2008 Wisconsin Dairy Modernization Survey

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Abstract

A survey was conducted on 99 Wisconsin dairy farms representing 30 counties that had recently modernized their dairy facilities. The majority of the farms surveyed had switched from milking cows in a stall barn to some type of parlor milking system. The survey was used to determine the producer's observations as to the major benefits to both themselves and the cows after modernizing their facilities. Producers were also asked to identify the educational resources they utilized and valued the most in their planning process; their most challenging aspect of the modernization process; the grant and loan programs they used, and what they would change if they could do it over again.

The changes in daily labor requirements as a result of modernizing dairy facilities were gathered through the survey. Daily labor needs on a per cow basis for milking setup and cleanup, stall maintenance, feeding and handling cows and manure were calculated for pre and post modernization. Milking throughputs based on the number of cows milked per person per hour were calculated from the survey data. The economic impacts on milk production per cow and per farm after modernizing were also gathered and are summarized in this paper.

Introduction

In 2008 approximately 80% of the dairy herds in Wisconsin still had herd sizes of less than 100 cows. The majority of these herds are milked and housed in the traditional stall barns, many of which were built in the early 1900's with stall dimensions for cows that were much smaller in size and produced about one-fifth of the milk that today's cows produce.

Most Wisconsin dairy producers simply added length onto their two story traditional stall barns as they increased their herd size from the 1940's - 1960's. In the 1970's and 1980's many dairy farms increased their barn size by adding on single story additions as silos replaced much of the need for additional hay mow space in the stanchion barns. These early dairy barn expansions are easy to spot as you drive around the Wisconsin landscape and see many barns with 2-3 different roof lines reflecting the different eras of modernization in the state.

The transition from the stall barn housing and milking system to a free stall housing and parlor milking system has been occurring on Wisconsin farms over the past 20 years. However, the adoption of milking parlors on smaller family dairy farms has been fairly slow due to the large costs involved with building a new parlor and free stall system and having to spread those costs over a small number of cows. The average herd size in Wisconsin has grown steadily and stands at 93 cows in 2008.

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Over the past 20 years many dairy producers reached a crossroad and were forced into deciding the future direction they wanted their operation to take. Their options usually included: remodeling the present barn and adding a few more stalls; moving the cattle out of the traditional barn and into a new freestall barn and parlor at a new location; building a new freestall barn and some type of retrofit parlor inside their present stall barn; or avoiding any new investment in their facilities and exiting out of the dairy business.

Many producers did choose to exit the dairy business as we saw a steady decline in Wisconsin dairy cow numbers from 1,876,000 in 1985 to a record low of 1,233,000 in 2005. The number of dairy farms in the state also dropped from 41,000 in 1895 to a present record low of 13,525 in November of 2008. This dramatic decrease in dairy farms, milk cows and milk production led to shortages of milk for cheese plants in many parts of the state in the early 1990's.

Fortunately for the Wisconsin dairy industry many dairy farms also found the option of modernizing their facilities as a viable one in meeting their future goals. Many family run dairies wanted to reduce their labor requirements for feeding and milking, and improve production per cow. They also sought to increase cow comfort by moving cows to a free stall barn. The concept of retrofit and lower cost parlors allowed many average sized producers to modernize and expand cow numbers in moderate steps.

Methodology

The UW-Extension Dairy Team conducted a survey in 2008 of Wisconsin producers that had modernized their dairy facilities within the past ten years. UW-Extension agriculture agents assisted in identifying farms and collecting the surveys from 104 dairy producers who had modernized their facilities. The farms were not chosen at random and many had received assistance from UW-Extension in their modernization process. Dairies from 30 counties are represented in the survey. Survey data were edited for practical errors and then entered by the University of Wisconsin-River Falls Survey Lab. After editing, 99 of the 104 surveys were included in the final data set that is summarized in this paper.

The survey was conducted to determine what the producers observed as being the major benefits to modernizing from both the cow's and their personal standpoint. Data were collected to determine the types of educational resources and dairy professionals that farmers used and valued the most in the process. They were also asked to identify the most challenging part of their modernization process; the programs they used to help finance their project; and what they would change in their project if they could do it over again.

The survey asked producers to compare their time spent on labor for feeding cows, milking setup, stall maintenance and manure handling prior to modernization, with their labor needs after modernization. Producers were also asked to record their costs for modernization and all investment figures were adjusted to represent 2008 dollar values.

Survey Results: General Farm Information

The average herd size in the survey was 82 milk cows prior to doing a modernization and was 203 cows after modernizing. The herd sizes after modernization ranged from 15 cows on a herd that had just started up, to the largest herd that is now milking 865 cows. The survey included 14 operations that utilized some grazing and 85 confinement operations.

General information for the surveyed farms including average herd size, production per cow, acres owned and rented for pre and post modernization are included in Table1 below. The average herd size increased by 148% after modernization; however, the full time equivalents (F.T.E.) for dairy labor only increased by 84.6% after modernization. Gains in labor efficiency after modernizing their dairy facilities were also observed by the increase from 35 to 50 milk cows per F.T.E.

Table 1. General Farm Information

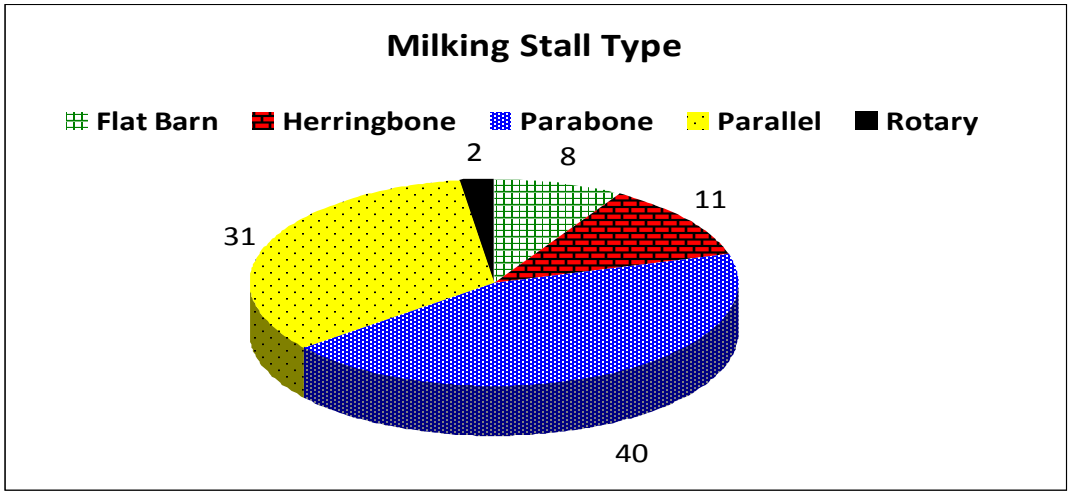
General Farm Information	Pre Modernization	Post Modernization
Herd Size (Milk Cows)	82	203
Average Milk Production /Cow	20,245 lbs.	21,684 lbs.
Acres of Land Owned	351	421
Acres of Land Rented	187	308
Acres/Cow (owned & rented)	6.56	3.59
Dairy Full Time Labor Equivalents	2.34	4.32
Milk Cows per F.T.E.	35	50

The survey showed that many dairy producers chose to rent additional land when expanding their herd and modernizing. The number of acres owned and rented per cow was reduced by 45.3% after modernization. This is not surprising given the high cost of land and limited capital available while undertaking a modernization project. The reduction in land base per cow after modernization was mainly offset by renting more acres vs. purchasing more land.

Milking Systems

Seven of the farms reported that they had built alternative housing facilities for the milk cows, but they were still milking the cows in their old stall barn. The other 92 farms reported that they had built some type of parlor to milk cows in. Sixty-two percent of the farms built retrofit parlors into existing facilities and 38% constructed their parlor in a new building. Parabone and parallel parlors was the most popular stall types used on the farms. Herringbone, flat and rotary parlors were also used on the farms. Figure 1 contains a complete break down of parlor stall types included in the study.

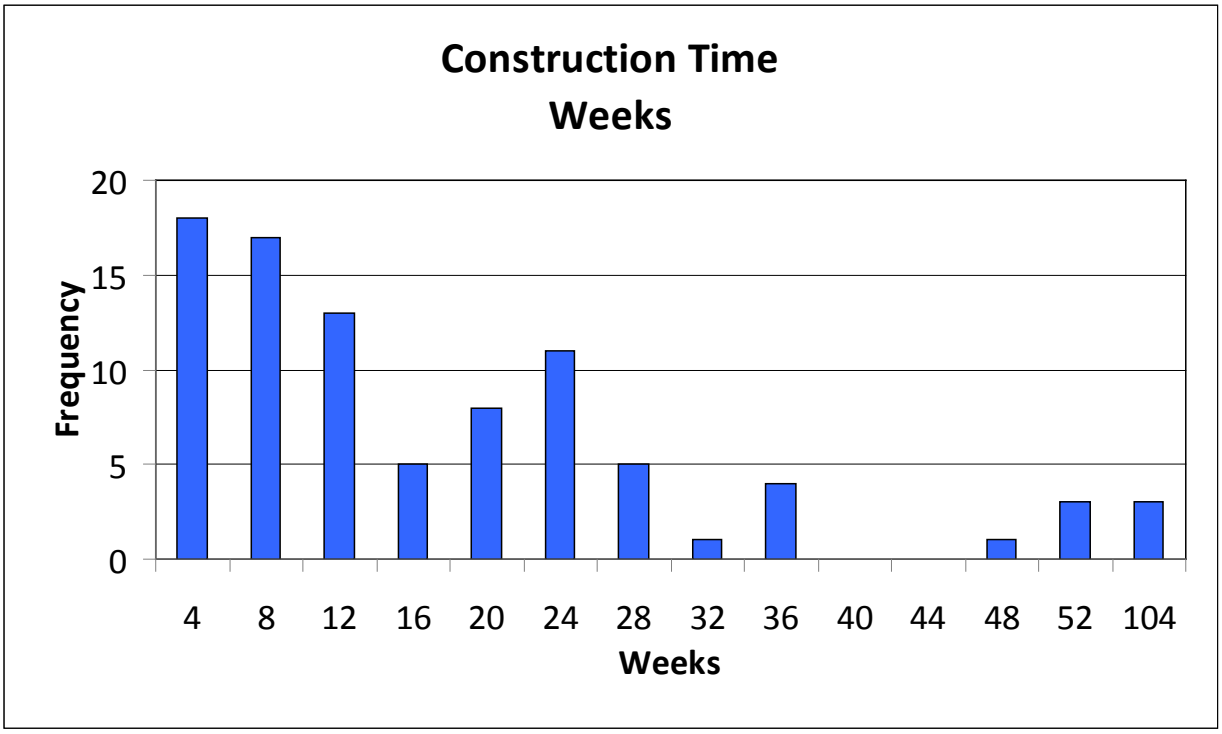
Figure 1. Types of Parlor Stalls Represented on Surveyed Farms



The parlors in the study had an average of 13.7 milking units. Sixty percent of the producers reported using new stalls, 28% used home built stalls, and 12% used a combination of new and used milking stalls when building their parlor.

The average time period for the farms to convert from their stall barn system to parlor milking system was 17 weeks. This period was defined as the time from the start of parlor construction to the first milking in the new parlor. There was a wide range in the time periods for the conversion ranging from as little as 4 weeks to as long as 26 months. See Figure 2 for the complete summary of all the times reported. The producers where also asked how much of their own labor they provided in building their new parlor. The farms averaged 37% of the labor being provided by the producer and 63% being provided by a professional contractor.

Figure 2. Parlor Construction Time



Producers were asked to report the cost of building their new parlors and the year they were built. The parlor costs were then converted to 2008 dollars to allow for an accurate comparison between parlor types based on a per stall basis. The cost breakdowns were also separated for parlors constructed inside a new building from the retrofit parlors that were built into existing stall barns or other buildings. Parabone parlors were the most popular choice for retrofit parlors and parallel parlors were the most popular in new construction scenarios. Flat parlors built inside existing facilities were the lowest cost at $3,360 per stall, with parabone parlors having an average cost of $3,845 per stall. The highest average per stall cost for parlors in the survey was a parallel parlor built into new construction at an average cost of $22,361 per stall. See Table 2 for the average per stall costs of all the parlors in the survey.

Table 2. Average Parlor Cost per Stall

Parlor Stall Type	Retrofit Construction (n=55)	New Construction (n= 31)
Flat barn	**$3,360 (n=6)**	**NA**
Herringbone	**$9,657 (n=8)**	**$18,769 (n=3)**
Parabone	**$3,845 (n=30)**	**$6,016 (n= 10)**
Parallel	**$7,478 (n=11)**	**$22,361 (n=18)**

Cost per stall for retrofit parlors were about half the cost of parlors built into new construction. The lower cost for retrofits results from lower building shell and milk equipment costs. Farmers also provided more of their own labor in building the retrofit parlors than those that built with new construction, helping to further lower the cost for retrofits. Producers that built retrofit parlors reported providing an average of 44.8% of the labor towards building their parlor, while those that built with new construction contributed an average of 23.8% of the labor.

Milk Cow Housing and Feeding Systems

Seventy-nine percent of the dairies surveyed housed their milk cows in freestall barns, 17% housed their milk cows in bedded pack barns, and 4% were using compost bedded pack barns. Fifty-nine percent of the dry cows were in bedded pack housing, 40% were housed in freestalls, and 1% was housed in compost bedded pack buildings.

Portable TMR mixers were used on 83% of the farms, 4% used stationary TMR's, 8% of the farms used mechanical bunk feeders, and 14% of the farms reported the use of some managed intensive grazing in their feeding systems. Cows were fed an average of 1.46 times each day in the winter and fed only a slightly higher average of 1.57 times daily in the summer. Farmers reported pushing feed up the cows and average of 3.51 times per day. Silo bags and upright silos were both used for feed storage on 66% of the farms. Bunkers were used on 35% of the farms, and 34% of the surveyed farms used wrapped bales.

Manure Handling, Storage and Bedding

Skid steers and tractor scraping was the most popular system for handling manure with 88% of the farms reporting using them. Eleven percent of the farms used automatic scrapers, 1% reported using a flush system and 8% reported using some other type of system for handling manure including grazing, barn cleaners, slated floors, and composting. The total percentages for handling and storing manure exceed 100% because many farms reported using multiple methods for each on their farm.

Fifty-two percent of the farms reported having a manure storage structure that held more than a 60 day supply. Concrete manure storage structures were the most common with 47% of the farms reporting their use. Twenty-six percent of the farms used earthen/clay lined manure storage pits and 4% used synthetic liners in their storage pits. Thirty-one percent reported having a manure storage capacity of 2-60 days on the farm, and 29% reported that they hauled manure daily.

Sand was the most popular type of bedding used for milk cows and was utilized by 52% of the farms. Mattresses were used on 27% of the farms, 19% used traditional bedded packs and 4% housed cows on compost bedded packs. These percentages do not equal 100 because several farms reported using a combination of bedding types.

The 99 farms surveyed reported a total economic investment of over $65.3 million (2008 dollars) into modernizing their dairy facilities. That is an average investment of $659,671 per farm and $3,250 per cow. The investments include expenditures for modernizing calf, heifer, milk cow and dry cow housing, milking parlors, manure and feed storage, and handling systems for feed and manure. The investments in modernizing milking parlors and milk cow housing represented 73% of the total amount invested for modernization on the surveyed farms.

Labor Impacts

The survey asked producers to compare their labor requirements prior to modernizing facilities with the labor needs after modernization. Producers listed the amount of time they spent daily for milking, milking setup and cleanup, feeding milk cows, cleaning and bedding stalls, handling cows and handling manure. Table 3 illustrates the average time reported for each of these daily chores. Note that the pre modernization numbers are for an average herd size of 82 cows and the post modernization represents the daily labor requirements for an average herd size of 203 cows.

Table 3. Pre and Post Modernization Daily Labor Requirement for Entire Herd

Average Total Time Spent Each Day on Chores	**Pre Modernization Average for 82 Cows** (Daily hours for herd)	**Post Modernization Average for 203 cows** (Daily hours for herd)
For Each Milking [1]	**2.58**	**2.88**
Milking Set up/Clean up	**.57**	**.73**
Feeding Milk Cows	**2.04**	**1.86**
Cleaning/Bedding Stalls	**1.08**	**1.17**
Collect/Handle Manure	**.98**	**1.31**
Handling Cows [2]	**1.14**	**1.83**

[1] Defined as the time from pump on to pump off

[2] Includes time for breeding, treating and moving cows

The numbers in Table 3 illustrate that producers were able to milk almost 2.5 times more cows without adding a lot of additional labor. The top personal benefit reported in the survey by producers was the reduction of labor per cow. These labor savings on a per cow basis allowed producers to expand cow numbers to help pay for their modernization project without having to hire a great deal of additional off farm labor. The real labor savings were seen on a per cow basis that is illustrated in Figures 3 and 4. The labor savings on a per cow basis were statistically significant for feeding, milking, cow handling, milking set up and clean up, stall maintenance and handling manure. These statistics are summarized in Table 4.

The labor reductions observed on the farms on a per cow basis after modernization was significant. The reduction in labor per cow for feeding and handling cows, milking setup/cleanup, milking, maintaining stalls and handling manure totaled of 25.80 hours per cow per year on the surveyed farms. The annual per cow hourly labor savings are listed in Table 5 along with the economic impact of the labor savings based on labor at $12 /hour for each farm.

Figure 3. Average Labor/Cow/Day for Feeding, Handling Cows and Manure

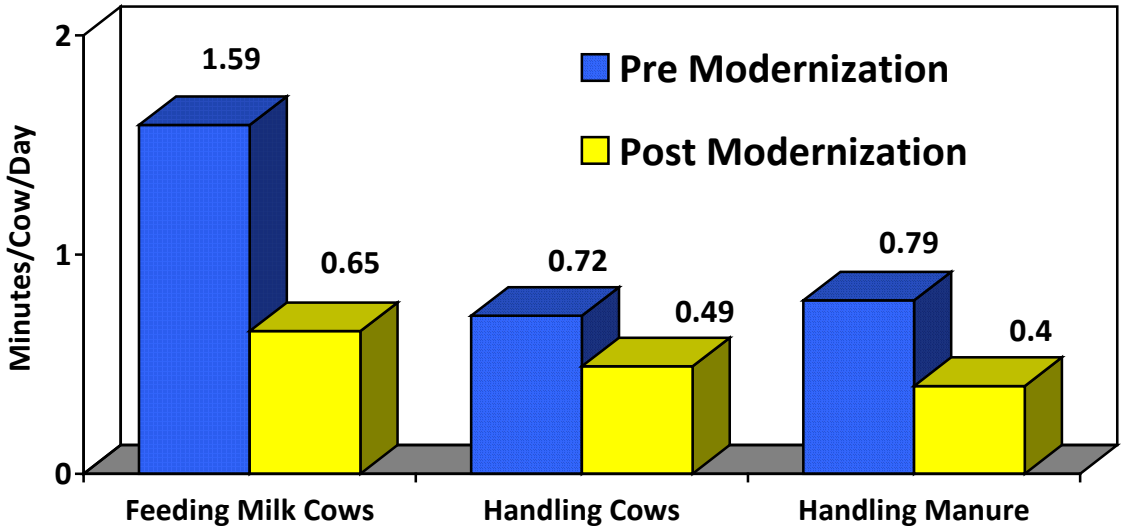


Figure 4. Labor/Cow/Day for Milking, Stall Maintenance and Milking Setup/cleanup

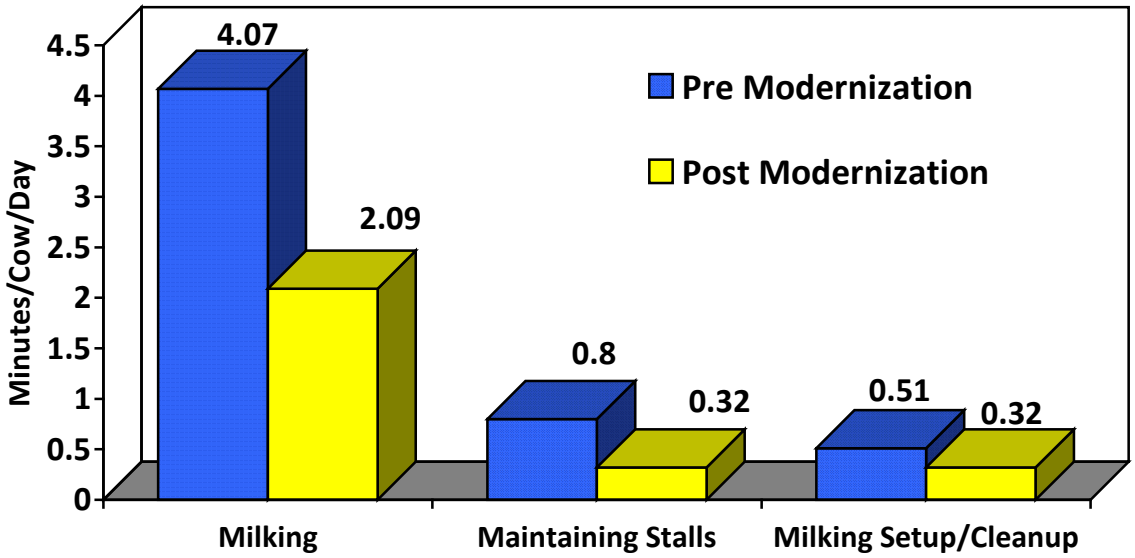


Table 4. Average per Cow Daily Labor Time in Minutes

Chore	n	Pre Modernization Mean	Post Modernization Mean	Time Change Cow/Day	Pooled Standard Deviation
Milking Setup/Clean	90	.51	.32	* .19	.39
Milking	90	4.07	2.09	** 1.98	1.56
Feeding Milk Cows	94	1.59	.65	** .94	.70
Handling Cows	89	.75	.49	* .26	.56
Maintaining Stalls	89	.80	.32	** .48	.38
Handling Manure	83	.79	.40	** .39	.46

**P=<.001 *P=<.01 Total 4.24minutes/cow/day

Table 5. Annual Labor Reductions per Cow and Economic Savings for Surveyed Farms

Chore	Reduced Time Per Cow/Day	Reduced Hours Per Cow/Year	Labor Rate	Dollar Savings of Labor Reduction
Milking Setup/Cleanup	**.19**	**1.16**	**$12**	**$13.92**
Milking	**1.98**	**12.05**	**$12**	**$144.60**
Feeding Milk Cows	**.94**	**5.72**	**$12**	**$68.64**
Handling Cows	**.26**	**1.58**	**$12**	**$18.96**
Maintaining Stalls	**.48**	**2.92**	**$12**	**$35.04**
Handling Manure	**.39**	**2.37**	**$12**	**$28.44**
Totals:	**4.24 min./day**	**25.80 Hours**		**$309.60/Cow/Yr**

The average farm reported reducing their per cow labor by 25.80 hours per year with almost half of those savings coming from reduced labor for milking. If labor is valued at $12/hour, the per cow labor reductions accounted to an average savings of $309.60 per year. If we took the final average herd size of 203 cows from the surveyed farms that would equate to a total annual labor savings of $62,848.80 (203 cows x $309.60= $62,848.80) for the average farm in the study.

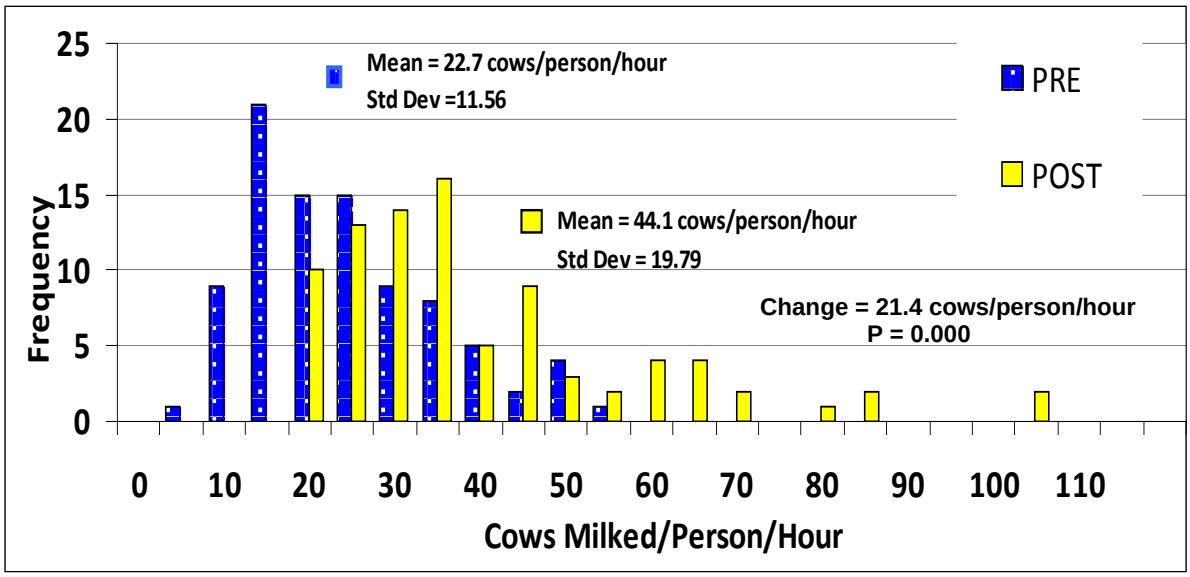
If we took the per cow labor numbers from table 5 and applied them to a 100 cow herd that herd would save 2,580 hours of labor which would equate to approximately one full time laborer. Thus, the per cow labor reductions that result from modernizing facilities could allow producers to expand their herd size by approximately 100 cows without having to hiring additional off farm labor.

The 92 dairies that switched from a stall barn to some type of parlor milking system reported milking an average of 22.7 cows/hour/person prior to modernization. After modernizing with a parlor milking system, the farms reported milking an average of 44.1 cows/hour/person across all the farms. The numbers of cows milked per person per hour increased by 21.4 after modernization. This number was statistically significant at a P value of 0.000. Parlor types in the survey included flat, parabone (swing), parallel, herringbone and rotary resulting in a large range of cows milked/person/hour.

The range of cows milked/person/hour after modernization ranged from a low of 21.1 cows in a double 12 parallel parlor that was achieving less than two turns per hour, to a high of 108 cows milked/person/hour in a double 16 parallel parlor that was achieving a little over 5 turns per hour. These numbers illustrate that the efficiency of the parlor operators has more to do with cow throughput per hour than does the type of parlor used.

The frequencies of parlor outputs from the study are represented in Figure 5. The number of cows milked/person/hour prior to modernization ranged from a low of 7 cows on a farm milking 85 cows in two different stall barns, to a high of 50 cows/person/hour on a farm milking 260 cows in a double 8 parallel parlor that was later expanded to a double 10.

Figure 5. Frequency of Milking System Throughput for Pre and Post Modernization



Cow Benefits from Modernization

Producers were asked to identify the cow benefits that they observed as a result of their modernization projects, and then were asked to rank the importance of each identified cow benefit. This was done on a scale of 1 to 6 with a score of one being the lowest and six being judged the most important benefit. The highest reported benefit to the cow from modernizing was the improvement of overall cow health, which was observed on 85% of the farms. Less feet and leg problems were listed as the second highest benefit to the cows, followed in order by lower somatic cell counts, increased production, lower culling rate and increased conception rates. The complete results of the cow benefits observed and the importance the producers placed on each are shown in Figures 6 and 7.

Figure 6. Cow Benefits Observed by Producers from Modernization Projects

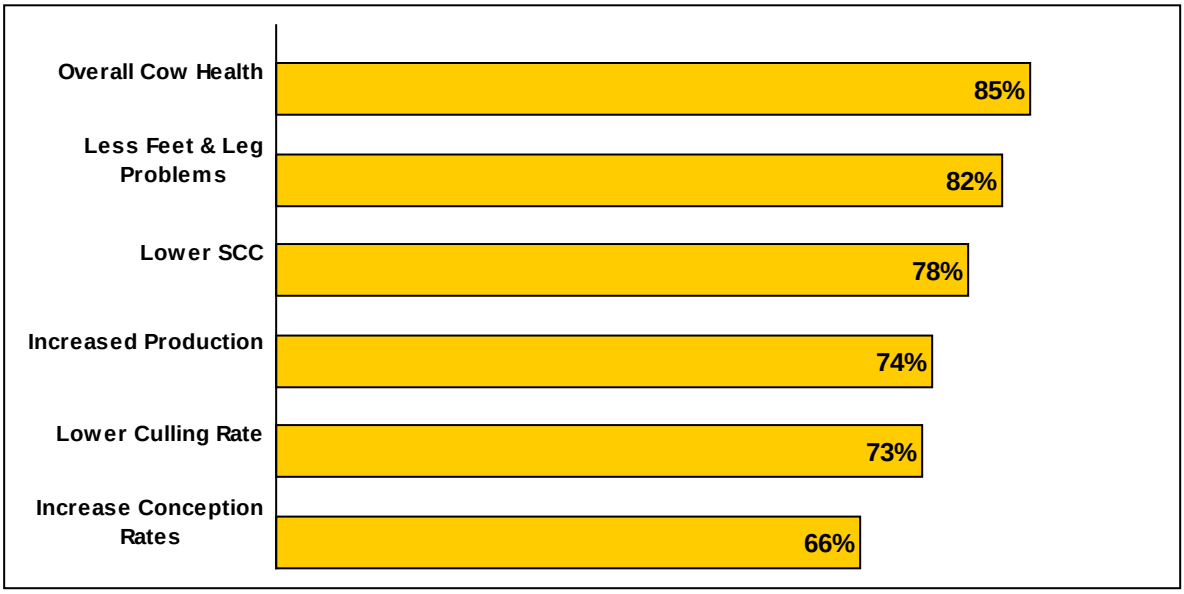
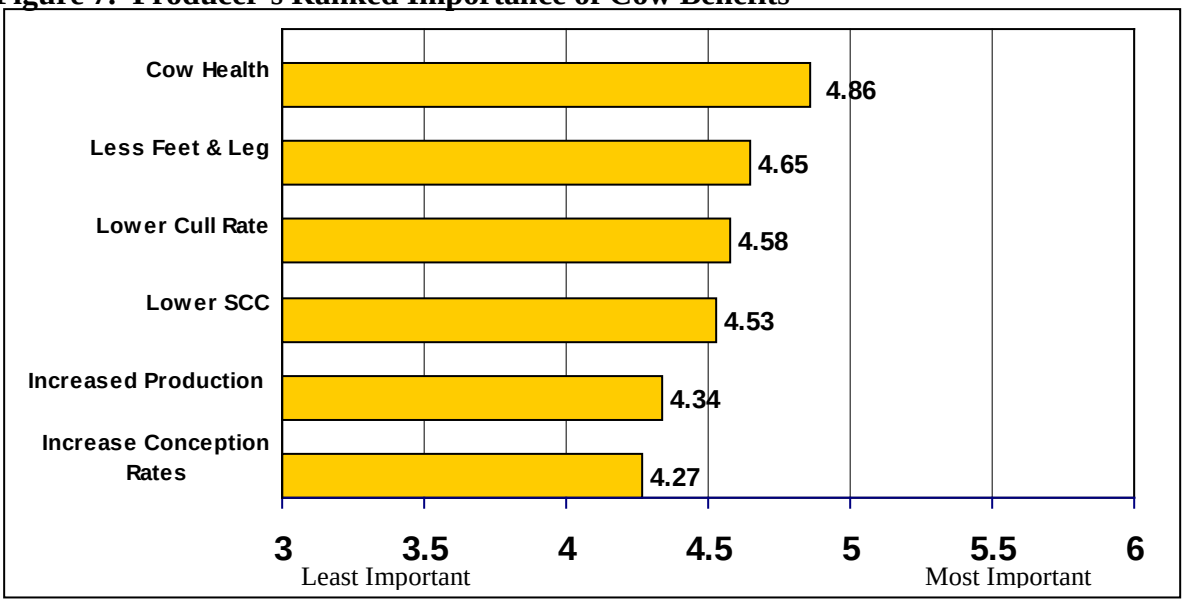


Figure 7. Producer's Ranked Importance of Cow Benefits



People Benefits Observed from Modernization

The reduction in labor per cow was listed as the number one personal benefit that the producers gained from modernizing their facilities with 96% of the producers reporting it on the survey. Improved working conditions and safety for workers were listed as the next highest observed benefits. These were followed in order by allowing the business to continue, increased profitability, providing entry for the next generation and increased family time.

While the reduction in labor per cow was the most reported people benefit on the farms, it only ranked as the 5th most important benefit to farmers. When asked to rank the benefits observed for people producers had improved working conditions and improved health and safety for workers ranked as the most important to them. Improved working conditions received a score of 5.26 out of 6, and improved health and safety for workers scored a 5.16. All of the responses regarding the most observed people benefits are show in figure 8 and the producers ranking of the importance of each benefit to them is summarized in figure 9.

Figure 8. People Benefits Observed by Producers after Modernization

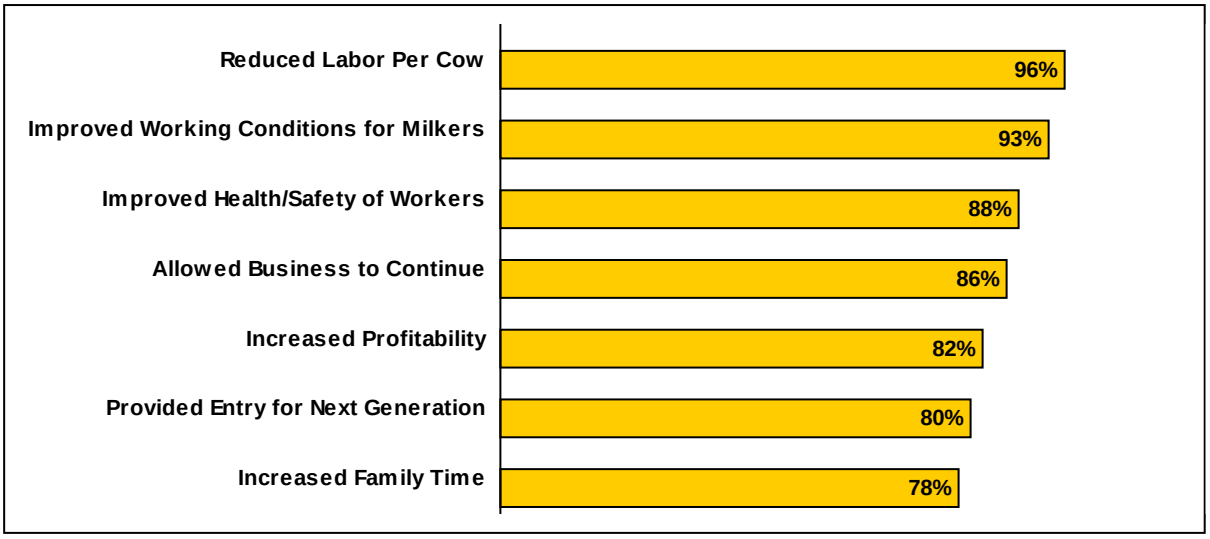
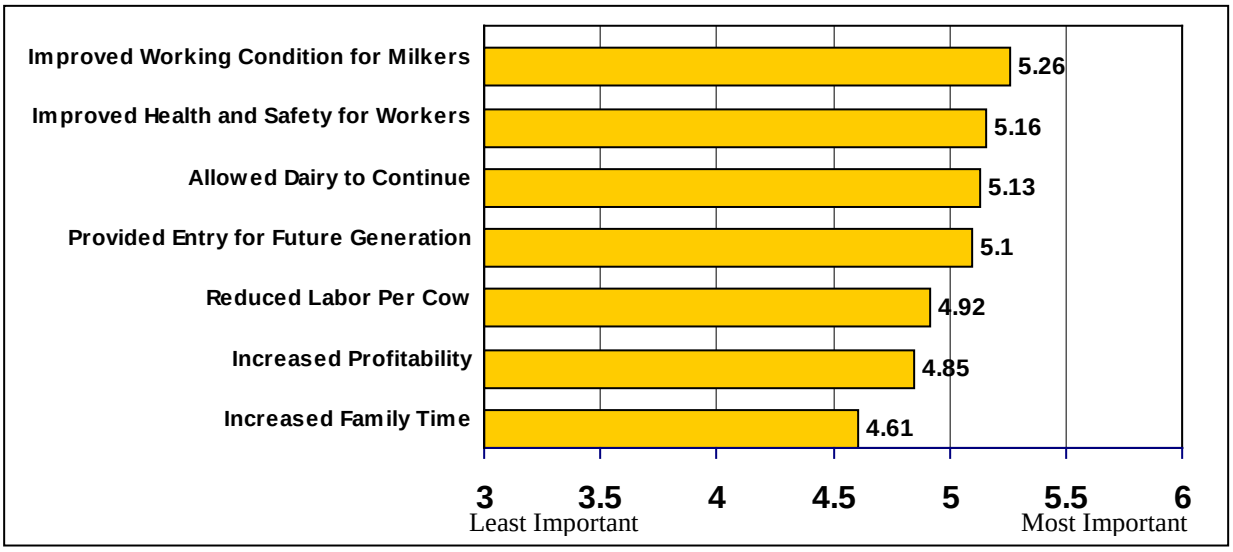


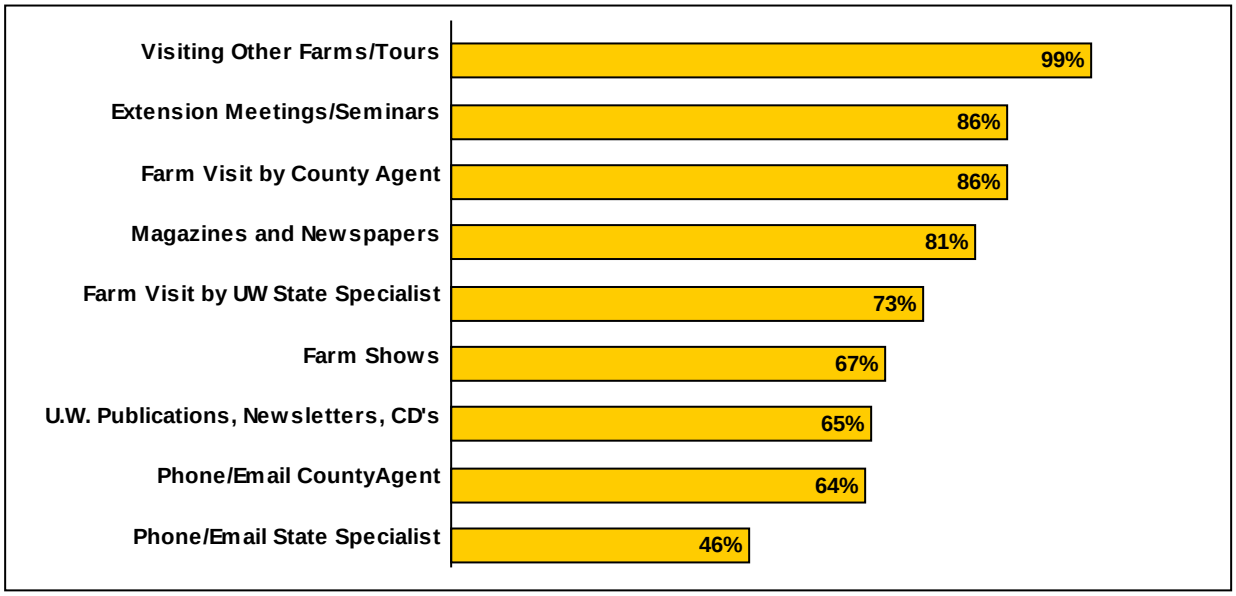
Figure 9. Ranking of People Benefits by Producers after Modernization



Educational Resources Used by Producers for Modernization

The survey asked producers to identify the educational resources they used in designing their dairy modernization projects. The most popular educational resource used by producers was touring and visiting other farms, with 99% stating that they had done so. Eighty-six percent of the producers reported using farm visits and seminars conducted by UW-Extension. Other educational resources used by producers are included in Figure 10 below.

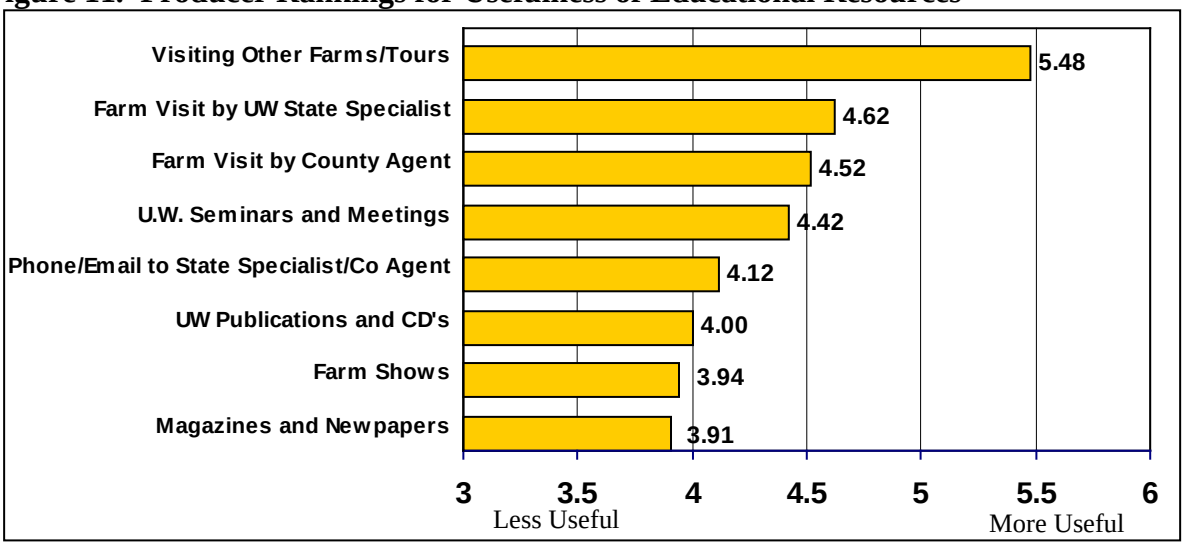
Figure 10. Percentage of Producers Reporting the use of Educational Resources



When asked which educational resources they found most helpful the producers ranked visiting other farms the highest with a score of 5.48 out of 6. This confirms that even though freestall buildings and parlors are not a new concept, they are still new to those that do not have them, and farmers highly value organized tours to other farms that have modernized.

The producers also ranked farm visits by UW-Extension state specialists and county agriculture agents as being very helpful with scores of 4.60 and 4.52 respectively. The producer rankings for the educational resources they used are shown in Figure 11.

Figure 11. Producer Rankings for Usefulness of Educational Resources



The producers were asked to identify the dairy industry professionals that they utilized for getting information and ideas for their modernization project. Ninety-three percent of the dairy farmers reported receiving assistance from UW-Extension agents and specialists in planning their modernization projects. Eighty-nine percent reported receiving assistance from their milk equipment dealer, 86% from other dairy producers, 85% from their builder/contractor and 76% received assistance from their agriculture lender. See Figure 12 for the complete summary of professionals that were used by producers, and Figure 13 for how the producers ranked the professionals for their level of assistance.

Figure 12. Percentage of Producers Reporting the Use of Dairy Professionals

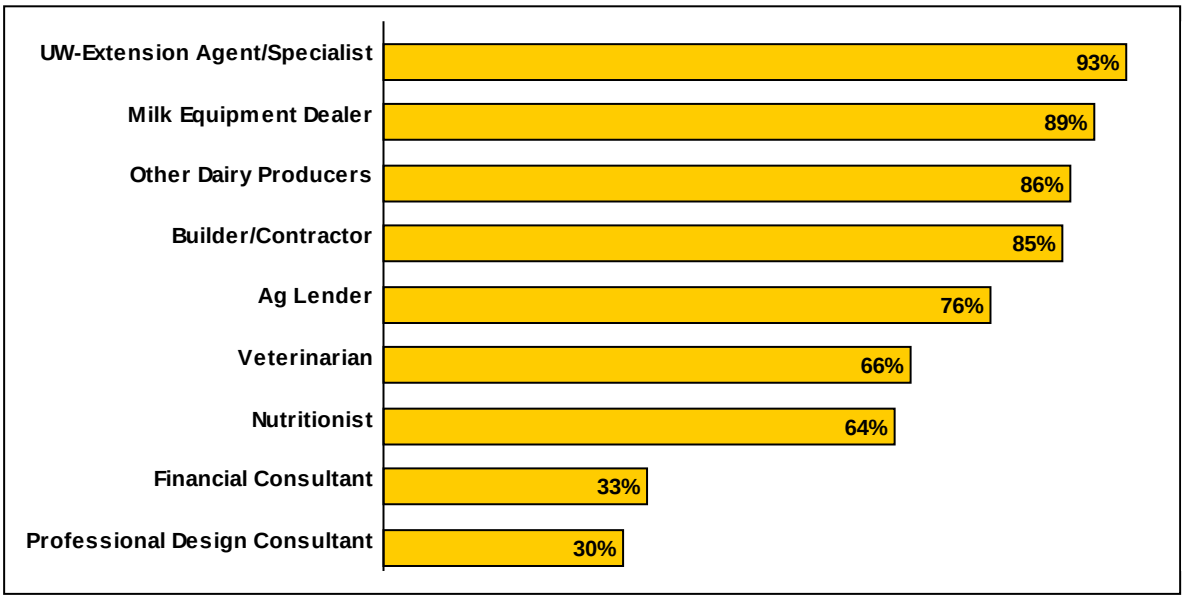
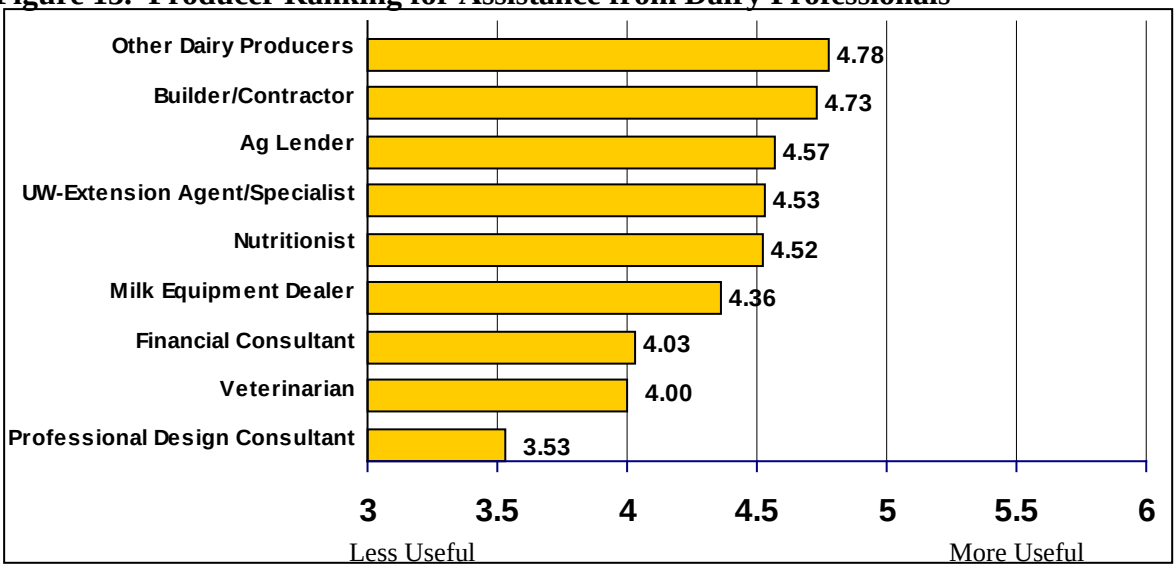


Figure 13. Producer Ranking for Assistance from Dairy Professionals



Modernization Planning Process and UW-Extension

Producers were asked how long their planning process took, from the conception of the plan to the actual use of their new facilities. The average time reported for this was 23 months and the time period ranged from as short as 3 months to as long as 120 months. When asked if they had developed a written business plan for their dairy modernization project only 36% indicated that they had a written plan.

When asked if assistance received from a UW-Extension Specialist or County Agent had an impact on their decision process in modernizing their dairy facilities 78% indicated that information from UW-Extension impacted their decisions. Producers were then asked to list examples of how assistance from UW-Extension impacted their decisions. Table 7 contains the complete listing of all their responses.

Table 7. Reported Areas of Assistance Received from UW-Extension

Number of Reponses	Producer Responses
26	Assisted in parlor location and design
20	Organized tours and farm visits to observe modernization projects on other farms
15	Presented new ideas and options for parlor design and construction
12	Design and layout of cow housing including cow flow and stall size
9	UW-Extension Presentations (meetings, tours, pasture walks) started the process
5	UW Publications (Low Cost Parlor CD and Retrofit Parlor Paper) were helpful
5	Received reinforcement of ideas and plans
4	Assisted in the permitting process
4	Assisted in preparing budget for modernization project
3	Assisted in manure handling and storage plans
3	County Agents and State Specialists answered all our questions
3	Assistance with ventilation and feed storage
3	Assistance in water and lighting needs
1	Aided in decision to move and start with a new facility
1	Helped me consider a compost barn
1	Helped me to build the parlor myself
1	Gave estimates for pre and post fresh group sizes

Producers were asked to list ways that UW-Extension's assistance to them could be made more effective and valuable to them. Eighty-seven of the producers either listed "don't know" or did not respond to the question. Three stated that it would be helpful if agents "brought real life dairy experience." Three producers responded by saying "keep doing what you are doing"; two responded by saying that "UW-Extension was very helpful"; two responded that "agents need to have more awareness of expanding dairies in their counties"; and finally two producers responded that UW-Extension could be more helpful by "working with NRCS and the Government to speed up the grant processes."

The survey asked producers if they would still be in business today if they had not modernized their facilities. Forty-three percent of the 94 producers that answered the question indicated that they would no longer be in the dairy business had they not modernized their facilities.

When asked what the biggest challenge that they had faced during the modernization process the top answer was working with contractors and/or serving as the general contractor on the project. The other major challenges they reported were deciding what system and the number of cows that would work the best on their farm, budgeting and financing, facility design, cost overruns, and finding good and knowledgeable contractors. See Table 8 below for a list of all the multiple responses received.

Table 8. Biggest Challenges Faced by Producers in the Modernization Process

Number of Responses	**Producer Responses**
16	Working with the contractors/serving as general contractor
10	Deciding what system & number of cows would work best for my farm
10	Budgeting & financing for expenses
8	Milking in existing facilities during construction
8	Design of milking facility and housing
6	Cost overruns
5	Finding good and knowledgeable contractor
4	Manure storage and handling
4	Confidence and motivation to do it
3	Permitting process for building/expanding
3	Getting honest opinions from equipment dealers
3	Did too much of my own labor
3	Changing the management system of feeding/breeding/housing
2	Switching from labor and management roles
2	Sizing stalls
2	Remodeling structured changes
2	Lack of knowledge on some of the tasks we tried to do ourselves
2	Getting cows used to the parlor
1	Site selection
1	Meeting deadline on construction
1	Human resource/dealing with employees
1	Finding the right equipment
1	Finding & obtaining more cows
1	Excavating not done correctly
1	Building the unknown - something you didn't have experience with
1	Blending new equipment with existing facilities

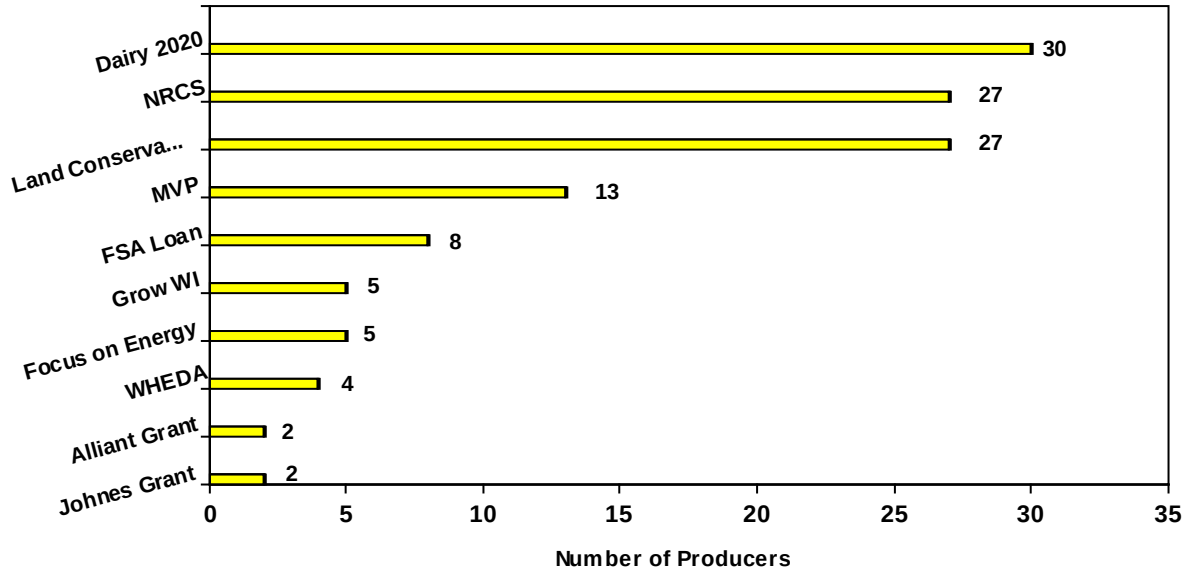
The survey asked producers if they could change one thing about their modernization process and/or project what would it be. The number one response to this question was if they could do it over they would have done the modernization sooner. The second most popular response was that they would have made either the parlor or the freestall barns bigger, and the third highest comment was that they would have started at an alternate site to allow for future expansion. See Table 9 for the complete listing of what producers reported as something they would change about their modernization project.

Table 9. What Producers Would Change about their Modernization Projects?

Number of Responses	Producer Responses
14	Wish we would have done the expansion sooner.
11	Wish we would have made the parlor/freestalls bigger
6	Start expansion at another site to allow for additional future expansions
5	Spend more time planning and seeking help in design
4	Start with new building and equipment right away
4	Would not start building in the fall, start earlier in the year
4	Design of parlor
3	Add a dry cow and calving facility
3	Change from mattresses to sand for bedding
3	Hire a more experienced and honest contractor
2	Set deadlines for construction
2	Would have built facilities for young stock at the same time
2	Get bids in writing before starting construction
2	Would have built a drive-through freestall
1	Smaller parlor
1	Should have added an employee break area
1	Lock in low interest rates
1	Put more waters and head locks in Freestall barn
1	Would have built a pit parlor instead of a flat parlor
1	Should have put manure system in at the start
1	Added more cows
1	More planning on manure system
1	Concrete work
1	Hire contractors to do more of the work
1	Use a professional design with detailed blueprints
1	Use custom calf raiser and crop harvester
1	Change curtain design
1	Locate dairy in a less populated area with more available land
1	Add alley scraper
1	Plan to handle waste water
1	Plan for sand laden manure
1	Would have borrowed more money and build it all at once
1	More space per cow

Producers were asked to identify financial assistance programs that they utilized in their modernization projects. Thirty producers reported using WI Dairy 2020 grants and 27 used cost sharing programs from NRCS and/or County Land Conservation Departments, 13 utilized the Milk Volume Program. All the programs utilized by the producers are shown in Figure 14.

Figure 14. Government and Financial Program Utilized by Producers



Economic Impacts from Dairy Modernization

As mentioned, the total investment in new dairy facilities by the 99 surveyed farms was $65.3 million in 2008 dollars. The survey also documented several other economic impacts from the data that were collected. The average annual milk production per cow increased by 1,439 pounds, and the number of cows per farm increased by an average of 121 after the modernization projects were completed. These two factors combined for a total increase of 266,535,141 pounds of milk sold for all the farms in the study. These production changes are shown in Table 10.

Table 10. Changes in Milk Cow Numbers and Milk Production after Modernization

	Pre Modernization	Post Modernization	Total Increase for all Farms
Milk Cows	**7,923**	**19,689**	**+11,766**
Ave. Herd Size	**82**	**203**	**+121**
Total Annual Milk Production (lbs)	**160,401,135**	**426,936,276**	**+266,535,141**
Ave. Production per Cow (lbs)	**20,245**	**21,684**	**+1,439**

Using the increased milk production numbers we can put an estimated average dollar impact for each farm as a result of their modernization. Using a farm milk price of $17/cwt, with premiums included, the increased production per cow of 1,439 pounds would have a value of $245 in increased milk income per cow per year. When the average reported increase of 121 cows per farm is added to the increased milk production per cow, it results in the average gross milk sales increasing by a total of $466,099 for each farm in the study. ((82 cows x 1,439 lbs of milk increase/cow) + (121 additional cows x 21,684 lbs/cow)) x $.17 = $466,100. See Table 11 for the summary of all the economic impacts reported in the survey.

Table 11. Economic Impacts from Dairy Modernizations

	Change	Dollar Impact
Average Increased Milk Income per Cow	**+1,439 lbs x $17/cwt**	**= $245**
Average Increased Gross Milk Income per Farm	**203 cows @ 21684 x $.17= $748,315** **82 cows @ 20245 x $.17 =- $282,215**	**= $466,100**
Increased Annual Milk Income For the State	**+266,535,141 lbs. x $.17/lb.**	**= *$45.3 Million**
Increased Local Economic Impact from more cows/farm	**121 cows x $17,000**	**= $2.06 Million**
Economic Impact from More Cows in the State	**+11,766 cows x $17,000**	**= *$200 Million**

*Total for all Herds

Both dairy cows and dairy farms are broadly recognized for the economic activity that they provide to the economy. The University of Wisconsin Department of Agriculture and Applied Economics estimates that each dairy cow generates $17,000 of economic activity in the local economy. If we take this number and apply it to the increase of 121 cows in each herd made possible through the modernization of their dairy facilities we come with $2.057 million of increased economic activity in each farm's local economy (121 cows x $17,000 = $2,057,000).

If we look at the total increase of 266,535,141 pounds of milk sold by all the farms in the study and multiply it by a price of $17/cwt. we get a total increase in gross milk sales of $45.3 million across the state. The survey also reported an addition of 11,766 more cows on the 99 farms after modernization. Using the figure of $17,000 of economic activity created by each dairy cow, the additional 11,766 cows would have generated over $200 million of economic activity to Wisconsin's economy.

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