and each said the extra work involved in transitioning from a seasonal to a year-round herd has deterred others from moving in this direction.

Animal Health

Although most of the interviewed farms feel that they have addressed their most significant animal health problems, nearly every producer indicated that they had faced major herd health challenges in their early years (either because their initial herd came with serious health issues or because they did not initially know how to manage their herd health challenges effectively). The most common goat health challenges included mastitis and the three chronic diseases of milking does mentioned above. Current health problems focused on managing coccidiosis, salmonella, and pneumonia that contributed to death loss among young kids during kidding season. Finally, producers who had experimented with pastures as a source of feed for milking goats reported serious problems with management of parasites.

Most of these producers have learned to manage chronic diseases (like CL, CAE and Johne's) by separating kids from does at birth and feeding pasteurized milk or purchased milk replacers to prevent transmission of these diseases between does and kids through colostrum or milk. This management approach can be a very time consuming and expensive process, and not all producers have found it worthwhile to maintain these practices over time.

Producers have developed a variety of strategies to manage kid health during kidding season. These include providing better facilities (clean, spacious, warm) for young kids, feeding kids several times a day using automatic feeders, vaccinating does and kids regularly, and providing for quick detection, diagnosis, and treatment of emerging disease outbreaks. Everyone indicated that kidding season is one of the most difficult and challenging periods for their family members and labor force.

Two structural factors make management of goat herd health difficult. First, there are very few veterinarians in the state who have experience and expertise working with milking goats. While most producers appreciated the efforts of their local veterinarians, they indicated that most of what they've learned about how to diagnose and treat important goat diseases has come from other producers, books, and internet sources. Similarly, a few indicated that their contacts with experts at the state diagnostic laboratory in Madison were unhelpful. A second factor is the lack of medicines and vaccines approved for use in milking goats. While there are many pharmaceutical products registered for use in dairy cows, producers were concerned about the adequacy of the research base relative to dosing rates and efficacy in goats, and most were anxious to see more products get approved for use in goat dairy operations.

Managing Somatic Cell and Plate Counts

One of the most talked-about issues during the interviews was the fact that goat producers often encounter problems meeting minimum milk quality standards specified in state milk marketing regulations. State law requires processors to take milk samples each time they pick up milk from a producer. In the goat industry, producers typically had their milk picked up every 2-5 days, depending on the size of their herd and bulk tanks. Milk is tested for somatic cell counts (SCC) on a regular basis, and plate counts on a monthly basis (or after positive test results on SCC tests. If a producer's milk sample has test results that exceed certain thresholds, they must

take steps to reduce the high counts. After repeated high test results, their license to sell milk can be suspended by the state.

Most producers in the study were concerned that Wisconsin state laws were too restrictive and did not recognize unique characteristics of goat biology. Specifically, they believed that the SCC test is not a good indicator of mastitis in goat herds. Moreover, they noted that somatic cell-like components in milk rise dramatically due to hormone surges when goats come into heat during breeding season. This effect is magnified on operations that milk seasonally, and have the bulk of their milking does in heat around the same time. Several seasonal producers in the study reported that they regularly 'shut down' their milking herd in the fall once their SCC levels get too high to avoid dealing with the regulatory hassles. Meanwhile, producers with year-round milking herds are more able to maintain average SCC levels that are below regulatory thresholds.

All producers in the study believe that the SCC is an inappropriate test for goat milk quality, and can cause false positive results. The state is perceived as having been unresponsive to producer requests for a reevaluation of the conventional SCC thresholds.

A related problem reported by many producers was a perception that processors do not provide prompt notification of high SCC or plate count test results. Several of the interviewed farmers indicated that they had experienced a long lead time between plant testing of milk samples and reporting of results to producers, which delays their ability respond and fix problems before they cause regulatory action.

Feeding

Most of the goat farmers in this study did not have sufficient land to provide the bulk of the forages and grains required to feed their milking herd. However, it was clear that there is a split among these goat farmers in terms of their perceptions about the desirability of relying on home-produced versus purchased feeds. Those with more extensive farming experience and sufficient acreage in crops typically argued that they were better off producing feed on their farm because they could control the quality and price of their feed inputs. It was most common for farmers to raise their own hay for their goats; most respondents indicated that they buy processed mixed feeds to supply their protein and mineral needs.

Respondents with less available cropland (or perhaps without the equipment or experience required to put up their own feed) were more likely to rely on purchased feed markets. These people usually argued that if you were willing to pay enough for high quality tested feeds, it would pay off in terms of higher milk production in your milking herd.

The discussions about the pros and cons of relying on purchased feed was colored by the fact that grain and hay market prices had increased to historic highs in 2008, and producers who had not contracted for their feed in advance were hit with dramatically higher feed bills that year. Those who raised their own feeds felt that they had been largely insulated from these price spikes.

Although several of the producers allowed their dry goats and young stock to graze on pastures or in woodlands, none of these farms relied on pastures as a significant source of forage for their milking does. A few had tried grazing more intensively, but felt that it was difficult to get enough energy and protein into their does to maintain sufficient milk output. Additionally, goats on pastures typically suffered from parasite loads, which were difficult and expensive to control and which had perceived adverse impacts on kid growth rates.

Marketing Challenges

The producers included in this study mainly marketed their products to one of the major commercial goat milk processors in Wisconsin (Montchevre, Kolb-Lena or Woolwich). Two producers marketed farmstead cheese products directly to consumers, and another diverted some of their milk to make a semi-hard cheese that was marketed through a regional distributor. One farmer participated in a producer marketing cooperative that sells milk to a variety of processors in the state. Their cooperative's marketing strategy is to require producers to meet higher than average quality standards, and then to find buyers willing to pay a premium for exceptional quality milk.

All of the farms in the study reported that they had secure relationships with their processor or market outlets. The farms considering expansions of their herds each believed that their buyer would be willing and able to purchase their additional milk. The farms with direct marketing outlets did not report any serious problems building a client base or dealing with customers.

A couple of the farms made (or planned to make) a large share of their income from sale of breeding stock. The breeding stock market is felt to be strong, though there is considerable concern that the majority of Wisconsin goat dairy farmers were unwilling to pay higher prices for proven quality breeding does or bucks.

Most of the marketing challenges faced by these producers involved dealing with their billy goat kids. Everyone indicated that there no good markets for billy goats and that the time and cost associated with raising them to market size was not worth the trouble and effort. Most sold their billies at auction barns or gave them away to neighbors or farmers willing to raise them. Finding ways to turn billy goats from a cost to a profit center would make a major impact on the profitability of goat dairy farms.

Viability of Goat Milk Dairies

The study farms all considered themselves to be viable in the short and medium-term. It is important to emphasize that these farms are not necessarily a statistically representative sample of all Wisconsin goat farms, but they do reflect a range of backgrounds, farm sizes and production/marketing approaches. Their success does document that under current conditions, many goat dairy farms are making money and meeting their goals.⁵

Importantly, the majority of the farms in the study reported significant income from other farm enterprises or off-farm jobs that helped pay for household expenses and provided important access to health insurance. In most cases, one member of the family worked full-time on the goat operation, and a spouse or household member held down an off-farm job. All of the farms indicated that poor weather combined with high feed and fuel prices seriously hurt their operations in 2008, and some were still struggling to get back on track. While producers who raised their own feeds were able to avoid some of the spikes in feed prices in recent years, they all suffered from weather events that made it difficult for them to bring in their own quality feeds.

⁵ While one of these goals is clearly the profitability of the farm and the goat operation, it may not be the only important objective for the farmers. Interviews with farmers suggest that the goat dairy operation should be seen as part of a whole household economic, investment, and lifestyle strategy.

None of the goat dairy farms were happy with the prices they were paid for their milk. People appreciated the fact that goat milk prices were relatively stable and predictable, especially compared to cow milk markets, but were concerned that goat milk pay prices had not risen proportionately to recent increases in their costs of production. The producers did not feel that there was much real competition among processors for their milk, and report that processors have been able to increase demands for volume and quality without having to pay more for their milk. Some producers were frustrated at the lack of organization among farmers. A common target for complaints were the ‘hobby’ farmers who are not making any money, but are perceived as keeping prices down for everyone else.

The biggest challenges to the future of their operations were economic – whether or not the milk price would keep pace with costs of production, whether purchased feed prices would return to historic averages (versus the unusually high levels in recent years), and whether demand for goat milk products would continue to grow at double-digit rates. Most farmers believed that increasing their per-doe output (and not the sheer size of their herd) would be the most important factor that would ensure their competitiveness in future years. However, as noted above, several of the operations also planned to make major expansions in their herd size to justify investment in new buildings and hired laborers. Several farmers also indicated that their children were considering joining the operation; in each case, the availability of an heir was associated with serious plans to expand herd sizes and/or upgrade milking and housing facilities.

PROCESSOR AND HANDLER PERSPECTIVES

Evolution of Wisconsin Dairy Goat Milk Markets

While there is no comprehensive published record of the early development of Wisconsin’s goat milk processing sector, interviews with key informants provided insights into the early development of the state’s industry. By most accounts, dairy goat farms have existed in the state since its early settlement, but until the last few decades, most producers either consumed milk on farm, processed it on farm and sold cheese locally, or shipped their milk out of state for processing.

In the 1970s, a group of farmers in west central Wisconsin organized the Mount Sterling cooperative (www.buygoatcheese.com) to process their milk into cheese, which was then distributed through local markets and regionally by the North Farm Food Distributor. The cooperative still produces raw milk and pasteurized cheddars and jack cheese, goat feta and mozzarella, and whey cream goat butter. Their members include producers from Wisconsin, Iowa and Minnesota. They market through regional and national distributors, natural food stores and through their online store.

Meanwhile, in the mid-1980s a privately owned cheese company (Bresse-Blue) with a national distribution network opened a goat cheese plant in Watertown, WI. This company was later purchased by a company which shifted production to a plant in Marshfield. The business was again sold to the Kolb-Lena company (a subsidiary of Bon Grande Cheese, based in New Holland, PA), which moved goat milk production to its cheese plant in Lena, Illinois in the 1990’s. This plant currently operates under Kolb-Lena Bresse Blue Inc. makes soft goat cheeses (Chevre, Crumbles, Brie, and Havarti) as well as dips and spreads which are marketed under the

Allouette label in major retail grocery chains across the United States. The Kolb-Lena plant currently contracts with roughly 50 goat milk producers, most of which are located in Wisconsin.

In 1989, a new goat cheese processor (Montchevre-Betin) opened its first plant in Preston, WI in an old cheddar plant. This plant was located in Wisconsin after a national search for a location that could provide a reliable supply of quality milk, had well established cheesemaking equipment suppliers and small cheese plants, and had a good logistical infrastructure for the distribution of cheese products. A significant amount of the original supply for this new plant was obtained from the Mount Sterling cooperative. In the early 1990s, this plant relocated to Belmont, WI in order to increase production capacity. This plant is still in operation, and has been through several major expansions. The plant currently obtains milk from roughly 250 producers in Iowa and Wisconsin. The Montchevre plant is reported to be the largest producer of goat milk products in North America, and produces a wide range of products including chevre logs, goat cheddar, traditional aged cheeses, and goat feta (www.montchevre.com).

In April 2008, a major Canadian cheese processor (Woolwich Dairy Inc.) entered the Wisconsin market by opening a plant to process goat milk in Lancaster, WI. This company was founded in 1983 in Ontario, Canada, where they still have a large processing plant supplied by over 200 Ontario goat farmers (www.woolwichdairy.com). They are Canada's largest goat cheese producer and produce several kinds of cheese, including Chevre, Goat Brie, Cheddar, Feta, and Mozzarella. Their Wisconsin plant was designed to expand their operations and facilitate their marketing of goat cheese products in the United States. It is currently supplied by over 110 producers from Wisconsin, Iowa, Missouri, and Illinois. Wisconsin producers comprise over half of their suppliers, many of whom are located in the Eau Claire area.

In addition to these large commercial processors (which focus mainly on soft-cheeses), several of the smaller artisanal or specialty cheese companies in Wisconsin have been developing lines of hard or aged goat or mixed milk cheeses. Perhaps the most significant player in this arena is the Carr Valley Cheese Company (www.carrvalleycheese.com), which began using goat milk in the late 1990s and has developed 18 varieties of goat cheese and 11 mixed milk cheeses. The CVCC was founded in 1902 and is a family owned and operated business that operates three cheese plants and seven retail cheese stores in Wisconsin. They market their products through retail stores, on-line orders, directly to restaurants and chefs, and through wholesale food service distribution companies. The CVCC obtains their goat milk through a variety of arrangements, including regular purchases from the producer cooperative mentioned above, direct purchases from individual farmers, and exchanges of milk with the larger commercial processors in the state.

As of 2008, there were 19 milk processing plants in Wisconsin that reported handling goat milk (DATCP 2009). Aside from the major commercial plants listed above, other specialty cheesemakers that process goat milk and market hard and soft goat cheeses include the Pasture Pride Cheese company that relies on Amish farms for their milk supply (part of K&K Cheese, located in Cashton, WI; www.pasturepridecheese.com); Capri Cheesery (in Blue River, WI; www.capricheesery.com); Nordic Creamery (in Westby, WI; www.nordiccreamery.com); Cedar Grove Cheese (in Plain, WI; www.cedargrovecheese.com); Bass Lake Cheese Factory (in Somerset, WI; www.blcheese.com); and Saxon Homestead Creamery (in Cleveland, WI; www.saxoncreamery.com).

A final group of Wisconsin dairy goat farmers have developed on-farm processing facilities to produce 'farmstead cheese' or raw goat milk for sale to local and regional markets.

A search of internet websites identified at least four major farmstead producers: Anne Topham, who milks 14 goats at Fantôme Farm (in Ridgeway, WI, www.fantomefarm.com), and who has made and sold handcrafted fresh chèvre, raw-milk semi-hard aged Boulot, and cave-aged Fleuri for over 20 years, and sells at farmers market and through limited mail orders; Diana Murphy, who has milked 14-20 goats at Dreamfarm since 2004 (in Cross Plains, WI, www.dreamfarm.biz), and who sells fresh goat cheeses (feta, crottin, and cheddars) through a CSA, and at area farmers markets and retail stores; Jay and Donna Sommer, from SommHerr Dairy in Granton, WI, who sell fresh Geiss chèvre, Somherset goat cheddar, and a mixed milk parmesan; and Mike Watters from Sunshine Farms (in Portage, WI) who sells grade A bottled goat milk.

Status and Performance of Processing Industry

All respondents agreed that the goat cheese retail market has expanded by double-digit growth rates for many years. While most milk still goes toward making soft cheeses, there are a growing number of aged semi-soft and hard cheeses that are being produced by Wisconsin plants. It is apparent that competition among processors has increased in recent years – forcing them to place greater emphasis on keeping their cheese products price competitive. However, most respondents suggested that they hoped to retain their market share through a focus on quality and by diversifying their product portfolio.

Wisconsin goat cheeses are distributed through a wide range of market channels, all of which appear to be robust and growing. The interviews with commercial processors and farmstead producers suggest that the markets for goat cheese products appear to have been little affected by the recent economic downturn. Several commercial plants noted that there has been a slight shift from sales to food service companies and restaurants, and increased sales through retail outlets. They believe this trend reflects a greater tendency for consumers to buy goat cheese in stores in order to consume it at home. Says one processor, “I think that maybe people don’t go out to eat as much, but maybe are eating more at home.”

While growth in markets for goat cheeses continues to be strong, all of the processors in the study reported that their production is constrained more by growth in consumer demand than by the supply of raw goat milk. All processors have long waiting lists of potential producers seeking to get into the goat milking business. One of the processors reported that they were in a holding pattern (e.g., not increasing farm numbers), while several others were actively increasing the number of farms with milk contracts over the past year. The ability to purchase more milk is limited most by the capacity of their production facility in the summer months when all producers are selling milk and milk production for most goats is peaking. However, processors find it difficult to justify major capital expenses to expand their production capacity since existing facilities are underutilized in the winter, when milk output typically drops and many farms stop milking for a few months.

Challenges facing Processing Industry

Production and Marketing Challenges

The processors interviewed for this study did not indicate any serious problems related to their cheese production, distribution, or marketing efforts. In each case, it is apparent that Wisconsin offers a uniquely attractive location for the siting of goat cheese manufacturing facilities. This is not only because there is a large concentration of existing goat dairy farms (and substantial supply of milk). Equally important to the processors is the long tradition of dairy farming and cheese manufacturing in the state. There appear to be many small-scale manufacturing facilities available for conversion to goat cheese production, there is a well developed transportation and distribution network for cheese products, and producers of relatively small quantities of cheese (goat output still pales in comparison to cow cheese production in the state) can find handlers and distributors that are willing and able to work with them.

Milk Supply Challenges

As noted above, the processors report that it is relatively easy to find a sufficient supply of goat milk in this region. While Wisconsin farmers continue to supply the majority of milk sold to the region's large commercial processors, several have seen their most dramatic growth in recent years come from Iowa goat farmers, particularly from Amish families in Southern or Southeastern Iowa. Indeed, the rate of growth in dairy goat inventories listed in Figure 1 above suggests that Iowa may some day surpass Wisconsin in goat milk output.

The interviews confirmed that there are many more producers willing to sell goat milk than Wisconsin's processors are currently able to accommodate. Indeed, a large part of the work of processor field representatives is to maintain a waiting list and screen potential new producers before new contracts are issued. Many respondents indicated that processors often require new entrants to buy out a herd from someone who already has a contract to ship milk. They also advise people seeking to get into goat dairy farming that they must have a secure contract to market their milk before they invest in livestock and facilities. This is particularly true for potential producers who do not live close to existing processing facilities or milk pick-up routes. With rising fuel costs and tighter profit margins, all of the processors in the study indicated that farmers located at the outer limits of milk pick-up routes, and those whose operations were too small to justify the expense of regular milk pickups were at risk of losing their contracts in the future.

All of the processors appeared to be very committed to their current group of suppliers and emphasized in the interviews that they rarely have had to terminate a farmer's contract. Most processors indicated a preference to increase their supply gradually by encouraging existing producers to improve productivity or expand their herds. The typical long-term contracts between processors and farmers have led to a greater degree of coordination and communication between farmers and processors than is found in the dairy cow industry. In

“Our milk supply is probably a hair short yet, we probably could use a little more, but like from our perspective, we don’t advertise that we want more milk, because if we do the people will just come out of the walls...I’d have so many phone calls...there are a lot of people that are interested in it.” – fieldman (a processor field representative)

“For us, one of the key things that we always try to focus on is we don’t want the milk supply to be larger than the demand. And so we are always very careful when we sign new producers.” - processor

particular, each of the processors indicated that they regularly collect information about the future plans of their farmer suppliers.

While they appear to be cautious about extending new contracts, all of the processors were deeply concerned about three key issues: the high level of turnover in the industry, the need to get higher per-doe output, and problems with milk quality from some of their current goat milk suppliers.

In the first instance, a number of respondents indicated that “the average life of a goat dairy farmer is 3 years.” While primary data on this issue were not available for this study, one processor noted that 20% of their current suppliers joined in the last year, and another indicated that 40% of their current suppliers have been in business for less than 3 years. Turnover appears to be a significant issue for small and mid-sized farms, particularly those run by people without farming experience⁶. The start up investment required to begin milking goats is much less than for dairy cows, and if you have access to a former dairy barn and facilities you can often get started for around \$10,000 for equipment and facility. As a result, goat milking is seen as a potentially lucrative activity by many non-farmers with rural farm properties, as well as among cow dairy farmers who are seeking to get out of cow milking.

Respondents generally believed that previous farming experience was highly correlated to the success and longevity of goat dairy farms. In the case of one processor, roughly half of their goat milk suppliers had farm backgrounds, and these tended to be the farms with the most longevity. One person noted that “Most of the time if I get a dairy cow person that wants to get into this, and he really wants to and does get into it, I know they’ll stay a while because they know what work is.” A recent downturn in cow milk prices has led a large number of cow dairy farmers to make inquiries about shifting to milking goats. Regardless of farming experience, all industry observers agreed that people need to do a lot of research first and start slowly if they seek to succeed in the goat milking business.

A second processor concern relates to a perceived low level of milk output on typical Wisconsin goat dairy herds. As noted above, statewide herd averages are well below the levels achieved on the top producing herds. Most observers agreed that increasing per-doe productivity would do more to increase net farm income on goat operations than any other practices. Factors limiting improvements in productivity include a lack of reliable breeding stock or production records that would help producers improve their herd genetics. Chronic herd health problems (such as CAE, CL, or Johnes disease) also appear to be major factors limiting the output of many goat herds.

“They don’t realize what they’re getting into. Farming is work – they don’t realize when they start milking goats...this is 7 days a week, you gotta get up and milk cows or goats on Christmas morning, Sunday morning, if you’ve got a sick animal you have to take care if it now, cause if you wait until tomorrow or later you bury it. They don’t realize this.” - *fieldman*

“Their challenge is they have to get more milk per goat. A lot of producers I see out there talk numbers of goats, you’ll never make any money that way. The ones that are making money are talking production per goat...I think you gotta be looking at getting the maximum amount of milk out of 150 to 200 goats to make this a paying operation. I’ve got a few producers that are milking 100 goats and doing well...and some milking 400 not making any.” – *processor*

⁶ It is worth noting that only one such farm was interviewed in this study, and they were quite successful.

Higher fuel prices have encouraged more processors to consider establishing minimum volume requirements for milk pickups (and to possibly restrict milk pickups from the most outlying farms). While many producers feel pressure to increase the number of milking does to meet these standards, the processors mainly focused on the need for producers to get more milk out of each doe first. Nevertheless, it may soon be the case that a reasonably productive herd of 150-175 does may be required to remain on the pickup routes for some processors.

A third processor concern is milk quality. Factors that limit productivity are similar to the factors that reduce the quality of much of the milk shipped to major goat cheese processors. Quality affects processors by reducing cheese yields and affecting the taste of the final products (particularly for semi-hard or aged cheeses). While processors acknowledge the seasonal hormone surges that make goat milk SCC counts artificially high in the fall, they believe that some producers use this as an excuse for serious milk quality problems in their herds. All processors discussed the logistical problems associated with dealing with producers whose milk consistently fails to meet minimum state milk quality standards (particularly SCC and plate count tests). A great deal of effort is expended working with a relatively small number of producers to troubleshoot sources of high test results in milk samples. A number of people mentioned specific challenges among some Amish farms that did not have adequate cooling facilities, were difficult to reach when milk sample test results came back high, and that had small herds and hence long periods of time between milk pickups. While all the processors expressed high levels of frustration with milk quality issues, they all seemed resigned to this situation and have rarely (if ever) terminated contracts with producers for poor quality. Rather, they expressed a desire to continue working with problem producers or to wait for/encourage them to quit eventually.

Milk quality is affected by the herd health problems mentioned above as well as management of the milking and milk storage equipment. Experts in the industry suggest that facilities and environmental conditions— such as maintenance of clean, dry, well-ventilated facilities, provision of quality feeds, and facilities that allow does to be kept in smaller groups (which prevents competition for feed by dominant goats) – can make a huge difference in herd health, milk quality, and per-doe milk output. Similarly, producers who are more familiar with milking equipment, more vigilant about cleaning equipment, and better able to keep their milk cool until it is picked up by processors have the fewest quality problems.

Several farmers and industry observers noted that the price incentives for milk quality are generally too low to induce many farmers to improve their milk quality. They emphasized that farmers will usually only do what they need to do in order to remain below the state SCC or plate count test thresholds that might trigger a regulatory action. Processors feel that they are doing all they can to encourage farmers to produce higher quality milk, and are hopeful that university or state programs might intervene to provide producers with more information about proper goat herd health and milk quality management.

OVERALL PERCEPTIONS OF THE WISCONSIN DAIRY GOAT SECTOR

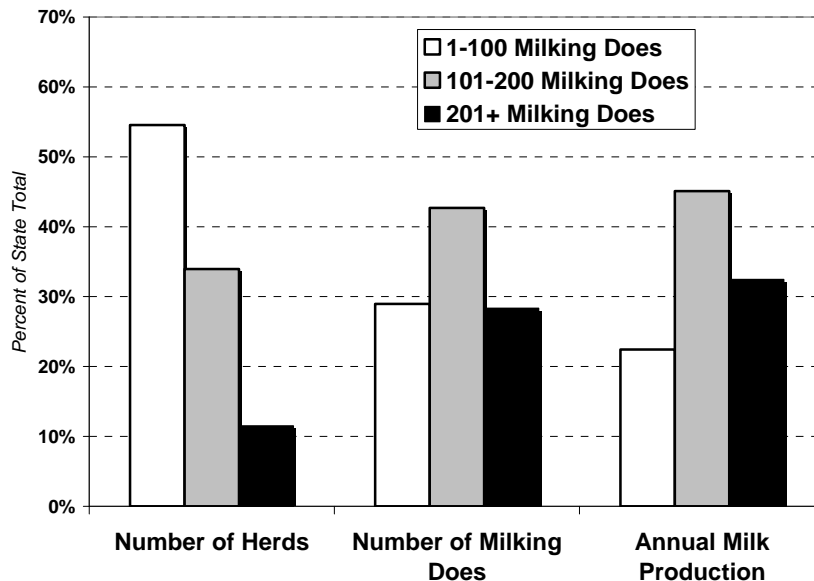
Combining feedback from farmers, fieldmen (processors' field representatives), processors, and other industry experts, it is possible to construct an overall profile of the current status and future prospects for the Wisconsin goat dairy sector.

Current Situation

It is clear that the Wisconsin dairy goat farm sector is diverse and dynamic. Published reports and key informant interviews suggest that there are at least four important subgroups among Wisconsin's goat dairy farmers:

- Small and mid-sized goat farms (30-100 does) that sell their milk to commercial processors, but rely heavily on off-farm income to survive. They produce more milk than they can consume on-farm, but are at the bottom end of size range considered practical for pickup of milk from commercial processors. Based on WASS estimates, these farms constitute the majority of goat dairy farms, but produce less than a quarter of the state's goat milk (see Figure 5).
- Farmstead producers (typically milking 15-30 does) who process their own milk into products sold directly to local consumers. Based on media reports, key informant knowledge, and a search of internet sites, these farms appear to be relatively few in number and represent a very small fraction of the overall Wisconsin goat milk supply.
- Mid-sized producers (roughly 100-250 does) that sell milk to commercial milk processors or farmers cooperatives. These farms represent roughly a third of all goat farms, but likely produce the majority of goat milk in the state.
- Large producers (400 or more does). This is a relatively small group of farms, but their large size means that they produce a significant fraction of the state's goat milk output.

FIGURE 5: Percent of Wisconsin Goat Dairy Totals by Herd Size, 2006



Source: Wisconsin Agricultural Statistics Service (2006).

The interviews with key informants suggested that the first group is the most volatile and marginal component of the Wisconsin goat milk industry. They represent both hobby farmers -- who got into commercial goat farming after purchasing rural properties and generally have less time to spend on improving their goat operation than other types of farms -- and smaller Amish farms, for whom the availability of family labor and low capital requirements of goat farming make goat milking an attractive component of a multifaceted economic enterprise. Importantly, no farms in this group were interviewed for this report, so it is difficult to verify the impressions of key informants.

The second group -- farmstead cheese producers -- is a small but generally successful group that survives by capturing the value added returns associated with producing and marketing their own cheese. They also rely heavily on family labor, yet are required to devote significant time and capital investment to their processing facilities and activities. The farmers contacted for this report suggest that this strategy is economically viable, though very labor intensive.

The third group of producers includes farms that rely mainly on family labor, work in retrofitted traditional Wisconsin cow dairy farm facilities, and have at least one adult who milks goats as their full-time job. Throughout this group, those who have achieved higher levels of milk productivity and more consistent milk quality tend to be the most successful. Farms which are able to sell significant numbers of breeding does or bucks (in addition to milk sales) are also in a much stronger financial position. At the upper end of the size spectrum for this group, farmers are faced with difficult decisions to make large investments in new facilities or to employ regular nonfamily workers if they wish to expand.

The fourth group of producers represents a relatively small but growing number of farmers who have decided to make the leap into large-scale goat milk production. While the largest operations now milk between 400-600 goats, they are all talking about doubling or tripling their herd sizes in the coming years. In the interviews conducted for this report, farms in this category represented both long-time producers who had systematically and gradually expanded to get to this scale, but also two farms in which the enterprise began at a large scale and expanded rapidly by purchasing herds over the last year. In these latter two instances, farmers have developed business plans that assume they would soon be milking well over 1,000 goats. The viability of this strategy will be important to monitor in coming years.

“There’s a lot of people doing a really good job...and then there’s a lot of really foolish people who have, I don’t know, what you would call their ideas (that) it sounds like it will be a really fun, cute thing, you know, easy to do, but it is incredibly difficult, we put in a lot of long hours and it is not glamorous... it’s a messy job, it is hard work, and you’ve gotta put in a lot of time.” - farmer

“There’s not very many goat producers that I’ve been associated with or worked with that have stayed in it for more than 10 years, and I think it is mostly because of disease issues that get them frustrated and make them financially not very profitable. The ones that I know that have been in it for a long time, built up a little more slowly and started with clean animals or were careful to keep them clean, and there are some that are still very profitable and doing very well.” - industry observer

Expectations for Future of Industry

Almost all respondents in the interviews believed that the future of the Wisconsin dairy goat milk industry is bright. Individually, all of the farms and processors appear to be in stable financial condition and have been largely unaffected by the recent economic downturn. When asked about their own businesses, all of the informants for this report expect that they will still be in the industry in 5 years. Among the farmers, most expect to make changes in their farm to improve their viability – including expanding herds, improving or replacing facilities, and/or increasing milk productivity through improved management and genetics. Most processors expect continued steady annual growth in production and marketing volumes.

When asked of their impressions of the prospects for the industry as a whole, almost all the respondents were optimistic about the future. Everyone in this study believed that the market for goat cheese was likely to continue to grow at double-digit annual rates, and that goat cheese would become more mainstream in the American diet.

Unlike the cow dairy industry, the Wisconsin goat farm sector is still relatively young, and most farms have been in business for less than 20 years. Looking to the future, most respondents expect to see fewer hobby goat farmers, more ex-cow dairy farmers turning to goats, lower rates of goat farm turnover, and a generally more ‘professional’ goat dairy farm sector to emerge in the coming years. All of the farmers in the study indicated that they have made significant improvements in their own skills, knowledge, and facilities in recent years, and expect to continue to make improvements along these lines. Processors are hoping that more producers will recognize the profits to be made by shifting to more winter milk production, though none of the producers in this study indicated a desire to move in this direction.

As some of the most successful and established farmers reach retirement age in the coming decade, a key factor that will affect the future prospects and maturity of the sector is whether or not young people will be willing to take over successful goat dairy farms. Interestingly, several farms in this study have children or individuals that are interested in taking over and expanding their operations in the future. One major processor noted that a few years ago they had been concerned about an aging population of goat milk suppliers, but that they were now seeing a surge of young dynamic people with interest in milking goats.

“I’m confident about it...we feel it is a way of the future. Looking at the entire goat industry, I think you will see a lot more larger scale operations that are viable operations...” - farmer

Research and Extension Needs

Current Role of the University of Wisconsin & Cooperative Extension

A key part of each interview focused on perceptions and feedback from farmers and other industry players regarding the role of the University of Wisconsin research and extension systems in facilitating the growth and development of the state's dairy goat sector. Overall, respondents were very critical of the UW's past contributions. While most respondents' recognized that Wisconsin's university scientists and extension personnel have deep expertise relating to cow dairy issues, their interactions with university personnel suggest that these people have little interest in focusing on goat dairy problems. Typical quotes include:

- "In Wisconsin, there has been zero support." – *farmer*
- "Honestly we haven't (had much contact with UW), I'm not too much aware of what is done at the university so far. I'm sure they've done some great things, but I'm not aware of it." - *processor*
- "They've gotten direction from the Board of Regents that they need to help promote the dairy goat industry. So the upper echelon of the university have pushed that, but among the people that actually have to make it happen, there's been a real resistance in the university to go that route...the people that could help have not been very helpful, and I'm talking about everybody from the ag school to the agronomy department to the nutritionist, to the veterinary school...Their people do cows and cannot be bothered to deal with goats or sheep." – *industry observer*
- "The UW is too cow focused, there is a lot of prejudice against the goats; if we could have someone come in with a clean slate and no set prejudice...it might make a difference." - *farmer*

Several people suggested that the UW-Platteville campus has made visible efforts to try to position itself to be a center for goat dairy research and extension activity – perhaps by hosting a dairy goat research herd -- but the general sense was that the UW-Madison campus was resisting efforts to shift responsibility to Platteville.

Most respondents volunteered that university and extension staff in Iowa and Minnesota have been more visible and active in developing programs for dairy goat farmers. Several farmers indicated that they regularly call the University of Iowa with questions, and others noted that despite the relatively small size of the Minnesota goat sector, they are 'moving quickly' to develop programs and resources for their farmers.

While the Wisconsin university and extension system may have more capacity and interest in goat dairy issues than these quotes suggest, it is clear that the UW system has a 'public relations' problem across much of the goat industry.

"If I have any goat questions, I call the University of Iowa. They are taking it extremely seriously. In fact, after last year, I considered moving to Iowa. Unless things change, in next 5-10 years Iowa will be at the forefront of dairy goat research; very inviting and open to producers. "These guys were literally offering their full services...and in Madison, its like 'we really don't have time for this.'" - *farmer*

Wisconsin Dairy Goat Initiative Feedback

While the UW research and extension system is generally not regarded as playing an important role in the goat dairy industry, the statewide Wisconsin Dairy Goat Initiative (WDGI) coordinated by the state Department of Agriculture, Trade and Consumer Protection is seen as the most important public effort to support producers and processors in the state. Described in more detail above, the WDGI was frequently cited positively in the interviews for its efforts to coordinate broad industry networks and discussions, facilitate an on-line discussion forum, organize on-farm field days, and host an annual goat industry conference.

Overall, a key contribution of the WDGI is the ability to have a paid coordinator to make sure that things get done. Universal appreciation was expressed for Jeanne Meier, who is viewed as having played a critical role in organizing and following through on plans and programs sought by industry stakeholders. The Initiative was also lauded for helping reduce duplication and competition for scarce resources. Several people also noted that the WDGI has increased the visibility and profile of the goat dairy sector in the eyes of the rest of the Wisconsin agricultural industry. For example, milk equipment and feed dealers now actively pursue the business of commercial goat dairy farms, whereas a few years ago they were very unhelpful to these producers.

“I’m just thrilled to death that Jeannie’s doing this stuff, you know, when we first started out...you talked to other people in the area that was milking goats, and that was it, and everybody was struggling to figure things out. Now with Jeanne, at least you have some resources, some knowledge, and there’s always something to learn.” - farmer

Another visible contribution of the WDGI has been the organization of regular on-farm field days and an annual conference. The field days were generally seen as valuable by respondents, though most of the commercial producers and processors found that they were frequently too busy to attend very many themselves. There is a strong perception that field days have been most useful to people seeking to learn more about the industry before they start milking their own herds (indeed a number of respondents used field days as a way to decide how to set up their own facilities and management practices). However, for most respondents, the field days have become repetitive and rarely provide the depth and detail required to be justify the time and energy it takes to attend. By contrast, the annual goat industry conference was lauded for having more detailed information – particularly in focused workshops with experts or from panels of producers presenting details about their approaches to common problems. Several people also noted that the informal time at the annual conference – ‘rubbing shoulders in the hallways’ is where they get most of their best information.

“Ten years ago, feed mills were not treating producers like real farmers; we were overcharged, got poor quality feed. Milk equipment dealers didn’t know what to recommend; in last 2 years, they are getting more aggressive about serving this sector.” - farmer

The online discussion forum facilitated by the WDGI was seen as a mixed success. While all respondents recognized that the producers could get quick feedback from other farmers through the on-line email discussion list, many were concerned that the advice was not always reliable or accurate. Others indicated that it was a valuable place to learn news about things going on in the industry – several gave the example of recent postings that publicized instances of ‘goat rustling’ from Wisconsin dairy goat farms.

When asked where producers get information about production problems, most indicated that they relied on other producers, internet websites, magazines, and a few key veterinarians or industry experts. The WDGI recently produced and posted on-line guides on “Best Management Practices for Dairy Goat Farms” and ‘How to Start a Dairy Goat Farm’. In the interviews for this report, few respondents mentioned being aware of or using these guides. This is likely related to the fact that these guides had been available for less than a year, but it may also indicate a need to publicize these resources more actively.

Suggested Extension Priorities

A critical question asked of all respondents was whether or not the biggest problem in the industry is a lack of information or research regarding goat industry production issues, or whether the issue is a lack of effective communication of this information to producers. Nearly universally, respondents felt that the biggest problem is a lack of access to existing knowledge or information. However, they also felt that the public experts in Wisconsin – university scientists, extension staff, and state regulators – were less knowledgeable about many issues than farmers. As a result, they were most excited to see new extension products and training programs developed by experts from out-of-state (and perhaps by the best producers from inside the state) for distribution to Wisconsin producers. Aside from information about production practices, several mentioned a desire to have access to better materials regarding laws and regulations that affect goat dairy farmers.

In addition, many producers indicated a desire to see more public support (in terms of staff and money) to facilitate regional networks of goat dairy farmers – perhaps involving farmer learning and mentoring networks similar to those used in the cow dairy grazing sector. Finally, several producers and processors mentioned a desire to see more formal training programs for veterinarians and county extension staff to make them more aware of the existing scientific literature and other goat dairy information resources.

Suggested Research Priorities

Although dissemination of existing information was seen as the highest priority, when pressed for suggestions, respondents were able to identify a large number of topics that would be appropriate for further scientific research. While the following sections do not provide a complete list of possible projects, their suggestions can be loosely clustered into 4 major types of activities.

1. Basic Science Projects:

Two types of basic science projects were suggested by many respondents.

Initially, as noted above, most producers and processors are very concerned about the **accuracy and utility of current SCC tests** used by state regulators to screen goat milk for quality and safety. Several people called for a review of existing scientific studies (from other states or other countries) regarding goat milk quality issues. More solid research to investigate the relationships between somatic cell count (SCC) levels, breeding hormone levels, the incidence of clinical mastitis, and other parameters is

believed to be necessary to provide a scientific foundation for reevaluating current state milk quality regulations.

A separate basic science need involves research that would be required to enable more veterinary **pharmaceuticals to be labeled for use with milk goats**. The belief is that the small size of the industry precludes private sector investment in the research required to approve more existing drugs for use in lactating goats.

2. Applied goat dairy production research

A wide range of production practices were suggested as topics for more applied research, particularly if the university is able to establish a representative milking goat herd for research purposes. The most common examples are listed below.

Several farmers and industry experts believed that the topic that is least well understood (from current scientific studies) relates to **feeding and nutrition issues** in the goat dairy sector. This includes nutritional studies to evaluate how different feed combinations impact milk quality and productivity among milking goats. One critical need is to examine whether research conducted on nutrition for dairy cows applies to dairy goats. In addition, noting that goats sort their feeds more than cows, there was interest in examining the potential for using total mixed ration – TMR – equipment for dairy goats.

A second type of applied production research relates to techniques designed to facilitate **out-of-season breeding** by dairy goats. During the interviews, producers reported using (or hearing of) a wide range of practices that could help goats breed out-of-season, but few were aware of any systematic scientific research to assess which practices were most effective. Given the strong economic incentives to shift toward production of winter milk, better advice and guidance for producers who want to pursue this path likely would have a significant impact on the industry.

A third applied topic is research on the **costs and benefits of different facility designs**. Specifically, there is a need for more information about the impacts of goat housing arrangements, milking parlor setups, and the design of feeding facilities on animal stress, herd health, labor efficiency, and farm finances. This could also include information about the relative performance of milking system components, including data on vacuum levels, ease of cleaning, and the best methods to collect production data on individual goats.

A fourth cluster of production-oriented research is the need for **objective research on new technologies and other products** that are sold to goat dairy farmers. Farmers would like claims made by private sector firms to be tested in a neutral research setting.

A final area for research would be more **studies of the economics of dairy goat farming**. This includes a focus on the economics of the various production technologies and management practices mentioned above. In addition, several farmers felt that the standardized farm financial reports available from farm financial management services

were difficult to interpret or understand. These farmers suggested a desire to have a financial specialist spend time on their farm going over financial records in person. Others suggested a need for more accurate real-world data on the actual costs incurred by start-up goat dairy farms, which could be used to help prospective farmers making more realistic business plans. Another suggestion for economic research was studies of exiting goat dairy herds to identify the factors that contributed to their decision to quit milking.

Many of the recommendations for applied research emphasized the appeal of a university-run research herd. The goat herd would be to demonstrate (or evaluate) which practices are both practical and profitable. Several respondents suggested the research herd to be ‘built’ using typical animals available on the open market (e.g., not all ‘clean’ or high end does). By acquiring a typical mix of genetics and herd health challenges, the farm might be better positioned to evaluate strategies that would apply to producers’ situations.

“A lot of the knowledge is there, as far as how to do it, but I think the research farm is more important and needs to demonstrate how to do it on a commercial size and commercial basis, how to do it profitably...” –
industry observer

3. Facilitating industry growth and development

A third category of research topics involves efforts to use university research and extension staff to help facilitate the overall development of the goat dairy industry. Two examples include working to develop **better record-keeping systems to improve goat genetics**. One observer noted that “I think its hard for producers to find good genetics, proven genetics...the university could do buck testing, you know. They have dairy studs and all that now, but not in goats.” Another mentioned that public universities have been instrumental in developing production records and projections of breeding value for ewes and rams in the sheep industry; a similar effort for goats might help speed genetic improvement in that sector.

A different topic that could have industry-wide benefits would be efforts to **develop markets for billy kids** – which currently serve as a drag on the financial performance of most goat dairy farms.

Most processors see little need for additional university research on goat cheese making or production practices. However, one processor suggested that universities could help by **identifying potential markets and uses for goat whey proteins**. In particular, it is believed that goat whey protein could be a valuable food additive for products targeted at people that are allergic to cow milk.

4. Provide opportunities for hands-on training for producers

A final category of research activities would be to develop more opportunities for **hands-on training of producers** (and for others who work with producers) regarding dairy goat management techniques. For example, some experts in the interviews believe that we

know how to treat or manage most common goat health problems, but producers still fail to take steps that would help reduce these problems. Similarly, given the lack of farming background among many goat farmers, basic training in milking equipment maintenance could help reduce the incidence of chronic milk quality problems. If there were a working goat dairy herd available for training purposes, one could develop workshops and classes to demonstrate recommended practices, including results of applied research into production practices mentioned above.

RECOMMENDATIONS

The insights and feedback from producers, processors, fieldmen, and other experts in this study describe a goat dairy industry that is strong and growing. However, the future prospects for the industry will depend, in part, on the types and levels of public support for research, extension, and market development in the coming years. The following recommendations represent the judgments and suggestions of the author, as well as those of many people who participated in this study. They are summarized here to provide a basis for future discussions and policy initiatives.

- While the industry appears robust and growing, serious production challenges remain for many goat farmers. High rates of turnover and a lack of experience mean the industry is still very young and there are chronic problems associated with low rates of productivity, herd health, and milk quality challenges. These challenges must be addressed for the industry to continue to grow and mature.
- Current milk pricing systems do not provide sufficient incentives for many producers to improve their milk quality or to change their seasonal production patterns. If processors seek to solve these two problems, they may need to expand price differentials based on these attributes.
- Although producers continue to provide an ample supply of milk (particularly in the summer), there are many signs that pay prices for milk may be too low to cover basic costs of production for a growing number of farms. Simply raising prices will do little to discourage less efficient or poor quality producers; however, proper pricing incentives might provide a better long-term economic foundation for the most productive and professional dairy goat farms.
- The state WDGI effort should be maintained and expanded. It has strong credibility with producers and processors and provides an important coordination role for industry-wide initiatives.
- The University of Wisconsin research and extension systems could develop a stronger role in support of the dairy goat sector. However, serious efforts must be made to overcome a negative image among dairy goat farmers. Any expansion of the UW role would be more likely to succeed if it works closely with the WDGI and other key industry leaders.
- Although the research capacity of the university remains limited, it would be beneficial for scientists to work with extension personnel to locate, summarize and make available scientific research on goat industry issues from other states and countries.

- Perhaps the most important contribution from UW would be to support the creation of an applied research goat herd. At present, industry participants regard UW-Platteville as the logical and most credible place to locate that herd.
- Efforts to resolve the legal and regulatory debates over somatic cell count tests as an indicator of the quality and safety of goat milk would help reduce one of the most common sources of stress and anxiety among goat farmers and processors. Wisconsin would do well to look at regulatory approaches used in other states and countries that appear to be more sensitive to the unique biological dynamics of milk goats (compared to dairy cows).
- Public support for programs to improve herd genetics and the ability of producers to select does and bucks capable of higher rates of milk productivity could generate dramatic benefits for many commercial producers, and would enable processors to maintain more efficient and successful milk pickup routes.

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APPENDIX 1

TABLE 1: Historical Census Of Agriculture Statistics on U.S. Dairy Goat Sector, National Total and Top 10 Dairy Goat States, 1978-2007.

	CA	IA	MI	MO	NY	OH	OR	PA	TX	WI	USA
Farms with Any Milk Goats											
1978										326	7,351
1982										620	25,283
1987	1,049	425	533	673	622	890	511	635	1,011	450	15,443
1992	694	295	404	506	426	634	413	496	902	381	11,559
1997	593	266	404	458	412	661	452	541	954	372	11,456
1997r ¹	910	296	514	559	573	876	591	937	1,276	546	15,451
2002	1,301	447	843	749	1,146	1,358	816	1,082	1,703	668	22,389
2007	1,402	652	1,144	951	1,030	1,258	901	1,342	2,124	1,088	27,481
Total Milk Goat Inventories²											
1978										4,827	85,581
1982										7,009	166,018
1987	16,055	3,195	3,844	4,512	5,234	6,109	4,321	3,512	10,559	5,562	129,225
1992	16,593	2,995	4,184	4,406	5,746	4,953	4,133	2,956	11,727	7,677	124,718
1997	15,780	4,992	3,959	4,068	6,085	6,654	5,554	6,802	13,732	12,989	146,678
1997r	19,935	5,263	4,690	5,053	7,610	8,224	7,276	11,413	17,930	16,629	190,588
2002	37,343	8,524	8,935	8,656	12,822	14,420	9,250	12,652	22,569	25,900	290,789
2007	39,198	22,269	9,883	8,866	11,968	10,072	8,300	14,297	20,092	36,367	334,754
Farms with Goat Milk Sales³											
1978										65	1,378
1982										90	1,957
1987	243	52	51	66	94	139	122	125	145	93	2,378
1992	194	48	53	68	90	92	93	86	130	89	2,010
1997	174	64	48	54	70	92	97	111	165	117	2,025
Goat Milk Sales (Gallons)											
1978										180,958	1,783,676
1982										247,966	2,038,840
1987	973,291	123,669	141,975	69,822	188,204	317,428	203,704	92,490	253,156	409,938	4,369,866
1992	1,222,181	349,746	204,357	200,209	551,344	210,433	175,710	64,675	567,250	877,101	7,222,917
1997	1,369,021	597,048	193,251	185,601	475,905	304,484	178,645	467,058	689,834	1,214,356	9,009,037

Source: U.S. Census of Agriculture, various years.

NOTES:

¹ Results for 1997r reflect adjusted 1997 data to reflect a major change in census estimation procedures implemented in that year. Data in 1997r, 2002, and 2007 reflect statistical sampling adjustments, whereas data prior to 1997r reflect summary counts from actual census returns. Pre-1997r estimates tended to undercount small and non-commercial farms, and the size of the adjustment can be seen when comparing 1997 and 1997r estimates.

² Milking does reflect roughly 63% of total milk goat inventory.

³ Milk sales data are not reported by U.S. Census of Agriculture after 1997.

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