Labour Efficiency and Its Importance in Profitability

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Take Home Messages

- When dairy farm labour is valued at a reasonable rate of pay, it is the largest input cost in producing milk.
- It is also the input cost with the greatest difference between low and high profit farms, and the input cost in which we have made the greatest gains in the last 30 years.
- Labour efficiency is greater in freestalls than in tiestalls and improves dramatically with herd size.
- Automation with technologies such as robotic milking, robotic calf feeding, pedometry and other precision management tools has much to offer. Low interest rates, combined with high labour costs make many of these technologies affordable.
- If labour is worth $16 per hour, saving 10 minutes per day can justify an investment in technology of $7300 to $9600 repaid over 10 to 15 years.
- Monitoring, comparing and improving labour efficiency is a key step to improving the profitability of the dairy farm.

The Importance of Dairy Farm Labour

Traditionally the majority of dairy farm labour has been supplied by family members and while this may continue to be the case in future, economic studies that include estimates of labour demonstrate just how big this factor is in the profitability of the dairy farm. But most economic summaries fail to record unpaid labour making it difficult to include this factor in economic analysis. Each year the Ontario Dairy Farm Accounting Project (ODFAP 2006) reports dairy farm income and expenses for a representative cross section of Ontario herds using standardized reporting practices across all farms. A subsection of these farms also fills in daily time sheets to generate

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labour data. Table 1 is a summary of farm expense data from the 2006 ODFAP, the latest year for which information is available. Data is presented for all 74 farms in the survey as well as for the 15 farms with the highest profit (lowest cost of production), and the 15 with the lowest profit, as calculated the using national pricing formula maintained by the Canadian Dairy Commission.

The average for all 74 farms is listed in the left hand column of table 1. In terms of relative importance, feed costs, which dairy farmers usually consider their largest expense, averages $18.75 per hectolitre of milk produced. Since most farmers do not put a direct value on their time, the cost of the reported 1.42 hours of labour is not calculated directly in the ODFAP publication. But if time is assumed to be worth $13 per hour or more, 1.42 hours of labour becomes a bigger production cost than feed. In the pricing formula for milk, the Canadian Dairy Commission uses a value for labour based on industrial wages. In this formula farmers are deemed to be worth $20.30/hour when they are working (82% of the family hours and $28.55/hour when they are managing (18% of family hours), for an average hourly value of $21.77. At this rate of pay, labour cost at a total cost of $30.91 per hectolitre is greater than all non labour direct costs combined ($29.80/Hl), and it is 1.7 times greater than feed cost. Since net returns plus paid labour averages $28.22 per hectolitre and it takes 1.42 hours to produce this amount of income, the average return to labour is $19.87 per hour.

Table 1: Dairy Farm Expenses per Hectolitre of Milk Sold (Source: ODFAP 2006)

Farms	All 74 Farms	15 Lowest Profit/Hl Farms	15 Highest Profit/Hl Farms	Highest as % of Lowest
Purchased feed, $	6.91	6.74	7.23	107%
Crop expenses, $	11.94	17.49	9.45	54%
Total feed cost, $	18.75	24.23	16.68	69%
Vet, breeding, %	2.94	3.37	2.53	75%
Other expenses excluding labour, $	8.11	9.15	7.78	85%
Paid hired labour, $	5.76	7.12	6.79	95%
Total labour (hours)	1.42	2.27	0.72	32%
Total labour cost at $21.71 per hour	30.83	49.28	15.63	32%
Net returns , $	22.46	14.44	24.28	168%
Net returns plus paid labour, $	28.22	21.56	31.07	
Net returns per hour of labour, $	19.87	9.50	43.15	454%

As illustrated in the right hand columns of table 1, there is very wide variation in returns to labour on dairy farms. The labour required to produce a hectolitre of milk in the low cost, high profit herds is 0.72 hours or only 32% as much as the 2.27 hours required in high cost, low profit herds. Farmers traditionally try to reduce feed costs or health management costs when looking for ways to increase profits, but clearly no other factor comes close to the amount of variation there is in labour costs. The bottom line of table 1 divides net returns with paid labour added back in, by the number of hours of work required to generate the revenue. Even though no adjustment is made to provide a return on capital investment, it would appear that the top 15 farms can easily generate the revenue to compete for labour with other industries, but the average farm has returns per hour 20% below the $23 per hour, average wage paid in Alberta today.

The ODFAP report identifies several characteristics that define low and high profit farms, and nearly all of them include an element of labour efficiency, along with other input costs. As illustrated in table 2, high profit farms are bigger and benefit from labour saving economies of scale. High profit farms raise fewer replacements and save both the labour required to care for more heifers as well as other associated expenses. High profit herds have higher production per cow, a factor that dramatically improves labour efficiency because milking labour is strongly linked to the number of cows milked.

Thirdly high profit herds work fewer acres of land, thereby reducing labour requirements for field work. While we cannot look inside the minds of decision makers on these farms, perhaps low profit farms fail to see the error in raising more heifers and working more land because a large portion of the cost of these activities is family labour, for which the value goes unrecognized.

Table 2: Basic Farm Production Parameters (ODFAP 2006)

	15 Lowest Profit/Hl Farms	15 Highest Profit/Hl Farms	All 74 Farms
No. Dairy Cows	38.2	135.4	69.3
No. Heifers 6 months and over	30.5	77.3	43.8
Heifer:cow ratio	0.79:1	0.57:1	0.63:1
Milk sold /cow (l)	6387	8838	7975
Butterfat Test (kg/hl)	3.97	3.90	3.93
Workable Land (ha/cow)	3.40	1.48	1.90
Age of Principal Operator	46.9	46.1	46.9
Person Equivalents of Labour	2.2	2.3	2.1
Hours labour per Hl	2.27	0.72	1.42

Looking back over ODFAP summaries from previous years, the average hours of labour per hectolitre has declined steadily from 3.34 in 1977 to 1.42 today. While other measures of productivity such as production per cow have also changed, no other parameter has changed as much as labour efficiency.

If the largest input cost on a dairy farm is labour, and if the most variable input cost factor is labour, and if the input cost factor that has improved the most over the last 30 years is labour, it would be reasonable to assume that:

"those who lead in labour efficiency will lead the dairy industry"

It also follows that, just as we measure and compare production per cow, income over feed cost, and pregnancy rates, with management programs such as Canwest DHI, we need to measure and compare labour efficiency between farms. Dairy producers who are interested in profitability need to know the hours of labour per hectolitre on their farms, and they need to develop management strategies to improve it.

It was pointed out earlier that on most farms the majority of the labour is supplied by family members. Hence low unemployment and pressure on the

labour force may not create an immediate crisis for these farms. But in the long run, even farmer's sons and daughters may lose interest in working at home for under $20 per hour when industrial jobs paying 1½ times that amount are readily available. In fact many trades and manufacturing industries like to hire people with farm backgrounds and experience, partly because they are known to bring an excellent skill set and work ethic to the job. In the longer term, our dairy farms will have to be competitive with industry or they will not offer a viable economic option for the next generation.

■ Dairy Farm Wages In Ontario

In order to gain a better understanding of dairy farm labour costs, the Ontario Large Herd Operators has conducted surveys of its members in 2004 and 2007 to compare wages and benefits paid on their farms. In the 2007 survey, average wages for all employees, converted to an hourly rate for the reported hours was $12.99 per hour ± 6.38. (6.38 is the standard deviation which means that 2/3 of the results are within the range of 6.38 above and below the average, or in this case 2/3 of the workers on dairy farms are paid between $ 6.61 and $19.37 per hour). Rates of pay for various responsibilities are listed in table 3 for all employees including family members, and in table 4 for arms' length employees only.

Table 3. Dairy farm wages for all employees by job description (LHO survey 2007)

Job title	Ave $/Hr. (SD)	Ave. Hrs/ week	Ave. $ Value of Benefits
Manager	$15.31 ± 6.26	52.8	0.34
Herdsman	$14.92 ± 3.19	48.9	1.13
Herd worker	$12.34 ± 6.73	31.7	0.80
Milker	$13.33 ± 4.49	22.3	0.65
Feeder	$14.08 ± 3.33	38.6	1.25
Calf Feeder	$10.33 ± 3.73	17.7	0.01
Labourer	$10.90 ± 3.21	25.5	0.57
All employees	$12.99 ± 6.38	34.4	0.61

In the 2007 survey 46% of arms length employees received some benefits in addition to wages, with the most common being milk 15%, meat 13%, clothing/boots 13%, health/medical insurance 10%, Christmas/year end bonus 9%, meals 7%, paid vacations, usually 2 weeks 7%, and housing 6%.

Other less frequent perks included training courses, staff dinners/meetings, birthday gifts, vehicle, gas, wood, laundry service, cell phones and bull calves. The average value of these benefits was estimated to be $ 0.61 per hour.

Table 4. Dairy farm wages for arms' length employees by job description (LHO 2007)

Job title	Ave $/Hr. (SD)	Ave. Hrs/ week	Estimated Value of benefits $/Hr.
Manager	$14.82 (14.10-15.54)	36.0	0.22
Herdsman	$14.94 (11.94-17.94)	50.3	1.98
Herd worker	$11.98 (9.21-13.74)	34.1	0.91
Milker	$14.83 (11.57 – 18.09)	21.0	1.20
Feeder	$14.57 (12.52-16.62)	31.8	0.57
Calf Feeder	$13.81 (10.39-1723)	13.6	1.37
Labourer	$11.75 (8.40-15.10)	31.7	0.81
All employees	$13.34 (9.87-16.81)	30.9	1.05

■ Herd Size And Management System

In table 5 below, the 2005 ODFAP report is broken down by herd size and management system. Paid wages are included in income to offset the greater use of paid labour on larger farms.

Table 5: Selected Financial and Labour Data (Ontario Dairy Farm Accounting Project 2005)

	Tiestall				Freestall	
	< 30 cows	30-45 cows	45-60 cows	>60 cows	< 60 cows	>60 cows
No. Herds	6	20	17	10	3	19
No. Cows	27.8	37.6	51.3	81.7	42.2	124.5
Kgs Milk/cow	6558	7,805	7,560	7,494	8,351	8,644
Cows/Person Equivalent	14.5	20.3	24.0	30.4	22.5	54.1
Labour/Hl Milk sold (hrs)	2.45	1.63	1.54	1.34	1.67	0.74
Return to Labour per hr.	$10.33	$16.41	$14.97	$18.04	$12.19	$37.96

As illustrated there is a large increase in labour efficiency in bigger herds. Within the tiestall management system labour per hectolitre decreases 27% as herd size increases from 28 to 82 cows. In a comparison of management systems, freestall herds with 42 cows are no more labour efficient than tiestall herds of the same size. In practical terms, small inefficient parlors in these herds don't decrease milking time very much and set up and clean up generally takes longer than in tiestall milking.

But while labour related economies of scale are moderate in tiestalls, labour efficiency in the freestall system increases dramatically as herds get larger. Note that income per hour of labour for larger free stall herds is more than double that of the bigger tie stall herds.

Across all farms in the comparison, labour per hectolitre of milk averaged 1.47 hours in tie stalls and 1.18 hours in free stalls. For herds bigger than 60 cows, average annual labour (milking herd plus replacements), was 8,978 hours. At 22% labour reduction in the free stall system this is an advantage of $28,400 per year at average paid wages, or $41,000 per year at the value of operator labour used by Dairy Farmers of Canada.

Labour efficiency of Ontario herds in hours per cow per day is shown for 70 Ontario Large Herd Operators' members (LHO) surveyed in 2007 in Table 6.

As shown, there are labour savings in free stall management in the 100-200 cow herd size range, but there is still more to be gained through expansion to 300 cows and beyond.

Table 6: Average minutes (± Standard Deviation) of labour /cow/day on Ontario farms

Herd Size (no. cows)	Labour min./cow /day	Number of Farms
69 (All ODFAP 2006)	15.2*	74
185 (all LHO 2007)	11.2	70
< 100 cows	15.0 ± 6.6	16
100 – 200 cows	11.4 ± 5.4	32
> 200	8.0 ± 1.8	22

* 86 % of total labour reported to adjust for 14% field work included in the data.

While some of these labour savings result directly from bigger herd size, most of the improvement results from mechanisation and automation of feeding, handling and milking.

■ Labour Saving in Parlor Milking

Milking, estimated to be roughly 40% of all the labour on the dairy farm, represents the largest single labour requirement. The 2004 LHO survey provides a snapshot of how 564 people on 105, mostly large farms harvest 460,000 litres of milk per day from 15,036 cows. Because of the small numbers of a wide variety of parlour types and sizes, none of the observations made are statistically sound, but can still be viewed as practical field observations. Throughput for the parlor and throughput per man in the pit, in cows per hour and litres of milk per hour were calculated and compared for 7 tiestall systems, 1 robotic herd, 2 swing parlors, 2 flat parlors, 3 side opening parlors, 30 standard exit and 13 rapid exit herringbone parlors, and 3 standard exit and 45 rapid exit parallel parlors.

Some of the more noteworthy observations include:

- On the farm, virtually none of the parlors came close to the theoretical 5 turns per hour advertised by manufacturers. The average for all gang exit parlours was 3.72 turns per hour with little difference between parlor types and sizes. This discrepancy must be accounted for when planning dairy projects, since the group size in the barn, and the holding area (add 20% for group changes) should be sized to accommodate groups of cows that can be milked in roughly one hour. Using the 5 turns in planning would result in groups that actually take 80 minutes to milk instead of 60.
- A 10 unit swing parlor reported milking a respectable 54 cows and 570

litres per hour with one operator. On a per man basis, this was comparable to the average of 18 double 8 rapid exit parallels which averaged 49 cows and 670 litres per man with 1.1 operator.

- As shown in table 7 below, at double 6 and double 8 size there was no clear advantage for rapid exit over older standard exit parlors. It would appear that under field conditions a lot of money is wasted on extra hardware and extra building space for a feature that has little chance of paying dividends in small parlors.
- The data in table 7 also suggests that there is probably little difference in throughput for parallel vs. herringbone parlors in this size range. The additional cost of the longer herringbone building and additional stabling must be weighed against the benefit of milking from the side without concern about lower throughput due to greater walking distances.

Table 7. Throughput (and number of systems) of milking parlors by type in the LHO survey 2004

Parlor type	Cows per hour		Milk per hour (litres)	
	Standard exit	Rapid exit	Standard exit	Rapid exit
2 x 6 herringbone	45 (12)	44 (1)	597 (12)	621 (1)
2 x 6 parallel	58 (1)	43 (2)	891 (1)	487 (2)
2 x 8 herringbone	53 (10)	54 (1)	682 (10)	899 (1)
2 x 8 parallel	-	49 (18)	-	670 (18)
2 x 10 herringbone	-	66 (1)	-	839 (1)
2 x 10 parallel	-	63 (6)	-	963 (6)
2 x 12 parallel	-	76 (7)	-	1061 (7)

- Comparing smaller and larger parlors in table 7, there is a clear and linear increase in throughput right up to double 12. If double 8 parlors average 50 cows per hour and double 12, 76 as suggested here, a 100 cow herd milking 2X can save 500 hours per year, and a 200 cow herd 1000 hours per year with the bigger parlor. At 6% interest over 15 years (annual repayment of $101 per $1000 borrowed) and labour at $16.03 per hour (the average wages and benefits for milkers in the 2007 survey) these herds can afford to spend an additional $8015 and $16030 per year on

repayment and operating cost for the bigger parlor. If operating costs are similar these farms can invest an extra $79,300 or $158,700 respectively in the four additional stalls. Since the actual difference in investment is somewhere in between, it would appear that the double 8 rapid exit parallel, a very popular parlor in herds of this size may be a poor choice since it is too expensive compared to low end swing parlours and standard exit herringbones, and does not have adequate throughput to compete with a double 12 in herds over 150 cows.

- Set up and wash up times were provided by survey participants. The data showed very wide variation with some farmers reporting more than 1 hour of clean up time compared to an average of 30 minutes. Surprisingly there did not appear to be a relationship between parlor size and setup or clean up time, as illustrated in the comparison of 3 parlor sizes in table 8. Good mechanisation of clean up may be the best investment in labour saving some herds can make. Washing systems that include a 5HP centrifugal pump with high volume and 80-100 psi with conveniently located hoses is one option. Powered hose reels may save some time as well, as will waste water flush systems, and crowd gates equipped with alley scrapers.

Table 8: Set up and wash time/milking for 3 parlor sizes (LHO 2004)

Parlor size and (number of farms)	Set up time (minutes)	Clean up time (minutes)
2 x 8 (16)	23	40
2 x 10 (8)	20	44
2 x 12 (7)	19	33

- 66% of the herds reported there was never more than 1 operator in the pit during milking. 22% reported a second person for part of the milking, usually for start up, fresh cows or problem cows, and 12% had two operators in the pit throughout milking. Even among the largest parlor the presence of additional people always reduced throughput per man. In other time studies I have done, a second operator seldom increases throughput by more than 10 or 15 cows per hour. In terms of labour efficiency more than 1 man in the pit is the biggest waste of time I see in parlor milking.
- 79% of herds predip, and 46% pre strip, 15% washed wet, 57% dry wiped (28% no response), 42% used paper, 52% cloth, and 6% nothing. Average stimulation time reported was 30 seconds, ranging from 0 to 60 seconds.
- Post milking 73% dipped, 12% sprayed and 15% responded yes,

suggesting all herds had a post milking sanitation procedure.

Table 9. Milking labour in various parlor systems (LHO 2004)

No. Herds - Parlor type	Cows/ man hour	Liters/ man hour	set up and cleanup min./milking	3x milking total min./cow/day for 100 cows	3x milking total min./cow/day for 300 cows
7 - tiestalls	23	360	45	9.18	8.28
15 - 2 x 6	46	694	58	5.65	4.48
26 - 2 x 8	56	782	58	4.65	3.78
14 -2 x 10	65	891	65	4.72	3.43
7 - 2 x 12	81	1136	52	3.78	2.73

Table 9 summarizes actual milking labour for the various parlor systems by combining set up, clean up and milking times from the survey. These values are used to calculate daily milking labour per cow at standardized herd sizes of 100 and 300 cows.

■ Improving Labour Efficiency Through Mechanization

Whether it is more cows per hour in a bigger more automated parlor, or just a bigger loader filling a bigger mixer, driven faster down a longer feed alley, most of the technologies used to improve labour efficiency in the last 30 years involve putting the operator in or on a bigger machine to increase efficiency. On smaller farms these technologies are less cost effective because the capital investment is spread over fewer cows, and labour saving benefits are smaller as well (A big mixer that is half full saves no time and washing up a big parlor after milking a small herd quickly erodes the benefits of the extra throughput). Hence traditional mechanisation is a strong incentive for development of very large herds. In the process, individual animal care is also replaced by group management. The typical “model of mechanized efficiency” in the USA dairy industry today would be Midwestern herds with 3000 cows in 8 groups of 375, milked with a 72 stall rotary parlor milking 450 cows per hour. Such a “model may work in Alberta, but it is not likely to be welcomed in south western Ontario where urban pressures already lead to friction between larger livestock operations and their non-farm neighbours.

■ Improving Labour Efficiency Through "Precision Dairy Management"

There are a number of new technologies emerging that will be less strongly linked to economies of scale, because they involve removing the operator rather than giving the operator bigger tools. In many cases these technologies also involve collection of sensor based management information, which can replace management time as well as labour, and can enhance the level of individual care. Many of these technologies have equal value and application on small and large farms and they could "level the playing field" by permitting family run dairies with no hired help to reach comparable levels of labour efficiency to large herds.

Specific technologies that can be included in the broad category of precision livestock management tools include:

- Electronic (radio frequency) identification systems and associated management software
- Automatic sorting systems
- Camera systems to allow remote visual observation of calving etc.
- Robotic milking systems
- Robotic calf feeding systems
- Pedometers/Activity monitors for heat detection, lameness detection and health monitoring
- Rumination monitors
- Step/gait analyzers to detect lameness
- Sensors to detect parturition contractions
- Electronic scales to assess body weight and weight changes
- Inner ear temperature sensors
- Automated feed delivery systems
- In line sensors to assess milk quality and composition, and animal health and reproductive status.

The best way to evaluate these technologies is to estimate how much labor they save and determine if the capital investment has a reasonable payback period. For example, using the wages and benefits cost of employees specialized as calf feeders in table 4, at an hourly rate of $15.18 including benefits, how much can you pay for a robotic calf feeding system? The current cost for such a system, suitable for up to 30 calves, ranges from

$10,000 to $14,000. These systems replace the labour of feeding calves with full automation. They record frequency of visits and meals and when equipped with scales and a temperature sensor in the drinking nipple, they monitor growth and body temperature. Feeding levels are automatically adjusted for age, size and health status. In a study at Allenwaite Farms in New York State, (Siciliano-Jones et. Al. 2002) caring for 40 to 50 calves required 7.7 minutes per calf per day with bucket feeding individual calves vs. 3.8 minutes per calf per day with group housing and robotic feeding. On a more typical Ontario farm with 10 milk fed calves, this saving represents 38 minutes per day, or 230 hours per year. Assuming housing, bedding and feed costs are similar, a calf feeder that costs $12,000 can be financed for $1598 per year at 6.0% interest over 10 years. Additional electricity and maintenance and repair on the feeder might add a further $200 per year but there is $100 per year saving in not buying buckets, nipples etc. so the net partial budget for the feeder indicates it adds $1700 per year in expenses. With a labour saving of 230 hours this represents $7.39 per hour saved. If labour costs $15.18 per hour, replacing bucket feeding with robotic feeding has a net benefit of saving $1792 per year, using the above assumptions.

Other factors in the decision would be the impact on calf health and growth. In this case, accurate feeding, more frequent meals and the ability to track intake and monitor performance add value to the feeder, while increased risk of spread of disease in group housing takes some value away.

A rough guideline for looking at any of these technologies is that if labour is worth $16 per hour, saving 10 minutes per day is worth $975 per year. A capital investment of $1000 repaid over 10 years at 6% costs $133 or repaid over 15 years, $101 per year. On this basis, saving 10 minutes a day can pay for $7300 in capital investment over 10 years or $9600 over 15 years. Most equipment will have an added cost for utilities and maintenance and repairs, but remember, most employees have an added cost as well, in unproductive hours, training time, management time etc.

Cameras, pedometers, robotic calf feeders, and automatic sorting systems are among the technologies that pay for themselves in labour savings in nearly all circumstances.

■ Robotic Milking

In an Ontario study of 22 robotic milking herds, milking related chores were reduced to 1.02 minutes per cow per day vs. 3.28 minutes on conventional parlor farms of similar size. (Fisher et.al. 2002) This is a decrease of roughly 2.26 minutes or 0.038 hours per cow per day. With this technology the 120 cow herd in table 6, with 2 robotic milking stalls would record approximately 0.6 hours per hectolitre of milk produced, or 2.5 times the labour efficiency of

the current industry average.

In figure 1 single box robotic milking systems, with a capacity of 60 cows per box, are compared to a double 8 and double 12 rapid exit parallel parlors and to a low cost 10 stalls per side swing parlor. Labor costs are calculated at $16.03 per hour, the average per hour cost of an “arm’s length” milker in the 2007 labour survey, in table 4. The amount of labor required for 2X parlor milking is estimated to be the throughput from table 10 plus set up and clean up time of 50 minutes for the double 12 and 40 minutes for the double 8. The robot data assumes 1 hour of labour per box per day consisting of cleanup, filter changes, and managing the cows that don’t attend voluntarily. The cost of ownership is calculated as repayment of the capital investment at 6% per year over 15 years, or $101 per year for each $1,000 invested. Equipment costs and other assumptions are fully discussed in another paper also presented at this meeting. In Fig. 1, when labour and capital investment are combined, robotic milking is competitive at 60 and 120 cows and still in the running at 240. Only at herd sizes greater than 240 cows, involving more than 4 robotic milking stalls, does the economics clearly favor parlor milking. One other alternative for smaller herds is to keep parlor investment as low as possible; however if this reduces labor efficiency, benefits in reduced capital investment are soon eliminated by increased labor cost. The swing parlor included in these calculations is one such option; however including it is like comparing apples and oranges. The other parlors and robotic systems include management aids such as cow I.D., cow activity, milk conductivity, and milk yield monitoring, as well as uniform milking with automatic detachers. The swing parlor only milks cows and will require additional management to be applied by other means.

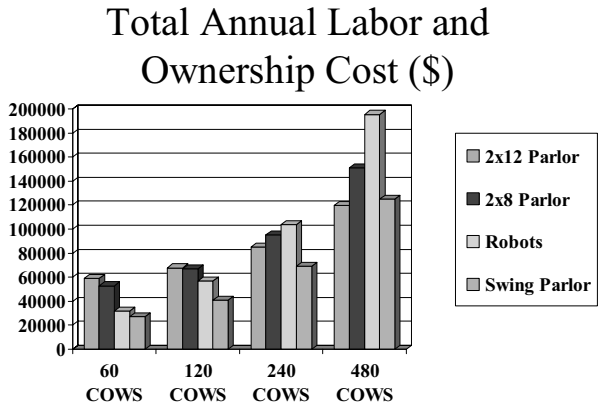

Fig. 3: Estimated annual cost of labour and ownership of milking parlors and robotic systems.

As illustrated in Figure 1 robotic milking is more than competitive with modern milking parlors in the 120 to 180 cow freestall herd. In Ontario there are now several examples of highly profitable, and highly labour efficient 120 cow herds with 2 robotic milking systems, operated by a single family unit with 1.4 to 1.5 man equivalents of labour, and no other employees. When these "precision managed" farms add robotic calf feeding and other precision management tools we can expect to see 150 to 180 cow family dairy operations that may be equally as labour efficient as the 3000 cow rotary parlor dairy.

Other Common Labour Variables

Some casual observations of dairy farm practices that add to the work routine include:

- Hay vs. silage: Handling hay in the field and in the barn requires both strenuous physical labour and much more time than larger silage systems.
- Feeding: Hand delivery of feed in several trips and/or waiting on slow silo unloaders to mix small batches of feed has a large time cost.
- Management of problem cows: How profitable is a sick cow that spends 3 weeks in a box stall requiring separate milking, separate feeding, daily bottles and needles etc.?
- Small field equipment: Despite the lower capital investment, how much money are you making doing field work with 3 furrow ploughs, 12 foot cultivators etc.?
- Do-it yourself: Many smaller dairy produces tell me they keep expenses down by being their own plumber, electrician, and tractor mechanic. How good are you at these things? Do you have the tools? Are these daily tasks you can schedule that permit efficient use of time on a daily basis?
- Do-it because it's there: Work habits evolve from the available time. When time is not in short supply we are less likely to seek and find a quicker way. Do cows need a prep routine that includes 30 seconds of stimulation? Do cows need to be fed 6 times per day?

Labour and the Future of Dairy Farming

If the past is an indication of what the future holds, hired labour costs will go up faster than the cost of other inputs. These costs will go up, partly due to demands for higher wages but even more due to cost of benefits, time off and shorter work weeks. In the past, isolation and family labour allowed

agriculture to ignore the fact that labour has a cost. As your sons and daughters pursue higher education, and as your neighbour's children do the same, farm wages, benefits and working conditions will have to be more competitive.

A Warning About The Economics Of Labour Saving

Although recognizing that labour has a real cost, even if it is family labour, is an important step towards pursuing excellence through labour efficiency, it needs to be stated that in reality it is impossible to "save" time, since at the end of every day all of the 24 hours are gone. Hence if we reduce labour requirements on the farm, and work fewer hours, the longer lunch, and earlier quitting time will not pay for a robotic milking system. Gains made in labour efficiency must result in reducing the size of the payroll by eliminating paid labour, or it must be reinvested in profitable activity, such as expansion of the herd before economic benefits from labour efficiency can be realized.

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