

Using Milking Center Information with Key Benchmarks

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Introduction

The milking center represents one of the largest investments of a modern dairy business. Managing that investment wisely can mean the difference between operating a highly profitable dairy that thrives in all economic environments and one that struggles even when milk prices are high. The responsibilities of the milking center manager can vary depending on the management level assigned to the position. All milking center managers must insure the center operates efficiently by striving to maximize the output of a high quality product, while controlling costs. In addition, an owner-manager must carefully scrutinize the initial investment in facilities and equipment to insure the milking center will provide a high return on investment. A specialized manager must focus on people and equipment performance, with some emphasis on cow performance. The milking center manager who also serves as a herd manager will be concerned with overall cow performance in addition to the performance of people and equipment. In all instances one role of the milking center manager is to provide feedback to the appropriate people within the organization.

If producers employed the managerial cost accounting practices utilized in corporate America, the milking center would be considered a cost center. In managerial cost accounting systems, the whole business is broken down into cost and profit centers. The difference between the two is that profit centers generate income, whereas cost centers do not. Cost centers are operated in support of profit centers. In a dairy business the milking herd is the main, and sometimes the only, profit center. The milking center is needed to harvest the product. Cost centers are often defined based on activities that must have some accountability. Thus the milking center is a classic example of a cost center. The goal of the milking center manager would be to harvest the most amount of high-quality product at the lowest cost. Recommendations on the cost of labor to harvest one hundred pounds (cwt) of milk have often been quoted. Yet, seldom do we hear producers discuss the total milk harvest costs per hundred pounds of milk.

Maximizing Parlor Efficiency

Two expenses, ownership (overhead) and labor, affect the efficiency of a milking center. Careful planning of the initial capital investment is critical to maximizing parlor efficiency. Over-sizing the parlor simply to complete milking in a shorter length of time is bad business management. In doing so, producers put themselves at a competitive disadvantage to producers who run their parlors more hours per day. Parlors should operate 15 to 22 hours per day to achieve optimum efficiency. Over-sizing a parlor without near term plans for expansion adds considerably to the cost of owning the parlor. In many well-planned expansions, producers will build a larger building with fewer stalls, knowing that as the operation continues to expand, stalls will be added to accommodate the additional cows. Another philosophy is to build the parlor at a size that will allow the producer to currently milk 3 times per day. As the operation expands, the manager will

cut back to two times a day milking. Maximum efficiency is achieved by harvesting the most amount of milk possible during a twenty-four hour period. Thus the key factors affecting milking center efficiency are hours of operation, through put, production per cow. Any management decision that increases the amount of milk that flows through the parlor on a daily basis will reduce the ownership cost per cwt. milk.

Controlling the labor expenses associated with operating a milking center is affected by many of the same factors mentioned above. However, the most significant factor that affects labor costs per cwt. milk is the number of operators in the parlor. Running a parlor with a single parlor operator should be a goal for milking center managers of parlors with 24-28 stalls or less. Larger parlors can be run with one operator also, but there is a point where throughput and overall parlor performance is sacrificed.

The effect of different management factors on ownership and labor costs per cwt. of milk are listed in Table 1. The economic assumptions of this analysis are listed below. These assumptions are based on information collected from several different dairy businesses in central Pennsylvania and Maryland.

Parlor Size	Double 12 Parallel
Initial Milking Center Investment	\$400,000
Usable Life	Buildings 15 years / Equipment 10 years
Interest rate	8.00 %
Throughput	84-112 Cows (2x-1 milker; 3x-2 milkers)
Wages	\$12.50 per hour (total wages + benefits)
Milk Production Increase-3X	7-8 pounds per cow

Table 1. Effects of Management Decisions on Milk Harvest Costs

Management Factor	Effect on Ownership Expense/Cwt	Effect on Labor Expense/Cwt	Effect on Labor & Ownership Expense/Cwt
Increase hourly wage - \$1.00	\$0.00	\$0.04-\$0.05 ¹ \$0.08-\$0.09 ²	\$0.04-\$0.05 ¹ \$0.08-\$0.09 ²
Additional Parlor Operator (2 vs. 1)	\$0.00	\$0.18-\$0.31	\$0.18-\$0.31
Increase milk production/cow (5 pounds)	-\$0.04	-\$0.04	-\$0.08
Milking 3X vs. 2X	-\$0.05	+\$0.11-\$0.13	+\$0.06-\$0.08
Adding cows (100) ³	-\$0.09	+\$0.01	-\$0.08
Operating parlor at max capacity 2X vs 3X ⁴	-\$0.08	-\$0.13	-\$0.21
Increasing Parlor Efficiency ½ turns per hour	\$0.00	-\$0.05	-\$0.05

¹ Twice a day milking; ² Three times per day milking; ³ Adding 100 cows without changing milking frequency (2X);

⁴ Moving the most cows possible in a 21 hour period- 2X vs 3X

Most of the conclusions of this analysis are fairly obvious. However, one must interpret these results with some degree of caution. For example, from the results of this analysis, one might conclude that milking 3X is not a sound business decision. This analysis only examines the affects of the decision on milk harvests cost per cwt., not total costs per cwt. The incremental milk from milking 3X also spreads the remaining fixed costs of the business of more product units, thus reducing total milk production costs per cwt. of milk.

From the data presented in Table 1., milking center managers should focus their efforts in the following areas.

1. Implementation of management practices that enable the milking center to be operated with the optimal number of parlor operators, as this factors has the largest impact on milk harvest costs per cwt. milk
2. Sizing the milking herd to fully utilize the parlor 18-20 hours per day, whether milking 2X or 3X.
3. Maximizing milk production per cow.

Development of standard operating procedures coupled with a sound employee training program can provide huge benefits in controlling the labor expense of operating a modern milking center. Many dairy businesses in Pennsylvania (and the Northeast) fall short of the second management decision. A number of benchmarks for monitoring milking center performance are presented in Table 2.

Table 2. Benchmarks for Monitoring Milking Center Performance

Factor	Top Goals	Your Farm
Herd Size ^a	NA	
Milking Cows per Milking Stall ^a	15-20	
Numbers of Milkers in Parlors ^a	1 per 32-40 stalls	
Number of Hours Milking per Day ^a	15-20	
Cows/Hour/Milker ^a	75-100	
Pounds Milk/Worker/Hr ^a	2,000-3,000	
Turns per Hours	4.2-4.5	
Labor Costs per Hour	NA	
Labor Costs per Cwt. ^a	\$.50/cwt	
Milking Center Ownership Costs/cwt.	.50-.60/cwt	
Parlor Maintenance & Repairs	3% of Investment	
Milk Quality Bonus ^a	.15-50/cwt	
Milk Quality Bonus Received	100%	

^a Benchmarks presented at the NRAES conference on Milking Systems and Parlors: Planning and Managing for Quality Milk and Profitability. Don Rogers, First Pioneer Farm Credit

Monitoring Milk Center Performance Efficiency

Many modern milking centers are equipped with sophisticated information systems that enable milking center managers to monitor the various aspects of parlor performance on a daily basis. The costs of these information systems are not reflected in the overhead

expenses previously examined. Returns on the investment in information systems must be justified by improved performance in cows, equipment and people. These systems can help determine which factors are contributing to lower than optimal system performance. For example, milk production per cow can be monitored on an individual animal, milking or daily basis. This alerts the herd manager to detect health problems before they affect an animal to the point her production is reduced for an entire lactation. Milk conductivity analysis can detect udder health problems before they can be spotted visually. Monitoring changes in milk production can detect animals that are off feed or sick, so appropriate treatment protocol can be administered.

Examining such indicators as unit-on-time, milk flow patterns and turn time can monitor the efficiency of the parlor operator. Achieving maximum parlor efficiency is a trade-off of moving cows through the parlor and cow preparation procedures. Proper cow preparation procedures can slow through put. However, if inadequate udder stimulation is achieved, improving cow preparation procedures can actually make milk let down more efficient and ultimately improve cow flow. Automated information systems can provide feedback on how implementation of recommended management practices affect the efficiency of the milking center. They can spot bottlenecks in the system, such as employees who don't follow standard operating procedures, slow milking cows and malfunctioning equipment.

Monitoring the performance of parlor operators can also be accomplished without information systems. By monitoring the amount of milk harvested during the different milkings and the length of time of each milking, one can determine if standard protocol is being followed.

Summary

Managing a milking center for optimal efficiency involves many factors. Focusing on those that provide the greatest impact can help reduce the cost of harvesting 100 pounds of milk. Information systems add to the initial investment of the milking center, but they can provide adequate returns through closer vigilance of cow and operator performance.

References

Reinemann, Douglas J., Milking Center Advisor: Software to Estimate Milking Center Costs and Performance, University of Wisconsin

Rogers, Don R., 2000, Milking Parlor as a Profit Center. Proc. NRAES Conference on Milking Systems and Parlors: Planning and Managing for Quality Milk & Profitability

Smith, J.F., Armstrong, D.V. and Gamroth, Mike J., 1996, Planning a Milking Center, Extension Publication, Kansas State University