Technologies to save you time and money

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Key messages:

- Milking-related tasks are estimated to account for around half of the labour required on farm
- Most popular technologies on NZ farms are automation technologies used to save time or reduce labour related to milking (eg. ACRs, auto drafting)
- Making more money from technology usually involves using tools for more frequent and accurate data collection – but the $$ benefit comes from making better decisions
- New technologies are always on the horizon, we suggest a process for considering your current performance gap and non-technology options prior to making technology investment decisions

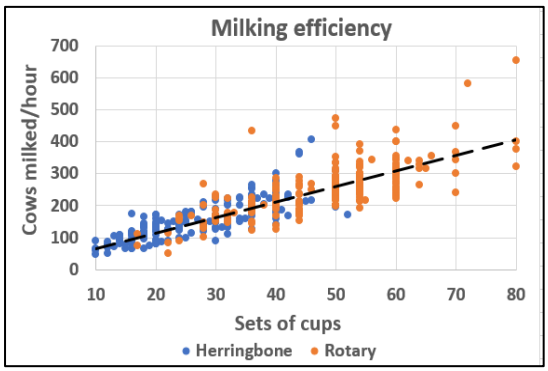
1. Saving time through increased milking efficiency

Milking-related tasks are estimated to account for around half of the labour required on farm. There are three main options to reduce the hours spent milking:

- Increase efficiency in milking practices (eg. Milksmart, FarmTune)
- Milk less frequently (eg. once a day, 16hr milkings)
- Automate the milking process (eg. ACRs, robotic milking)

In a recent DairyNZ survey, total milking time per day, measured only from first cups on to last cups off, was 4.0 hours for herringbone and 4.5 hours for rotary dairies. The average number of people required in the shed to milk the cows at peak production was 1.8, this equates to 7.3 and 8.1 hours of labour per day for herringbone and rotary dairies. Milking efficiency or throughput (cows milked per hour) increased with more cups installed for both dairy types, but there was little increase in labour productivity (cows milked per person per hour) for herringbone dairies and the increase was highly variable for rotary dairies.

The use of a combination of automatic cup removers, automatic teat spraying and automatic drafting in rotaries dairies was associated with an increase of around 44 cows milked per person per hour compared with rotaries without these technologies, as they can replace the need for a person at cups off. The graphs below indicate there is plenty of room for improvement in both milking and labour efficiencies if farmers are able to reduce labour associated with milking. Much of the difference between high and low performing dairies is in milking routines, including cow flow, cupping order per row, and shorter milking times (cups off earlier). DairyNZ's Milksmart project provides information to improve milking efficiency www.dairynz.co.nz/milking



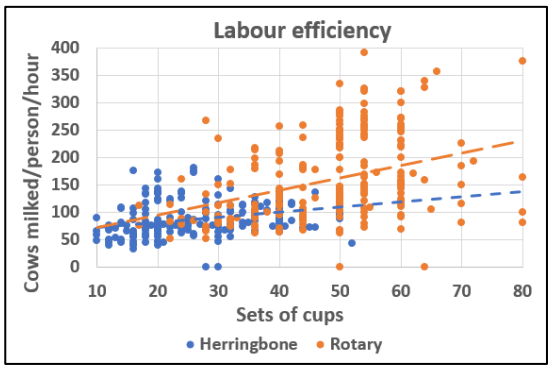


Figure 1a & 1b. Milking efficiency and labour efficiency for herringbone and rotary dairies (Source: DairyNZ Technology Survey)

In-shed technologies
In a recent DairyNZ technology survey, we found that farmers are continuing to invest in in-shed and animal technologies, but at a relatively slow pace. The most popular are technologies focussed on automating tasks – thereby saving time (Fig. 2).

A high proportion of farms with rotary dairies had automatic cup removers (77%), automatic teat spraying (70%), and in-shed feeding (66%) installed, while nearly half had automatic drafting (49%). Ninety percent of rotary dairies had at least one of the eleven technologies installed, 61% had only automation technologies, 29% had automation and data capture technologies and 10% had none.

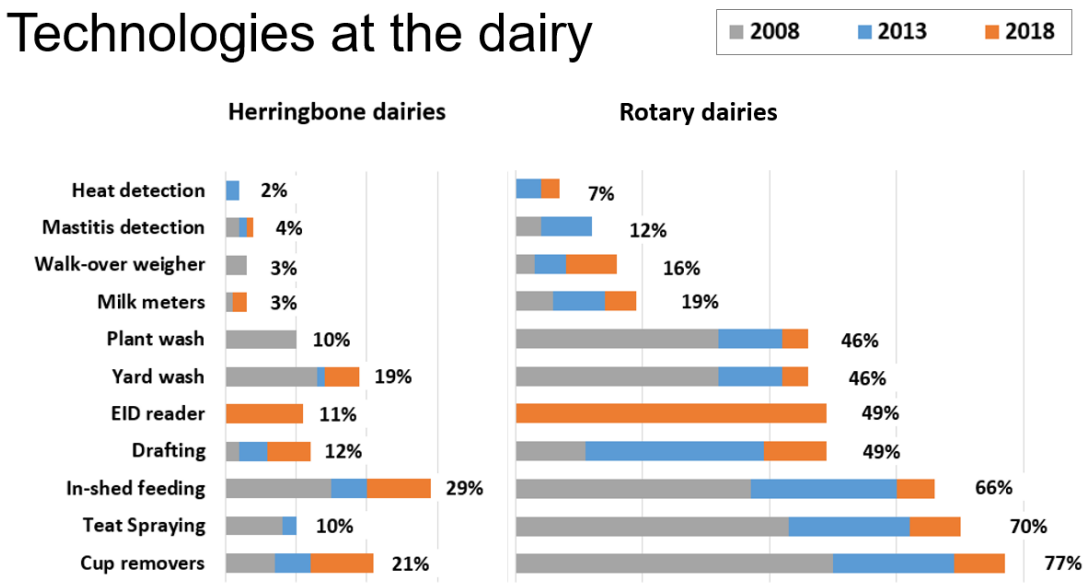


Figure 2. Percentage of NZ farms with in-shed technologies installed

2. Making more money through improved pasture measurement
There is still significant room for improvement in grazing management practices on most New Zealand dairy farms, with the value of an extra tonne of DM/ha harvested estimated at $300/ ha (Neal and Roche, 2018). Improved pasture management can be achieved by:

- Knowing the 'gap' from current performance to potential performance in your farm system (eg. benchmarking)
- Measuring to provide the kind of data you need to make more timely and accurate decisions (not necessarily highly accurate data, it might just be more frequent)
- Using tools to help make decisions (eg feed wedges or grazing software)
- Communicating with staff about your plan, and what they are seeing going on out in the paddock (eg use team meetings, whiteboards or apps)

Grazing management tools developed range from the simple, but effective, plate meters to on-the-go devices like the C-Dax Rapid Pasture Meter™, LIC's Space™, a robotic version of the C-Dax Rapid Pasture, as well as various computerised decision support tools to help store and use the pasture data. Forty-two percent of farmers are recording their pasture data in a spreadsheet or pasture management software.

Know your opportunity
Knowing the opportunity (or 'gap') around a farms potential for pasture growth is an important first step to improved performance. There are several ways to identify this opportunity – through targeted discussion groups, benchmarking with other farmers using tools such as Agrinet™, or comparing with similar farms using the DairyNZ Pasture Gap tool - www.dairynz.co.nz/pasture-potential.

What kind of data do you need?
When considering a pasture measurement tool, farmers should consider the end use of the data, e.g. is it for ranking paddocks, or expected to be used for daily feed allocation decisions. Farmers may also have other factors that are important to their particular situation, such as ability for staff to access and use the data.

The advent of better and smaller remote sensing devices, along with the rapid development of improved remotely piloted aircraft systems ('drones' or UAVs), will eventually lead to improved near-ground measurement of pasture quantity, quality and composition. At a paddock scale, grazing behaviour devices may enable real-time (or near real-time) paddock related information that would support timely decisions around grazing residuals. Commercial application of such technologies is still some years away.

3. People and technology

Managing and supporting staff effectively to ensure high labour productivity, good communication, high staff satisfaction and meeting compliance requirements around employment and health and safety will be an increasing challenge for many farms. Computer and smart phone apps (applications) are becoming a commonly used tool to manage and complete daily tasks. Use of simple tools like WhatsApp™ and Facebook Workplace™ had already changed the way farmers communicate with their teams. An example is AgRecord™, an online farm management system that managers and staff can contribute to which becomes a permanent record of all staff related activities/ documents, farm maps, auto-updating calendars for tasks and meetings, and access to manuals and instructions. DairyNZ has apps to support people on farm including practical tasks like staff rostering, body condition scoring and pasture management.

4. A process for considering technology investment

When considering any technology investment for your farm, we suggest first looking at the bigger picture, as outlined in Fig. 3. This involves thinking about the 'problem' you wish to solve, then considering what your current performance is in this area is and what the gap is to your performance goals.

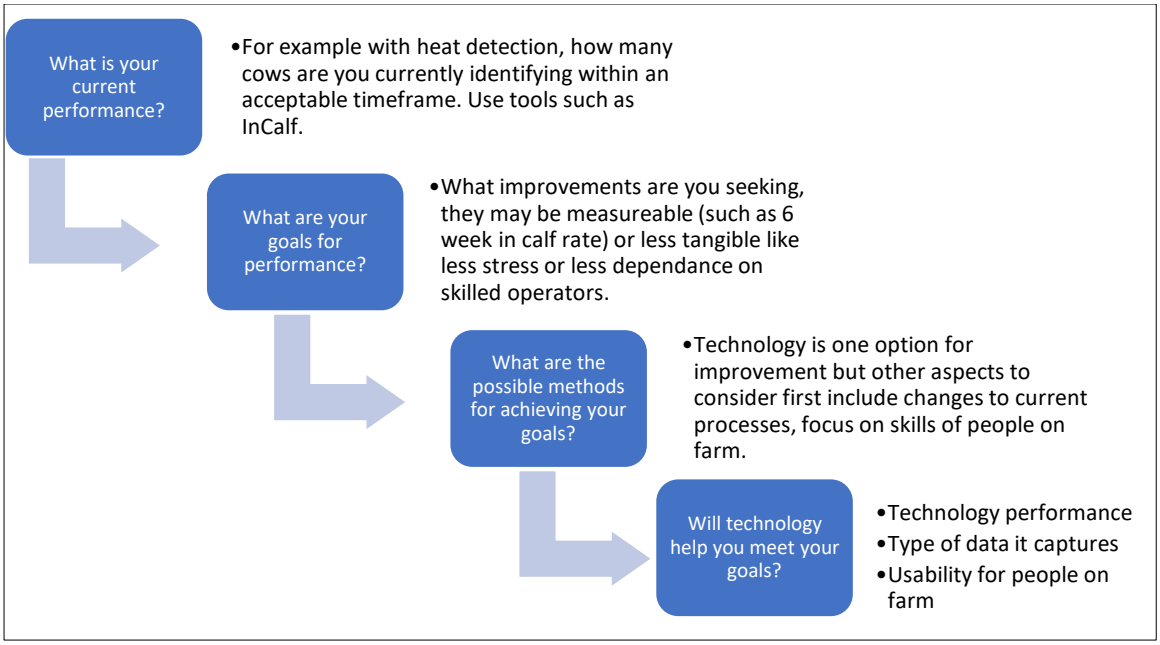


Figure 3. Flow chart of decision points when considering investing in new dairy technologies

References

Neal, M. and Roche, J.R. 2018. Profitable and resilient pasture-based darm farm businesses in New Zealand. Proceedingof of Pasture Summit (*in press*)

Eastwood, C. R. and B. Dela Rue. 2017. Identification of performance attributes for pasture measuring devices. Journal of New Zealand Grasslands 79:17-22.