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[Return to Current Issue](#)

# **Wisconsin Dairy Business and Production Survey: Comparison Between Farms Planning to Expand and Farms Not Planning to Expand**

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**Abstract:** The Wisconsin Dairy Business and Production Survey was conducted to provide a comprehensive assessment of Wisconsin dairy operations. Key differences between expanding and non-expanding dairies were highlighted, with additional focus on topics involving dairy expansion. Further priority was placed on maximizing the impact of a concurrent project concerning risk management in dairy production and expansion and the creation of a decision support system. Survey results highlight emerging trends among Wisconsin dairy farms and emphasize areas where further research and Extension programs are needed.

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## **Introduction**

The strength of Wisconsin's dairy industry is directly dependent upon its diversity of dairy farm systems. A drive through rural landscape in any corner of the state reveals distinct differences in farm size, appearance, and management style. According to 2007 USDA statistics (USDA, 2007<sup>a</sup>), there are more than 13,000 dairy farms in Wisconsin. Ninety-two percent of these farms house less than 200 animals each and account for 61% of the total milk production. The remaining 8% of Wisconsin dairy farms, each having more than 200 animals, supply the difference of the state's milk production (USDA, 2007<sup>b</sup>).

Providing adequate Extension support to farmers across this broad spectrum can be a challenge. Various methods of outreach are needed to fully understand the issues affecting dairy producers at the current time and those that have not yet surfaced. Past efforts acknowledged the effectiveness of mailed surveys to gather information and increase stakeholder input (Kelsey & Mariger, 2003; Boone, Sleichter, Miller, & Breiner, 2007). The implications of this approach may influence the future direction of core research and Extension activities, as changes in dairy farm demographics are analyzed from different perspectives.

As dairy owners operate under increasingly difficult market conditions and elevated awareness of their issues, a desire for outside help becomes apparent (Kelsey & Mariger, 2003). As a result, many progressive dairy producers rely upon the latest information and technologies to maintain a competitive edge (Cabrera, Solis, & del Corral, 2010). A call for greater focus, specifically toward risk management, has been demonstrated in contemporary literature (Kauppila & Pelsue, 2003; Gustafson, 2006). Recent efforts of both researchers and Extension personnel at the University of Wisconsin-Madison (UW-Madison) addressed this area of interest and gained valuable insight on other emerging topics. Specific objectives of the study reported here were to identify key differences between producers planning to expand versus those not planning to expand and use this information in the development of a decision support system to help farmers during an expansion process.

## Methods

A comprehensive survey was used to observe a sample of 1,000 randomly selected dairy farms throughout Wisconsin in 2009. A completely random sampling was applied to the 2008 list of active dairy producers maintained by the Wisconsin Department of Agriculture, Trade and Consumer Protection, which contained more than 13,000 records. A large sample of 1,000 farms was needed to represent all geographic areas and farm systems existing in Wisconsin.

To ensure our efforts contributed original insight, we referenced existing questionnaires that had been administered by the University of Wisconsin-Madison or associated organizations in years past. Most notably, the Wisconsin Value-Added Dairy Poll from the Program on Agricultural Technology Studies (Foltz, Roth, & Lachenmayr, 2005) and Wisconsin Dairy Modernization Survey from the Center for Dairy Profitability (Mayer & Kammel, 2008) proved to be excellent resources to formulate the questions to be included in the survey instrument.

Testing of the questionnaire was conducted through personal visits to two dairy farms before surveys were mailed out. Valuable input was gathered regarding specific details as well as overall questionnaire format. This testing confirmed the survey was generally user-friendly and relatively easy to understand. The final survey questionnaire had four pages in total and took no more than 30 minutes to be completed. Two rounds of survey mailings between September and December 2009 brought the response rate to our goal of 30% (N=300) completed surveys.

Survey responses were separated into two groups: those producers planning to expand and those not planning to expand their dairies in the future. The results highlight differences and similarities between these two groups to stimulate discussion regarding future research efforts and Extension programs. Statistical t-Test analyses were performed between farmers planning to expand and farmers not planning to expand on selected important variables. Variables deemed to be important were: Age of respondent, farming experience, years of formal education, herd size, the milk productivity, acreage owned, and acreage rented. Statistical significance was measured at 5% level ( $P < 0.05$ ) and was denoted by an asterisk (\*), whereas highly statistical significance was measured at 1% level ( $P < 0.01$ ) and was denoted by two asterisks (\*\*). Non-significant results were denoted by NS ( $P > 0.05$ ). Results are reported along with the number of respondents for specific questions.

## Results and Discussion

## Respondent Demographics

About 26% of all producers surveyed (78 out of 300) were planning to expand their operations sometime in the future, whereas the remaining 74% of producers (222 out of the 300) were not planning an expansion. The proportion of farmers planning to expand their operations in the study was lower than the one reported for Pennsylvania 12 years ago (between 33 and 46%; Parsons, Hanson, Loloff, & Winsten, 1998). This is not surprising, though, considering our survey was administered in late 2009, when the U.S. dairy industry was experiencing one of the hardest economic times due to record low milk prices (Cropp, 2010), which would explain, in part, a relatively lower desire for expansion.

Table 1 compares demographic and educational differences between respondents planning to expand and those not planning to expand. Producers planning to expand were younger (47.1 vs. 51.2 years old,  $P=0.010$ ) and had less experience dairying (25.1 vs. 29.1 years,  $P=0.041$ ) than those not planning to expand. On average, a slightly younger age (46 years compared with our finding of average age of 49 years) was found for Pennsylvania dairy farmers (Zimmerman, E.K., Holden, L.A., Park, J.A., & Hyde, J., 2006), but interestingly, younger farmers were the more innovative (Parsons, Hanson, Loloff, & Winsten, 1998) in both locations. These are important findings to consider for Extension programming.

Statistical inference also indicated there was no significant difference ( $P=0.250$ ) between the level of education of either group. Parsons, Hanson, Loloff, & Winsten (1998) reported a proportion of dairy farmers between 16 and 31% that attended college, with a higher proportion of them being younger farmers. Our results are in agreement with those previous reports by the fact that between 28 and 41% of Wisconsin farmers attended college, with a higher proportion of younger farmers (those planning to expand). An overall higher proportion of college attendees in our study could in part be explained by the fact that farmers are more educated nowadays than they were 12 years ago.

In either category, planning to expand or not planning to expand, the predominant survey respondent was male: 94.8% for those planning to expand and 95.5% for those not planning to expand.

**Table 1.**  
General Demographics of Survey Respondents

<b>Demographic and Educational Characteristics</b>	<b>Planning to Expand</b>	<b>Not Planning to Expand</b>
<b>Age</b>		
Mean (SD) Age of Respondent *	47.1 (10.7)	51.2 (10.7)
N	62	187
<b>Gender</b>		
Male (%)	94.8	95.5
Female (%)	5.2	4.5
N	77	221
<b>Farming Experience</b>		
Mean (SD) Years Farming *	25.1 (13.0)	29.1 (12.1)
N	63	201
<b>Education</b>		
Years of Formal Education (NS)	12.8	12.4

<b>Education (%)</b>		
PhD	0	0.5
M.S.	1.3	0
B.S.	18.7	5.5
4 Year College	1.3	2.3
Technical College	20.0	19.7
High School	42.7	53.2
<b>Other (%)</b>		
8 <sup>th</sup> Grade	9.3	10.1
Farm & Industry Short Course	5.3	3.2
Night Classes	0	1.8
Other	1.3	3.7
N	75	218
N is number of respondents, SD is standard deviation		
* Denotes significant difference between means (P<0.05) for t-Test		
(NS) Denotes no significant difference between means at (P>0.05) for t-Test		

### Reasoning & Limiting Factors

Before an in-depth analysis is made, it is necessary to understand the reasoning and limiting factors in the mindset behind dairy producers planning to expand vs. those not planning to expand. Whereas there may be a variety of reasons, the three most important for either option are listed in Table 2. When planning for expansion, nearly 47% of producers' primary goal was to increase their farms' net income. This is consistent with what was previously found for Wisconsin dairy farms (Mayer & Kammel, 2010). For those not planning to expand, 37% indicated growth was undesirable given available labor. Also shown are the most influential reasons that hamper dairy growth and modernization. Producers planning to expand cited low profits as their number one choice (25.0%), while most producers not planning to expand were satisfied with their current size and did not feel a need for growth (27.8%).

Clearly, economic considerations play an important role in a dairy farmers' decision of whether to expand or not, although this seems to be more heavily weighted toward farmers planning to expand. Farmers not planning to expand seem to give more importance to the level of satisfaction with their current farm size and prefer to avoid risk. It is reasonable to assume younger farmers are more risk tolerant (Hardaker, Huirne, Anderson, & Lien, 2004) and consequently more inclined to expand, which has important implications for Extension programming.

**Table 2.**  
Reasons For and Against Expansion and Limiting Factors

<b>Reasoning</b>	<b>Planning to Expand</b> (N=78)	<b>Not Planning to Expand</b> (N=222)
<b>3 Most Important Reasons Given for Expansion/No Expansion (%)</b>		
1	Increase farm's net income 46.6	Keep operation at best size given available labor 36.8

2	Reduce production costs 24.1	Avoid costly investments in structures and equipment 18.4
3	Other 20.7	Avoid increased stress from managing a larger operation 16.7
<b>3 Most Limiting Factors to Improve/Grow Operation (%)</b>		
1	Low Profits 25.0	Satisfied with Current Size 27.8
2	Land Costs 26.6	Labor Availability 18.5
3	Health 10.9	Low Profits 11.1
N is the number of respondents		

## Herd & Farm Demographics

The average herd size was a highly significant difference between the two groups ( $P=0.0002$ ) (Table 3). Average herd size of milking cows for dairies not planning to expand was 82 cows, whereas farms interested in expanding had 247 cows. This is a different finding from that of Mayer & Kammel (2010), which indicated farms doing an expansion or modernization in the late 1990's or early 2000's had on average 82 cows. It seems that small family farms nowadays want to remain small because of labor limitations (Bewley, Palmer, & Jackson-Smith, 2001) and to avoid costly investments, additional stress, and uncertainty. This is an interesting finding with implications for the future of the Wisconsin dairy industry and its Extension needs. On one hand, small dairy farm operations (less than 100 cows) might remain small as they remain sustainable. Increasing numbers of intensive grazing and organic small farm operations (Blazek, Silva, Paine, & Atwell, 2010) contribute compelling evidence, as these types of systems might be providing a space and opportunity for farmers to remain small and sustainable (Parsons, Hanson, Loloff, & Winsten, 1998). On the other hand, medium size farms would tend to increase size in order to achieve higher overall farm profits. Despite size differences between studied systems, milk production was not significantly different between the two groups (Table 3).

There was also a noticeable difference in the number of milkings per day, as those not planning to expand almost unanimously followed the traditional twice-a-day schedule (2x). In comparison, 28% of herds planning to expand were milked three times daily (3x; Table 3). Evidently, three-a-day milking increases milk production (Erdman & Varner, 1995) and improves farm technical efficiency (Cabrera, Solis, & del Corral, 2010), but at the cost of additional management and labor. Therefore, it is reasonable to find that those more labor-intensive systems would tend to have 3x milkings and also the desire to expand. Alternatively, non-expanding farmers, who mention labor and management as important limitations, would be less prone to use 3x-milking schemes.

When asked about their record-keeping practices, the majority of dairy producers across the spectrum indicated they actively kept records, 94.2 and 90.2% for expanding and not expanding farmers, respectively. This is higher than what was previously reported (between 54 and 63%) 12 years ago (Parsons, Hanson, Loloff, & Winsten, 1998). A sharp increase of farmers keeping records is a reasonable finding giving the

higher availability of personal computers and Dairy Herd Improvement Services. The important implications of these findings for Extension indicate there is a growing need to consider more technological venues and data-intense analyses for delivery efforts. Disparities in how herd records were kept are apparent between the studied groups. Among farms planning to expand, 61% owned a computer having DairyCOMP 305® as the most popular software choice (41.7%). Only 45% of their counterparts owned a computer using a wider variety of software programs. This finding is not surprising considering younger farmers, especially those planning to expand, are expected to be more technologically savvy.

A comparison of milking systems revealed stark differences in both style and variety being used. In either group, the most popular milking system was the traditional stanchion barn setup. More producers who were not planning to expand used this type of system (69.1%), as compared to 52% of those planning to expand. One likely change in dairy farm facilities expansion is to modernize the milking parlor, as previously reported by Mayer & Kammel (2010). It is interesting to note that 4.5% of all farms surveyed still milked their cows by hand: respondents from these farms typically had fewer than 20 total cows and, as expected, were in higher proportion (2.5 times higher) in the non-expanding group. Younger farmers (planning to expand), being more risk tolerant and innovative, would adopt technology faster than their counterparts, which is reflected in these findings. Extension efforts should consider these results to plan and execute Extension programs according to the target audience to be served.

**Table 3.**  
General Farm Characteristics Related to Dairy Production

<b>Farm Enterprise</b>	<b>Planning to Expand (N=78)</b>	<b>Not Planning to Expand (N=222)</b>
<b>Dairy: Milking Herd</b>		
Mean (SD) # of Milking Cows **	247.4 (363.0)	82.1 (117.0)
Mean (SD) Rolling Herd Average Production (lbs) (NS)	21,747 (4,640)	20,642 (5,068)
<b>Milkings per Day (%)</b>	72.0	
Twice a day (2x)	28.0	94.5
Three times a day (3x)		5.5
<b>Dairy: Recordkeeping</b>		
<b>Actively Keep Records (%)</b>		
Yes	94.8	90.2
No	5.2	9.8
<b>Own A Computer (%)</b>		
Yes	60.5	45.0
No	39.5	55.0
<b>Records Program Used (%)</b>		
DairyCOMP 305	41.7	10.7
Scout	6.3	3.6
PC Dart	2.1	3.6
AgSource DM	12.5	8.3
<b>Other (%)</b>		
QuickBooks	6.5	5.6
Quicken	0	1.9
Ag Manager	1.3	0.9

Excel	0	1.4
Other	14.3	19.1
<b>Dairy: Milking System</b>		
Stall barn w/pipeline (%)	51.9	69.1
<b>Flat Parlor in Existing Building (%)</b>		
Walk-through	0	0.9
Back-out	1.3	1.4
<b>Flat Parlor in New Building (%)</b>		
Walk-through	0	0.9
Back-out	0	0.5
<b>Pit Parlor in Existing Building (%)</b>		
Auto-tandem	0	0
Herringbone	8.9	3.2
Parallel	6.3	3.6
Rotary	0	0
Swing	5.1	2.3
<b>Pit Parlor in New Building (%)</b>		
Auto-tandem	0	0.5
Herringbone	6.3	3.2
Parallel	15.2	3.7
Rotary	1.3	0
Swing	0	2.3
<b>Other (%)</b>		
By Hand	1.3	3.2
Stall Barn w/Buckets	1.3	4.5
Robots	1.3	0.9
N is the number of respondents, SD is standard deviation		
** Denotes highly significant difference between means at (P<0.01) for t-Test		
(NS) Denotes no significant difference between means at (P<0.05) for t-Test		

### Bedding & Manure Management

Dairy producers in both groups used straw or cornstalks as the primary bedding choice for their milking herd. The summary in Table 4 also shows differences in manure management. Whereas most farms used a skid steer or tractor for scraping manure, differences occurred in storage length, liner type, and size. Farms planning to expand generally had greater than 60-day manure storage, with an average capacity of about 3.7 million gallons. Popularity among liner type was relatively close between clay and concrete-based structures. Producers not planning to expand were split between daily haul and long-term manure storage systems. As a result, their average storage size was much smaller (about 1.1 million gallons), and concrete was the liner of choice. As expected, farms planning to expand, being larger in herd size, had more infrastructure, machinery, and equipment for bedding and manure management, which makes these operations better prepared to start or continue a process of expansion.

**Table 4.**  
Bedding and Manure Management Profile of WI Dairy Farms

<b>Farm Enterprise</b>	<b>Planning to Expand (N=78)</b>	<b>Not Planning to Expand (N=222)</b>
<b>Dairy: Primary Bedding Type</b>		
Sand (%)	30.8	15.2
Straw/Cornstalks (%)	52.6	74.0
Shavings/Sawdust (%)	14.1	12.7
Compost (%)	0	0
Manure Solids (%)	2.6	0.5
<b>Dairy: Manure Handling System (%)</b>		
Skid Steer/Tractor Scrape	55.3	35.5
Automatic Scrapers	19.7	2.7
Flush	0	0.3
<b>Other (%)</b>		
Gutter w/barn cleaner	19.7	25.6
By Hand	2.7	4.1
Other	2.6	1.0
<b>Dairy: Manure Storage Length (%)</b>		
Daily Haul	28.2	44.7
Short-term (0-60 Days)	14.1	11.2
Long-term (60+ Days)	57.7	44.2
<b>Size (Mean)</b>		
Cubic Feet	41,836.7	16,359.9
Gallons	3,682,886.4	1,146,229.6
<b>Storage Liner Type (%)</b>		
Concrete	41.8	49.6
Earth/Clay	47.3	41.9
Synthetic	9.1	7.7
Other	1.8	0.9
N is the number of respondents		

## Crops

Producers were asked to describe their total acreage owned vs. rented, the variety of crops grown, and whether a nutrient management plan was in place (Table 5). There was a non-significant difference ( $P=0.36$ ) in the total acreage owned. However, farms planning to expand rented a larger (314 acres) area of land compared to those not planning to expand (114 acres) ( $P=0.001$ ). Dairies planning to expand held a larger land base, although acreage per cow was actually greater for dairies not planning to expand (2.3 vs. 4.3 acres/cow), another indicator that farmers not planning to expand were more reliant on pastures than those planning to expand, who relied more upon high-density confinement systems. The land base reported here is consistent with the one found in Pennsylvania, which ranged between 3.2 and 3.9 acres/cow (Parsons, Hanson, Loloff, & Winsten, 1998).

Dairies planning to expand were more likely to follow a nutrient management plan, which is expected from larger, more confined dairy farm operations. A complete breakdown of crops grown and their average



acreage is summarized for each group in Table 5, which indicates farmers planning to expand produce larger amounts of nutrient-dense feeds such as corn grain or soybeans, whereas those farmers not planning to expand have more land devoted to forages such as alfalfa and pastures. The majority of the crops listed in the "Other" category were grown as cash crops in both categories. The implications of these findings for Extension programming are that emphasis should be given to nutrient management plans in conjunction with the large variety of crops, land availability, and herd size on a farm-by-farm specific basis.

**Table 5.**  
Description of Cropping Systems on Expanding and Non-expanding Dairies in WI

<b>Farm Enterprise</b>	<b>Planning to Expand</b>	<b>Not Planning to Expand</b>
<b>Crops: Acreage</b>		
Mean (SD) Acres Owned <sup>(NS)</sup>	307.1 (384.2)	261.9 (274.8)
Mean (SD) Acres Rented **	314.2 (491.0)	115.4 (167.2)
N	73	207
<b>Crops: Nutrient Management Plan? (%)</b>		
Yes	85.9	59.0
No	14.1	41.0
N	78	210
<b>Crops: Acreage</b>		
Mean (N) Corn Grain	113.6 (59)	76.3 (167)
Mean (N) Corn Silage	173.3 (69)	51.2 (199)
Mean (N) Soybeans	42.5 (25)	31.8 (85)
Mean (N) Alfalfa	219.2 (74)	107.0 (202)
Mean (N) Pasture/Grazing	30.0 (41)	36.8 (153)
Mean (N) Wheat	43.2 (9)	35.9 (17)
Mean (N) Winter Wheat	66.7 (3)	69.0 (5)
Mean (N) Oats	22.9 (11)	21.0 (36)
Mean (N) Barley	47.8 (4)	23.3 (6)
Mean (N) Grassy Hay	26.5 (6)	86.8 (6)
Mean (N) Peas	35.0 (1)	38.8 (4)
Mean (N) Snap Beans	0.0 (0)	150.0 (2)
Mean (N) Other Crops	20.0 (1)	30.7 (13)
N is the number of respondents, SD is standard deviation		
** Denotes highly significant difference between means at (P<0.01) for t-Test		
(NS) Denotes no significant difference between means at (P<0.05) for t-Test		

## Farms Planning to Expand

In a separate section of the survey, dairy producers planning to expand were asked several additional questions about various aspects of their future expansion plans. The information gained here was used to support work on a project focused on minimizing risk during dairy expansion and the development of a decision support system.

Respondents were asked to choose their most desirable methods of herd expansion. The vast majority of producers in this category indicated growing from within was one of the strategies they would employ to expand their herd (89.7%), and most of them would start expansion within a year (Table 6). This is a different finding from that from Bewley, Palmer, & Jackson-Smith (2001). The previous study found that the majority (more than 66%) of expanding farms bought additional animals (whether calves, heifers, or mature animals), and only 48% of farms grew from within. Several reasons might explain the different results. One reason could be that improved reproduction efficiency and the introduction of sexed semen technology within the last 10 years would provide confidence to farmers to be able to grow from within today more easily than in the past. Another reason could be that the relative cost of on-farm heifer raising compared to buying replacements might be perceived as being more favorable today.

Implications from these findings are critical for Extension efforts. Most of the farmers rely on their own farm capacity to produce enough replacements to outweigh the number of animals leaving the herd, and ultimately, increase their herd size. Therefore, strategic management toward reproductive efficiency and herd replacement policy is essential. Farmers planning to expand need to assure their cows are getting pregnant within a reasonable time to procure enough replacements and reduce the number of cows culled due to reproductive failure.

**Table 6.**  
Future Plans of Expanding Dairies (N=78)

<b>Plans Relating to Expansion</b>	<b>%</b>
<b>Method of Expansion</b>	
Grow from Within	89.7
Purchase Youngstock	11.5
Purchase Bred Heifers	33.3
Purchase Cows	17.9
Not Sure	3.8
<b>Timetable to Commence Expansion</b>	
0-1 Years	44.7
1-2 Years	14.5
2-3 Years	15.8
3-4 Years	6.6
4-5 Years	5.3
Not Sure	13.2
N is the number of respondents	

Table 7 highlights the areas where most improvements will occur as dairies enter the expansion phase. Aside from herd expansion, updates to milking facilities and calf and heifer facilities were the most common plans cited.

As previously discussed, farmers planning to expand will be required to make facility improvements together with the herd expansion. Therefore, farmers planning to expand will require relatively large investments and consequently a cash flow plan for the short, medium, and long term.

**Table 7.**  
Likelihood of Improvements on Expanding Dairy Farms (N=78)

<b>Likelihood to Make Changes/Improvements</b>	<b>Somewhat Likely (%)</b>	<b>Very Likely (%)</b>
Increase Herd Size by more than 20%	41.0	25.6
Improve Milking Facilities	32.1	23.1
Improve Manure Storage	16.7	19.2
Improve Calf and Heifer Facilities	41.0	26.9
N is the number of respondents		

## Information & Extension Needs

The diversity among Wisconsin dairy operations commands a wide variety of informational and Extension needs. The data displayed in Table 8 is evidence of this fact. Farmers planning to expand and those not planning to expand were given the opportunity to request more information in factors relating to production, management, and finances. Financial planning (48.5%) and additional information about profitability measures and financial efficiency (54.2%) were ranked highest by producers planning to expand, while producers not planning to expand requested more information related to reproduction (36.0%) and financial efficiency (40.4%).

In response to these requests, the Dairy Management team at the University of Wisconsin-Madison and University of Wisconsin-Extension developed a risk management tool to support dairy farm decisions during a process of expansion, which is a computer-based decision support system that simulates changes in herd structure and cash flows when considering dairy farm expansion scenarios. This Extension tool is the Decision Support System Program for Dairy Production and Expansion Tool, and it is available at <<http://www.DairyMGT.info>>. This decision tool comes with a detailed user manual, a 9-minute video demonstration, and technical support, and it covers the most important needs expressed for those producers planning to expand.

**Table 8.**  
Areas of Interest among Dairy Producers

<b>Informational Needs</b>	<b>Planning to Expand (%)</b>	<b>Not Planning to Expand (%)</b>
<b>Dairy Production/Management</b>		
Genetics	15.2	15.5
Reproduction	30.3	36.0
Heifers	16.7	16.1
Calves	34.8	23.6
Herd Management	45.5	26.1
Employee Management	25.8	10.6
Milk Quality	21.2	17.4
Transition Cows	25.8	20.5
Expansion	42.4	4.3
Financial Planning	48.5	30.4
Other	10.6	23.6

N	68	161
<b>Financial Information</b>		
Liquidity Measures	33.3	21.3
Solvency Measures	41.7	12.8
Profitability Measures	54.2	34.0
Repayment Capacity	41.7	20.2
Financial Efficiency	54.2	40.4
Other	1.4	3.2
None	15.3	38.8
N	74	188
N is the number of respondents		

## Conclusions & Implications

The Wisconsin Dairy Business and Production Survey showed dairy farms throughout Wisconsin are represented by a diverse group of people, management styles, and herd sizes. The face of the state's dairy industry seems to be rapidly changing, which is indicated by 26% of farmers intending to expand their operations. Herein lie opportunities for advancements in research and Extension activities for researchers and Extension professionals.

The Wisconsin Dairy Business and Production Survey successfully identified several areas where more research and Extension efforts are desired by dairy producers across the state. Results that divided dairies planning to expand and dairies not planning to expand definitively express the specific needs of each group, which are related to farmers' demographics and farm characteristics. In general, dairy farmers planning to expand are younger, have less farming experience, and are more innovative and risk tolerant than those not planning to expand. Dairy farmers planning to expand have larger herd sizes, manage more acreage, and produce more nutrient-dense crops than those not planning to expand. Dairy farmers planning to expand have more dairy infrastructure, machinery, and equipment for bedding and manure management than those not planning to expand.

Moreover, emphasis on Extension programming for expanding farms should be given to nutrient management plans in conjunction with the large variety of crops, land availability, and herd size on a specific farm-by-farm basis. Because most expanding farmers plan a herd expansion from within, strategic management towards reproductive efficiency and herd replacement policy is essential. They need to ensure their cows are getting pregnant within a reasonable time to procure enough replacements while reducing reproductive failure culls. Farmers planning to expand require information on facility improvements, large investment acquisition, and cash flow planning. Not surprisingly, farmers planning to expand have requested educational support on financial planning and profitability measures. Future research and Extension efforts have to address these needs.

The above findings served as validating evidence for developing a risk management tool to support dairy farmers during a process of expansion. A computer-based decision support system program was therefore developed by the University of Wisconsin Dairy Management Team to simulate changes in herd structure and cash flows when considering dairy expansion scenarios. More information about the Extension tool and a current version of the application can be found at <http://www.DairyMGT.info>.

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