

## Low Cost Milking Parlors — Producer Surveys

### A.S. Leaflet R2789

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#### Summary

Producer surveys showed very positive results in switching from flat barn parlors or stall barns to LCP's. An average of 54% more cows are able to be milked with an average of 2.44 less daily hours of labor. Producers on average doubled their labor efficiency in number of cows milked per hour with some reaching the goal of 70 cows milked per labor hour including set-up and clean-up. Production increased 15% while SCC dropped 22.3%. Feeding and housing efficiencies were gained as well. Investment in a LCP allowed producers to drop cost of milking cows to \$1.27 per hundredweight (some less than \$1 per hundredweight) with labor included. In sum, LCP gave a very positive quality of life, financial return, and milking labor advantage over stall barns or flat barn parlors.

Many dairy producers (> 40% in Iowa) are milking in stall barns or antiquated milking parlors which are achieving only 25 cows milked per person per hour. In comparison, other producers are achieving 75 cows milked per person per hour in well-designed milking parlors. This difference represents a person being three times more efficient with use of labor which translates into significant differences in farm profitability between these milking systems.

Making milking easier and more labor efficient should be a primary goal for dairy producers who are milking less than 45 cows per person per hour. Most of these milking systems can be modernized in cost effective ways that usually payback in very reasonable timeframes using Low Cost Parlors (LCP).

#### ISUEO Dairy Team Programmatic Response

The ISUEO Dairy team has developed an exceptional array of materials to facilitate these decisions and has worked individually with many producers and agri-industry professionals to implement successful LCP systems. Much of this information can be found at:

<http://www.extension.iastate.edu/dairyteam/milking-systems>

#### Low Cost Milking Parlor Producer Survey

An exceptionally useful tool for producers contemplating milking system decisions would be a database of costs, benefits, and economic ranges of income and expense variables and responses by producers who have already implemented decisions on building low cost parlors.

This database analyzer and partial budget spreadsheet tool could also be utilized by producers contemplating decisions to assess economic evaluations under different scenarios and assumptions.

ISUEO Dairy Team initiated a survey in 2012 of producers who had already installed a low cost parlor (LCP) on their farm. Eighteen producers responded to the survey. The average parlor was 8.2 years old; has swing units in a parabone style; and had 5-16 cows per side.

The herds averaged 73 cows before the LCP and increased 54.3% to 112 cows after installing the LCP. The average cost for the building shell (many built inside an existing barn), parlor framework, and added milking equipment was \$56,919. The lowest cost parlor was built for \$8,500. Producers estimated a 21 year useful life from the LCP with only \$3,353 in salvage value.

#### Labor Efficiency

Labor efficiency is a primary goal when installing a LCP. On average, producers milked 54.3% more cows while decreasing milking labor by 27.3%. Time spent handling manure decreased 32.5% due to skid steer scraping versus daily hauling with a barn cleaner. Feeding labor, in the same respect, decreased 17.6%. Heat detection labor increased 43.8% with the LCP. Overall, labor efficiency was a tremendous savings at 2.44 hours per day valued at \$21.96 per day or \$8,015 per year.

The average cows milked per labor hour increased from 24.5 to 47 after the implementation of a LCP; some producers are able to achieve the goal of 70 cows per labor hour including set-up and clean-up.

With the installation of a LCP, producers were able to reduce the milking labor cost per cow and hundredweight by almost half. Efficiency of a LCP allows producers on average to milk cows at a labor cost of \$0.95 per hundredweight, a change from \$1.83 before installation (doesn't include previous barn cost).

On a per cow basis, daily milking labor cost was \$0.98 per cow, it reduced to \$0.50 per cow after LCP installation. If comparing milking labor savings at a constant herd size of 112 cows (305 day lactation), savings would be equivalent to \$16,373 annually. However, the actual reported labor savings is lower due to the increase in herd size from before and after the LCP installation; therefore producers capitalized on labor efficiency by increasing their respective herd size while decreasing hours per milking.

#### Milk Production and Quality

Pounds of milk per cow per day increased 15% with the LCP system, from 52 to 60 pounds per cow per day. Much of this increase could be attributed to facilities or other management factors, not the LCP. Changes in fat and protein percent were insignificant with the LCP. However,

on average the somatic cell count (SCC) dropped from 305,000 to 237,000, 22.3% decrease. A change in housing system would presumably be a big factor in this difference.

### Other Issues of Concern

Producers reported a reduced cull rate of 4% on average with the LCP along with a \$7.52 per cow drop in electrical costs. However, both the water costs and chemical costs increased annually per cow by \$0.23 and \$0.27 respectively, possibly attributed to herd growth.

### Types of Dairy Producers Building LCP's

Of the 18 dairies who participated in the LCP survey, 10 producers were confinement, 6 grazing and 2 organic. 82% used the parabone stall and remodeled an existing stall barn, while only 18% of producers built new. Three dairies retrofit from a flat barn parlor system.

### Practice of Dairy Producers

Only 24% of dairy producers surveyed were in freestalls before the LCP as compared to 78% after the LCP. This change impacts the labor efficiency, possibly more than the LCP. After employing the LCP, sixty percent of producers used sand bedding and 100% used a skid steer manure scraping system.

Prior to the LCP, 50% used a TMR or PMR with the rest component feeding. After the LCP, 83% use a TMR or PMR + grazing system and only 17% component feed.

### Satisfaction Index

Of the producers surveyed, **100% of the producers agree or strongly agree that:**

- 1) The LCP has been a good personal, financial and management investment.
- 2) The LCP has improved cash flow.
- 3) The LCP has improved profitability
- 4) The LCP has improved quality of life (by an average of \$23,818 annually).

### Reasons for Installing a Low Cost Parlor

Top reasons producers installed parlors in rank order:

- 1) **Gain labor efficiency at a low cost (n=18).**  
Speeding up milking time, being able to reduce labor costs, and finding labor were all factors.
- 2) **Personal health and safety of milking (n=16).**  
Less wear on the body, making milking easier and less physically demanding were all factors.
- 3) **Ability to milk more cows and expand (n=7).**  
Not having to switch cows, being able to milk more cows in less time in order to expand were all factors.
- 4) **Extension advice and assistance (n=4).** Dairy Field Specialist's resources, advice and encouragement were all factors.

### 5) **Desire to stay in dairy business (n=4).**

Overcoming worn out facilities, a barn fire or moving to a new location were all factors.

### Investment Analysis

LCP's have a low annual investment cost due the characteristics of the parlor frame and stall work. These parlors can be installed as a retrofit into an existing facility including stall barns or in a new parlor facility. Additionally, these parlors are easy to update and remodel.

The annual investment cost including depreciation, interest, repairs, and insurance, is equal to \$59.44 per cow or \$0.32 per hundredweight of milk. This can be compared to a robot which has an annual investment of \$336.04 per cow, six times the investment compared to a LCP. On a per hundredweight milk basis, a robot has an annual investment of \$1.42, five times that of a LCP.

Total annual investment and milking labor cost for a LCP system is \$1.27 per hundredweight which is \$0.50 lower than an AMS. Based on annual investment costs over the life of the parlor, assuming a 15 year life, the estimated payback period is 5.78 years if based only on milking labor savings. The estimated payback would be 7.06 years for the average LCP with a 10 year life.

Producers in the survey also saw an increase in milk production, but other management factors may also have attributed to this change. The range of initial investment on the LCP surveyed ranged from \$8,500 to \$150,000 which can affect payback period to range from 0.63 to 21.4 years based on range of initial cash investment and average labor savings. It is important to note that high labor efficiency and quick payback periods are possible when the capital investment of the LCP is kept low.

Since, the definition of a LCP can have different meanings to different people, it may also be important to note that LCP in this survey had costs per stall averaging \$2,521 but ranging from as low as \$542 per stall (retrofit in a stall barn using lots of own labor) to \$4,667 per stall (includes all new milking equipment).

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## Iowa State University Animal Industry Report 2013

**Low Cost Parlor Survey** by ISU Extension and Outreach Dairy Team: Jennifer Bentley, Dairy Field Specialist, NE Iowa; Kristen Schulte, Ag and Farm Business Management Field Specialist, NE Iowa; Leo Timms, Campus Dairy Specialist; and Larry Tranel, Dairy Field Specialist, NE/SE Iowa. 2012.

Low Cost Parlor Survey			
	Average	Range	Notes
<b>Years Since Parlor Installed</b>	8.2	1-17 years	
<b>Type of Parlor: Low Line or Swing Units</b>	10.7	5-16/side	15 Swing; 3 Low Line
<b>Annual Value to Quality of Life =</b>	\$ 23,818	5,000-60,000	
<b>Herd and Financial Assumptions</b>			
Herd Size, Before Low Cost Parlor	73	35-155	
Herd Size, After Low Cost Parlor	112	50-200	54.3% Increase
Cost for Low Cost Parlor Building Shell	\$ 12,367	\$0-\$50,000	
Cost for Low Cost Parlor Framework	\$ 23,681	\$2,500-\$50,000	
Cost added Milking Equipment	\$ 20,871	\$2,500-\$50,000	\$ 56,919 Total Cost
Number of Stalls Per Side	10.78	5-16	
Years of Useful Life Anticipated	21	15-30	
Value of Parlor and Equipment After Useful Life	\$ 3,353	\$0-\$10,000	
<b>Labor Changes</b>			
Hours of Daily Milking Labor, Before Low Cost Parlor	6.68	3.5-18	
Hours of Daily Milking Labor, After Low Cost Parlor	4.86	1.25-8.5	27.3% Decrease
Hours of Daily Manure Handling, Before Low Cost Parlor	1.17	0.25-1.5	
Hours of Daily Manure Handling, After Low Cost Parlor	0.79	0.25-1.5	32.5% Decrease
Hours of Daily Feed Labor, Before Low Cost Parlor	1.76	1-3	
Hours of Daily Feed Labor, After Low Cost Parlor	1.45	.5-1.5	17.6% Decrease
Hours of Daily Heat Detection, Before Low Cost Parlor	0.16	0-0.5	
Hours of Daily Heat Detection, After Low Cost Parlor	0.23	0-0.7	43.8% Increase
Labor Rate for Milking, Manure Handling, and Heat Detection	\$ 9.00	8-13.50	
<b>Total Daily Labor Savings of 2.44 hours @</b>	<b>\$9.00</b>	<b>/hour = \$21.96 per day, \$8,015 per year</b>	
<b>Milk Production and Quality Changes</b>			
Lbs of Milk per Cow per Day, Before Low Cost Parlor	52.12	35-70	
Lbs of Milk per Cow per Day, After Low Cost Parlor	60.00	35-78	15% Increase
Percent Fat in Milk Shipped, Before Low Cost Parlor	3.68	3.2-4.4	
Percent Fat in Milk Shipped, After Low Cost Parlor	3.76	3.2-4.4	2% Increase
Percent Protein in Milk Shipped, Before Low Cost Parlor	3.14	2.9-3.68	
Percent Protein in Milk Shipped, After Low Cost Parlor	3.17	2.9-3.87	1% Increase
Annual Bulk Tank Average SCC, Before Low Cost Parlor	305	100-400	
Annual Bulk Tank Average SCC, After Low Cost Parlor	237	160-350	22.3% Decrease
Milkings per Cow per Day, Before Low Cost Parlor	2	2	
Milkings per Cow per Day, After Low Cost Parlor	2	2	No Change
<b>Cull Rate Changes</b>			
Change in Annual Turnover Rate, After LCP	-4%	(10)-2	4% Decrease
<b>Utility and Supply Changes</b>			
Anticipated Change in Electricity Cost, After LCP	\$ (7.52)	(20)-2	Decrease
Anticipated Change in Water Cost, After LCP	\$ 0.23	(2)-2	Increase
Anticipated Change in Chemicals Cost, After LCP	\$ 0.27	(2)-5	Increase

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