

# Time for Technology

## Automated Calf Feeding

Jack Rodenburg, DairyLogix



With regard to the adoption of “precision automation” on dairy farms in North America, the technology that has made the greatest inroads in the last five years is undoubtedly automatic calf feeding. Before that time these feeders were nearly impossible to sell, since every calf feeding expert made it pretty clear that group housing and feeding could only lead to disaster. Although the technology itself has changed very little, these feeders are now one of the hottest items on the market. Economics and a big change in attitude are the two factors that have made this happen.

When labour is cheap, automation is hard to sell, and although some will think that labour is cheap again in today’s economic crisis, this may not be true for the average dairy farm. Increasing herd size and cultural change are clearly impacting how the work is getting done. Traditionally, success on the family farm has come from husbands and wives working long hours with either children or parents pitching in as well. So what has changed to make automation more attractive? While still dedicated to making it all work, the younger generation taking over management of our dairy farms seem less willing to “live in the barn” than their parents were. They rightly feel that a reasonable work week should be a little closer to the 40 hours their non farming friends put in. Furthermore, the person with the greatest sensitivity for vulnerable baby calves and the best skill set for calf management, that being the farm wife, might very well have a fulltime off farm job today. So as herd size grows and family help becomes more limited the choices are automation or hired help.

In that context, the economics of automatic calf feeding looks extremely good. Robotic milk feeding systems suitable for up to 30 calves cost \$10,000 to \$15,000 and replace the labour of feeding calves with complete automation. They record the frequency of visits and meals and feeding levels are automatically adjusted for age. As a bonus for Canadian farmers, the ID system is one of the few that uses the RFID eartag so there is no extra cost for collars and transponders.

In a US study at Allenwaite Farms, caring for 40 - 50 calves required 7.7 minutes per calf per day with bucket feeding individual calves in hutches vs. 3.8 minutes with group housing and robotic

feeding. On a smaller farm with 10 milk fed calves, this saving would be 38 minutes per day or 230 hours per year. Assuming housing, bedding and feed costs are similar, a \$12,000 feeder financed at 5% over 10 years costs \$1526 per year in repayment. Additional electricity and maintenance might add another \$200 per year, but there may be a saving of \$100 per year in not buying buckets and nipples etc. so a net partial budget suggests the automatic feeder adds roughly \$1626 per year in expenses. With a labour saving of 230 hours, the net cost per hour of labour saved is \$7.06. If the cost of hired labour or the value of your own time invested elsewhere in the business is higher than this, investing in automatic calf feeding appears to be a profitable choice.

Other factors that come into play will be the impact on calf health and growth. Accurate feeding, more frequent meals, and the ability to track intake and monitor performance has resulted in improved calf growth on many of the farms that have installed calf feeders but greater disease risk in group housing has led to losses on some others.

Some farms also report excellent success with various forms of free choice group feeding without investing in automation. While these systems involve lower capital cost the inability to measure individual intake makes the management challenges a little bigger and the inability to restrict intake in older calves adds to feed costs.

For those who want to be at the forefront of automation, there are a number of interesting enhancements that can be added to these systems. Last year, the Progressive Dairy Operators awarded top prize in their youth innovation contest to an inventive young dairy farmer who developed a system to reduce competition at the feeder between young calves and older ones in a neighbouring pen. To see this device and also learn about this year's innovation contest, go to [www.pdo-ontario.ca](http://www.pdo-ontario.ca). Commercially available enhancements can add some very interesting precision management tools. For example, the units can be equipped to a temperature sensor in the nipple to record body temperature at each feeding. Along with feed intake and frequency of visits, this will identify a sick calf more quickly. Another option is digital scales that weigh the calf while it is drinking as a method of monitoring growth and adjusting feeding rates. A computer feeder for calf starter can also be added, and this can be linked to the milk feeder so that milk feeding levels are reduced based on measured increases in starter intake.

But the biggest factor contributing to the new popularity of these systems seems to be a general change in attitude. Five years ago, farm advisors and farmers themselves were convinced that the only way to raise healthy calves was in individual pens that prevented calf to calf contact. When early adopters experienced health problems, they heard more "I told you so's " than solutions, but perseverance and experience are making a difference. Management strategies that include individual housing and feeding for the first 3 to 7 days, introducing calves to automatic feeding in small groups, and segregating calves under 3 weeks from older ones,

reduce stress and improve performance and health. Excellent ventilation in the form of lots of fresh air but no drafts, and a dry bed, preferably with lots of straw for nesting in cold winter conditions, is another important success factor. It has also been shown that feeding milk replacer at higher levels, close to the calf's voluntary intake in the first 3 to 4 weeks does much to improve both the growth rate and disease resistance of the calf.

The contribution these systems are making to labour saving on farms today is the direct result of the experience gained by innovators. Often against the advice of experts and advisors, they took the risk and paid for the health problems and death losses that have provided the experience on which the current success of these systems is built. As an industry, we need to salute these people along with the pioneers of all kinds of technologies, for the contribution they make to our progress.