



MANAGING PERSONNEL FOR MILKING PARLORS ON LARGE HERDS

Introduction

Over the past 65 years the number of dairy farms in the US has decreased from approximately 4.5 million to 74 thousand. During the same period the number of cows per dairy farm increased from five to one-hundred twenty-five. The total number of dairy cows in this country decreased from 21.5 to 9.1 million while milk per cow increased from forty-five-hundred to nineteen-thousand pounds per year. The current national milk production could be produced in eight-thousand dairies milking a thousand cows producing twenty-thousand pounds each, thus requiring a 90% further reduction in the number of dairy farms.

As today's dairy consolidates, cows are being milked more rapidly through larger milking parlors on larger dairies than ever before. Because milk is the primary commodity and source of income for producers, the harvesting of milk is the single most important job on any dairy. Producing high-quality milk to maximize yields and economic value requires effective parlor management, an enormous challenge for producers. Managing large parlors includes managing labor, milking equipment, as well as monitoring and evaluating parlor performance. The goal of parlor management for large herds is to enhance profits by maximizing milk yield, udder health, and overall efficiency. This may be accomplished by adequately training and motivating employees to efficiently milk clean, dry, stimulated teats using proper milking hygiene.

Training and Motivating Employees

Employees are the most important resource on a dairy. Managers are responsible for employee training and development, and employees, in turn, are accountable to management. **Team Work** is defined by Webster as "*joint action by a group of people, in which individual interests are subordinated to group unity and efficiency*". Together Everyone Achieves More! To have a team working environment, it must be clear who makes up the team and what each member of the team's role is. The most effective way to identify team members and their role within the team is to have an organizational diagram of every job on the dairy (Figure 1).

An organizational diagram should clearly define the chain of command within the team, and, who is **accountable** for each member of the team. If a member of the team answers directly to more than one person, the chart organization should be re-visited.

The milking parlor is the heart and soul of any dairy. Harvesting quality milk requires more than just milkers in a parlor. Typically a shift supervisor or leader will be directly responsible for the milking during their shift. Cow pushers bring cows to the parlor to be milked and return them to their pens. In some parlors, cow pushers perform one or more steps in the milking routine used to milk the cows. Spreadsheets and other tools may be incorporated to monitor the daily activities in and surrounding the milking parlor.

- Milkers are responsible for following the milking routine to milk clean, dry, stimulated teats. This should be done efficiently, effectively, conscientiously, and consistently throughout each shift.
- Cow pushers direct cow flow to and from the milking parlor. Their primary responsibilities are to provide a constant supply of cows in the holding pen and to return cows to their designated pens after milking. While performing these tasks, they are to handle cows gently and conscientiously.

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This information has been reviewed by university faculty.
ag.arizona.edu/pubs/animal/az11339.pdf

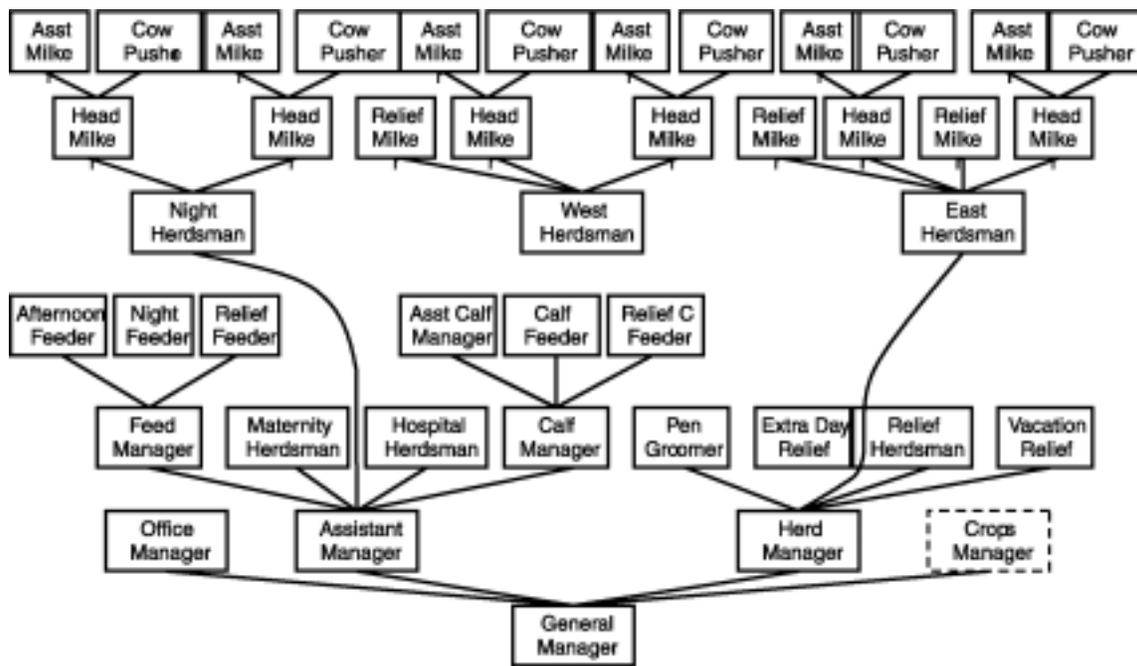


Figure 1. Flow Diagram for Stotz Dairy Buckeye, Arizona.

Employees are critical to implementing change, improving efficiency, increasing quality, and improving profitability on a dairy. If employees are not doing their jobs correctly, often times it is not entirely their fault, rather it is the fault of management. If managers solicit input from employees, employees will be more receptive and effective at performing tasks because they had a role in developing them. Managers can learn from employees, and incorporating them in decisions that affect their work improves morale and the working environment in general. **Employee input is critical!**

In any business, including large dairy management, communication is very important to the success of an operation. In general people learn from what they hear, see, do, from others and their mistakes. Typically, people retain 20% of what they hear, 30% of what they see, and 50% of what they see and hear. Regardless of the method of teaching, people learn best when they are convinced they need to know the information being presented to them in order to do their job.

The most important aspect to training and communicating effectively to employees are through **Standard Operating Procedures (SOPs)**. SOPs provide a clear understanding of responsibilities of a specific job and prepare employees to succeed. Each SOP should have a specific set of objectives associated with it. In other words, if the SOP is followed precisely, employees will be very successful, ultimately contributing to the overall success of the dairy farm. Jobs designed (with input from employees) to be effective but simple allowing each employee doing the same job to perform an equal

amount of work will minimize employee turnover and improve labor efficiency. Well designed SOPs **fit the person to the job, not the job to the person**. Standard operating procedures should be written (in the language of choice) and given to all employees prior to performing a job. It is also beneficial to have SOPs posted in a prominent place in each work area.

Some successful dairies have implemented a **certification program** designed to “certify” an employee that is ready to perform their job adequately. Certification can be achieved by passing a written, oral or demonstrative exam in which an employee successfully demonstrates to management that he/she is ready to begin doing their job independently (“**they have been properly trained**”). Consequently, a portion of an employees salary is structured around their performance based on how effectively they follow procedures. In other words, to achieve full salary, they must perform their job as outlined by the SOP. A major benefit of such a pay-for-performance program is that it allows employees to make the full wage with the performance bonus if they simply follow procedures. Employees who lose the performance-based portion of their wage become “de-certified” for a predetermined period of time. During this time their wages are reduced significantly and if they continue to perform poorly they may become candidates for removal. When used correctly, such programs ensure that employees were adequately **trained**, effectively **communicated** with, and ultimately **rewarded** yet held **accountable** for their performances.

The relationship between managers and employees is inseparable. Below is an example of an eight step process for milking cows, along with the impact of each step. Although many procedures can be developed depending upon particular management strategies of a dairy, below are basic underlying methods, based on current knowledge that can be employed to maximize milk yield, parlor throughput, and udder health.

Basic Principles for Milking Cows (for more on decision making regarding specific routines, see Smith et al. 2003).

1. Provide cows with a clean, dry, stress-free environment to help ensure calm cows with clean udders are brought into the parlor (*management*).
2. Prepare clean dry teats for milking (*employee*).
3. Properly pre-dip teats with an effective teat dip (*employee*).
4. Provide some type of physical stimulation (forestrip?) (*employee*)
5. Dry teats completely with an individual towel or cloth (*employee*).
6. Attach teat cups appropriately, minimize air inlet, and align units to ensure even milk out (*employee*).
7. Remove the milking unit as soon as milk flow slows substantially (*management (detacher settings) and employees*).
8. Post dip with an effective teat dip immediately following removal (*employee*)
9. Remove cows from the parlor in an expeditious manner (*management and employees*).
10. **Ten percent rule**
If = 10% of cows are still milking, properly remove the unit and remove all cows from the parlor (*management and employees*).

Other Considerations

- What about forestripping every cow every milking? Some say “**No time to prep**” others say “**No time not to prep**”. Currently the authors are unaware of any published data that suggests additional forestripping speeds up parlor throughput. Stewart et al. (2002) reported a 10.2 to 15.6 second reduction in milking time per cow when automatic cluster removal settings were increased. Average milk flow per minute increased 0.11 to 0.42 lb/minute, and milk production was not negatively impacted. These data suggest that increasing automatic cluster remover settings represents an opportunity to increase parlor performance.

- Although often a challenge for large dairies, **it is NECESSARY to forestrip milk from teats to detect clinical mastitis**. Some dairies forestrip cows intermittently (once a week or as needed) with a herds person or lead milker. Others forestrip two groups of cows per day, thus on a dairy with 10 pens, all cows would be forestripped at least once every five days. If 0.5% of a herd has clinical mastitis, and each case last 5 days, then only 0.1% of the herd will be diagnosed each day. Which means, in a herd with 1,000 cows milked 3 times per day only one new case of mastitis would be detected for every 12,000 teats forestripped. (Philpot, 2000) The best procedure is to forestrip each teat every milking.
- By **identifying the mastitis causing microorganism(s)** your cows are infected with (by taking samples to a proven milk quality laboratory) you can improve prevention strategies and treatment programs. In addition, laboratories can expose other problems such as cows not being sanitized properly during milking, cows being milked wet, poor maternity housing/bedding management, or heifers calving with mastitis. When collecting milk samples from cows it is important to: 1) minimize sample contamination during collection; 2) use a proven milk quality lab with an acceptable turn around time; 3) effectively communicating the information between employees and management; and 4) effectively utilizing the information to improve mastitis control and overall milk quality. Routine sampling of fresh cows and clinical cows in addition to bulk tank milk samples is warranted.

Additional factors that must be considered when practicing effective milking hygiene include:

- 1) **Cow cleanliness.** Singe or clip udder hair and clip the switch or dock tails to improve udder cleanliness, milk quality, parlor throughput, and milker attitudes.
- 2) **Wash pens.** If wash pens are used, they must contain enough sprinkler heads and be adequately sized (15 square feet per cow) to minimize stress and increase cow cleanliness. Depending on parlor size and cow cleanliness, wash pens can speed up parlor throughput. Sometimes the main advantage of wash pens is cooling of cows during hot weather.
- 3) **Drip pens.** Cows must be dry when the milking machine is attached in order to achieve long-term udder health. Full-size drip pens allow teats to air-dry and reduce the need for further drying in the parlor.

- 4) **Crowd gates.** Gates should be used to enhance cow flow towards the parlor, not as a cow *dozer*. Used correctly, crowd gates can speed up parlor throughput. However, incorrect use may increase stress and reduce oxytocin release.
 - 5) **Gloves.** Wear gloves during milking to decrease the spread of microorganisms.
 - 6) **Forestripping.** Removing two or three streams of milk from each quarter may encourage milk letdown, eliminate microorganisms in first milk, and aid in clinical mastitis detection.
 - 7) **Timing.** To take full advantage of oxytocin release, attach units within 45 to 90 seconds from the beginning of the udder preparation process. Field reports have indicated a 10 percent decrease in production when unit attachment is delayed for more than five minutes. In addition, attaching the unit to early (prior to oxytocin let down) may result in teat damage from overmilking.
 - 8) **Protect open teat ends.** Provide fresh feed for cows returning from milking to encourage cows to stand while teat ends close. This practice also allows more time for teat dip to remain in contact with teats, thus increasing the teat dip's efficacy.
 - 9) **Milking intervals.** Time between cow milkings is the "milking interval." Cows being milked two times daily should be milked every 12 hours; three times daily should be milked every eight hours; and four times daily, every six hours. Maintaining proper and consistent intervals will increase milk yield and improve udder health.
- Regardless of ones preferred milk routine or procedure for milking cows, it is important to monitor the effectiveness of the parlor throughput as well as the routine used to harvest the milk.

Conclusion

Everything revolves around the parlor. Because parlors are fixed assets, increasing their use increases profits. Milking cows 21 to 22 hours a day, depending on the time required for properly washing the system, makes the best use of this asset. Milking parlor performance has been evaluated by time and motion studies (Armstrong and Quick, 1986) to measure steady-state throughput (cows per hour). Steady state throughput does not include time for cleaning the milking system, maintenance of equipment, effects of group changing, and milking hospital strings. These efficiency measurement studies also allow us to look at the effect of different management variables on milking parlor performance. The authors believe the best way to evaluate the effectiveness of a procedure and of milking parlor equipment is in the typical measurements of milk quality and udder health. **The results of a milking procedure are demonstrated by the quality of the milk and the condition of the teats and teat-ends.**

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