

# Time for Technology

## Profitable Dairies Earn it with Labour Efficiency

Jack Rodenburg, DairyLogix



For a number of years now I have been preaching the merits of improving labour efficiency in the dairy industry. The annual economic analysis provided by Dairy Farmers of Ontario, the Ontario Dairy Farm Accounting Project, has blessed us with one of the best sources of dairy labour information in North America. In the 2006 report the average dairy farm spent \$18.75 per hectolitre milk produced, on all feed, including heifers and calves, and another \$11.05 on other direct expenses for a total of \$29.80 per 100 litre sold. They also invested an average of 1.42 hours of labour per 100 litres. According to DFO dairy farmers should earn \$22 per hour, and at this rate your time invested in that hectolitre of milk is worth \$31.24. This is slightly more than all the direct costs combined. Of course you didn't pay this out to anyone, but how much income you generate with your time still defines and limits your bottom line just as directly as the feed bill. In the same report the 20% of the farms with the least profit had feed costs of \$24.23 and other direct costs of \$12.52 per hectolitre versus \$16.68 and \$10.31 for the most profitable farms. While these differences are substantial the difference in labour was 2.27 hours (at a cost of \$49.50) per hectolitre versus 0.72 hours (\$15.80) for high profit farms. In other words, efficient farms used less than a third of the labour of inefficient farms and it was the single biggest factor in determining the bottom line.

So the problem is "time", and while calling it "labour" might be more correct, on many farms "labour" is interpreted as the paid wages of the hired help. Of course when it comes to profit it matters very little whose time it is. This column is called "Time for Technology", because if "time" is the problem, "technology" is the solution. While average dairy herds invested 1.42 hours to produce 100 liters, a subgroup of larger freestall herds with an average size of 103 cows did it in 0.74 hours or about half the time. Labour saving technology like parlors, trailer mixers and bedding slingers made the difference. Until recently most of this technology involved putting bigger and better tools in the hands of the worker to make him or her more productive, and as the tools get bigger, so do the dairy herds. Using the milking parlor as the best example of this traditional "mechanisation", the worker in the tie barn could milk 30 cows per hour. The first 2 x 6 parlors, which milked 50 cows per person-hour were a big improvement, and with detachers and other enhancements, the 2 x 12 rapid exit parlor with one operator now milks over 100 cows per hour. But because it is much easier to pay for if it

runs 20 hours per day milking 1000 cows than if it runs 2 hours per day milking 100, this technology has a built in incentive for major growth in herd size.

But a new trend in dairy technology is emerging that may change all that. Still sticking to milking, how many cows per person hour does a robotic milking system milk? A theoretical answer might be “unlimited” but in practical terms, an Ontario study done several years ago reported that robot care and dealing with problem cows took a total of 1.02 minutes per cow per day vs 3.28 in parlors. Since cows were milked 2.6 times, the labour used translates to milking 153 cows per hour. When set up, clean up and day to day maintenance are included in the parlor milking time, even the best parlors drop back to 75 or 80 cows per hour, so robotics represent a major leap in labour saving. And since the robot is limited to 60 cows there is no big incentive to grow beyond what one family can manage. So when physical labour is disconnected from the machine, through “automation” instead of “mechanization” new possibilities and perhaps a new direction arise.

To this point most new technology has focussed on reducing physical work. But as the shovel work is gradually eliminated, the work of “observing the cows” and “decision making”, things like which cow to breed, which milk to discard and how much to feed becomes a proportionally bigger share of the total. On large farms, “mechanization” has severely limited our “decision making” options. Big processes, as in big groups of cows getting the same big batch of feed regardless of their differences, mean that individual care gets sacrificed. In that regard the things around the robotic milking system open up a whole new era of technology. In a robotic milking system, automated collection of information, computer analysis and diagnosis and automated delivery of outcomes is taking the labour component out of management as well. And when management does not take time it can be much more complex and precise. If information such as milk weights, milk composition, change in body weight, feed consumption, chewing activity, and metabolic indicators like milk urea nitrogen and beta hydroxybuterate (an indicator for ketosis) can be measured without any labour input, and changes in feed rations can be applied without labour, a whole new technological era in dairy cattle management will begin. That era, which I call “precision dairy management” is about to unfold in the next decade or so. In upcoming issues of this magazine, this column will focus on some of these technologies and how they can earn future profits with new ways to improve labour efficiency.