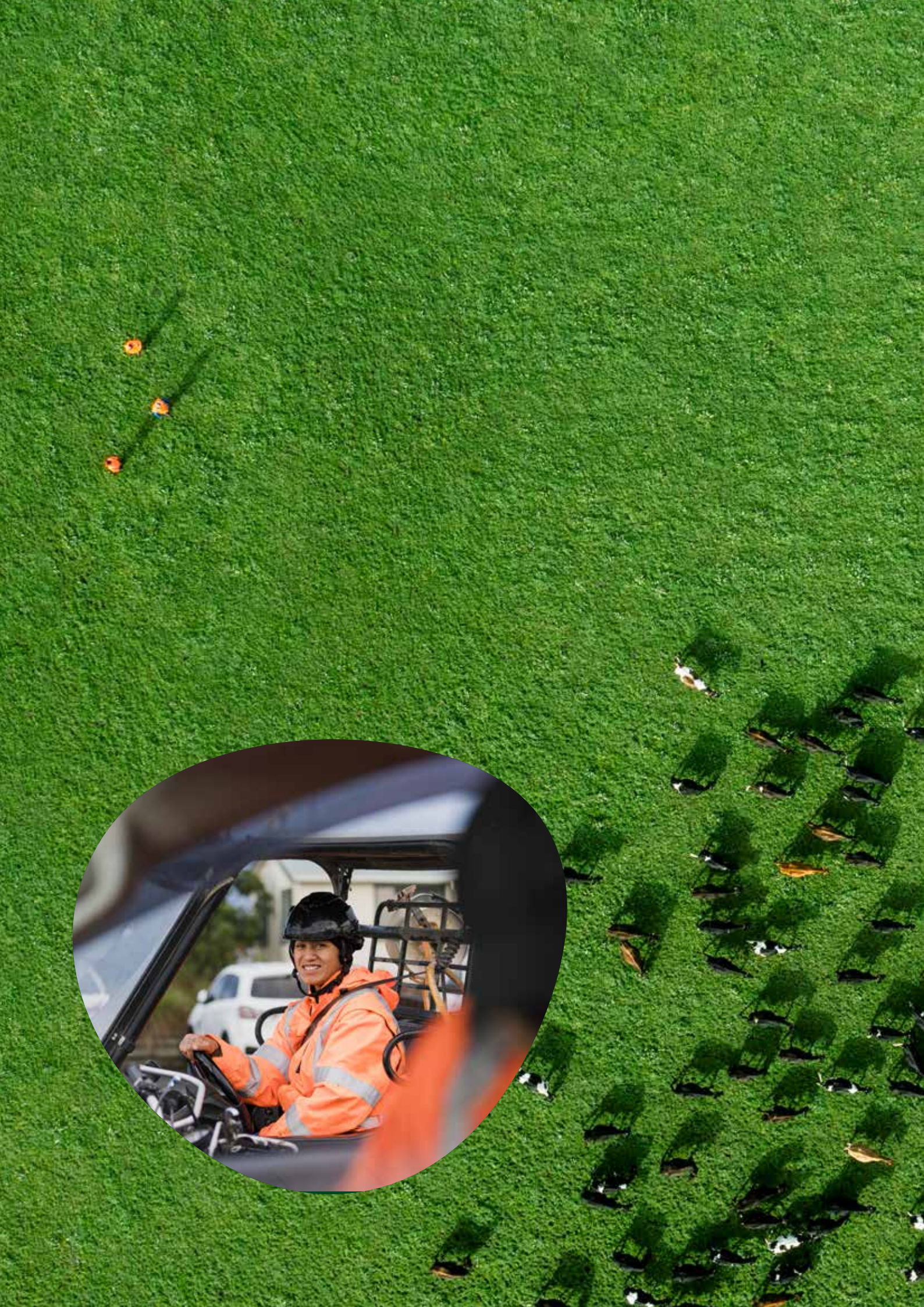
DairyNZ

Workplace Productivity Survey 2023 Report



Overview

Workplace productivity and efficiency are vital to a high-functioning dairy farm. Inefficient practices and lack of productivity can negatively impact profitability and team engagement.

How do New Zealand dairy farms stack up in terms of productivity? Historically, dairy workplace efficiency has been measured by looking at the number of cows, full-time workers, and kilograms of milksolids produced, or by milking-based metrics such as cows milked per person, per hour. This study was designed to look at productivity and workplace practices on a deeper level.

The 2023 DairyNZ Workplace Productivity Study examines how factors like different farm systems, farm size and technologies influence annual hours worked, season hours and time spent on specific tasks. The results of this study are detailed in this report.

DairyNZ and QCONZ completed in-depth surveys of 154 farms across New Zealand between November 2022 and March 2023. The survey questions focused on:

- How many total hours per year it takes to run different farms.
- Where farm teams spend hours during key periods of the year.
- Relationships between hours worked and the systems, management and technology in place on different farms.

Key insights

- The number of hours worked per cow per year were related to herd size. There was no relationship between hours worked per cow per year and kilograms of milksolids per cow per year.
- There was a big range in hours worked across the season on similar-sized farms. This shows an opportunity for productivity gains on some farms.
- The most efficient farms were able to reduce time spent milking later in the season, meaning fewer hours worked for the total year.
- Efficient farms have rotary dairies, use milking efficiency practices, and automation technology. Therefore they require less staff to milk.

You can view the workplace productivity benchmarks from this study, and factors that influence them, on pages 7 and 8.

Progressing a positive future for New Zealand dairy farming

DairyNZ is the industry organisation that represents all New Zealand dairy farmers.

We support farmers by investing in research, resource development, extension and advocacy to ensure they can continue to lead the world in sustainable dairy farming.

dairynz.co.nz

How was the survey structured?

The survey focused on the full 2021/2022 season to ensure all farm data could be aligned. Data was captured at four key periods of the year: peak work (i.e. calving), mating, mid-late lactation (post-mating) and the dry period.

The data captured included:

- Hours worked by all people working on-farm in each of the four periods
- Details of the size, infrastructure, and technology used on each farm
- An estimate of time spent on various farm tasks in peak work and mid-late lactation periods

Work categories were:

- **Milking activities:** herding, milking, plant/yard wash
- **Animal care:** calving, calf rearing, animal health, mating
- **Feed/nutrient management:** pasture assessment, fencing, supplements, irrigation, fertiliser
- **Repairs and maintenance:** general R&M, effluent and weed management
- **People management:** team meetings and planning
- **Office work:** day-to-day planning, data entry, financial
- **Run-off work:** time spent on run-off or wintering block
- **Other intermittent tasks:** cropping, hay/silage, training, large R&M
- **Non-work time:** lunch and other breaks during the working day
- **Major tasks:** jobs that require contractors

Results and limitations

The main aim of this report is to provide a reference document with full results and data analysis for the 154 farms surveyed in the workplace productivity study as well as all DairyNZ Levy payers. This report includes averages and high-level insights from surveyed farms, focusing on milking efficiency, daily time allocation on tasks and average hours worked per season.

Given the small number of farms involved in this study and the non-randomised selection process, the results are not necessarily a snapshot of averages across the whole sector, however the results do provide valuable insights into workplace productivity opportunities that are relevant to many dairy farms. The number of split calving and autumn calving herds was not sufficient to provide a separate benchmark, so the data presented primarily relates to spring calving farms.

How many hours does it take to run a dairy farm?

One of the key measures captured in the survey was total hours worked – hours per farm per year. This included hours from all people who had worked on the farm across the year.

As expected, the data shows that the number of hours worked is closely related to herd size. However, one key insight was the significant variation in hours worked on similar-sized farms.

For example, one 500-cow farm reported around 5,000 hours worked a year, while another 500-cow farm spent more than double that time on farm tasks, at roughly 12,000 hours a year (see green arrows in Figure 1).

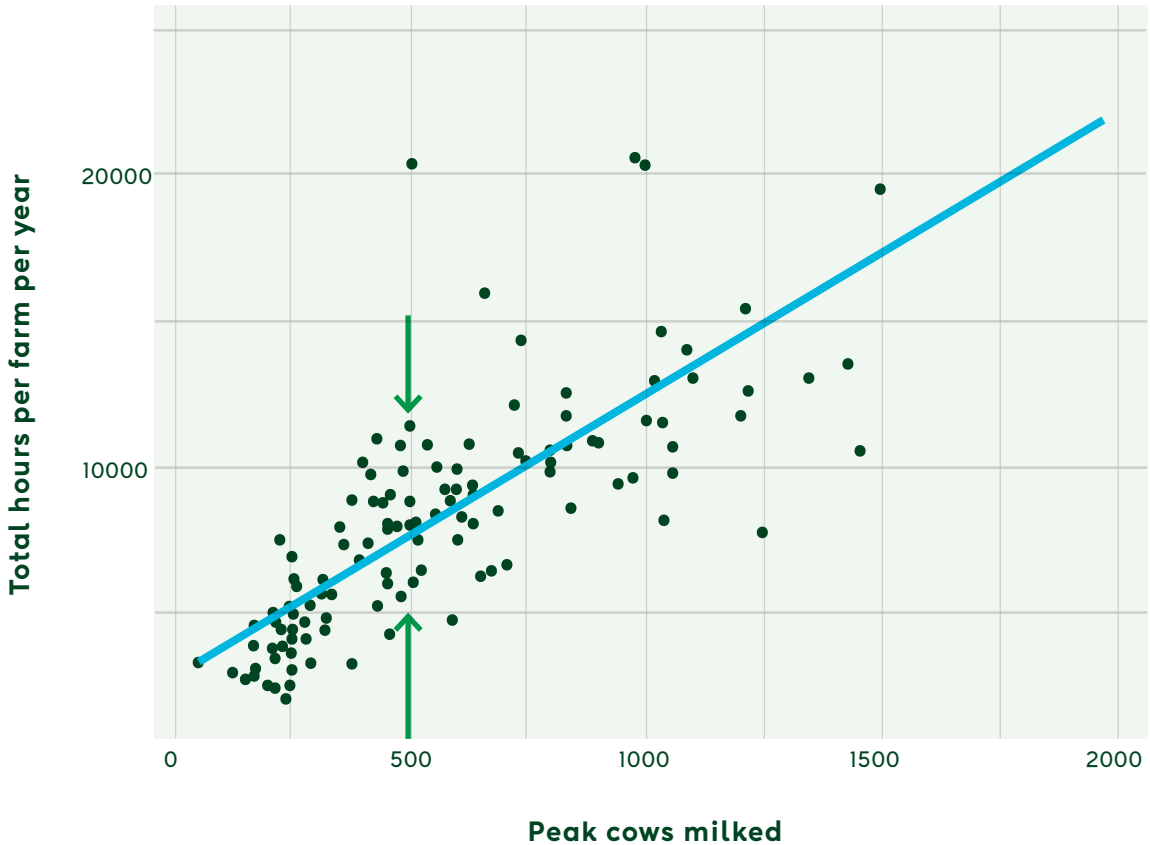
While factors like topography, irrigation, infrastructure and farm setup can all influence hours worked, the gap between similar-sized farms shows that there are likely opportunities to improve productivity (reducing hours per year to get the same work done) in many cases.

Workplace productivity can be improved and work hours reduced with strategies like milking platform upgrades, greater technology use and different milking intervals. From a workplace management perspective, improved organisation (through use of DairyNZ Waste Hunt or FarmTune), communication (e.g. using Kanban boards, or WhatsApp), autonomy and decision making for skilled team members, decreasing staff turnover and the prudent use of contractors are also productivity-boosters.

Read more about DairyNZ Waste Hunt, FarmTune or Kanban boards at dairynz.co.nz

Figure 1.

Total hours worked per farm per year for the 2021/2022 milking season by peak cows milked



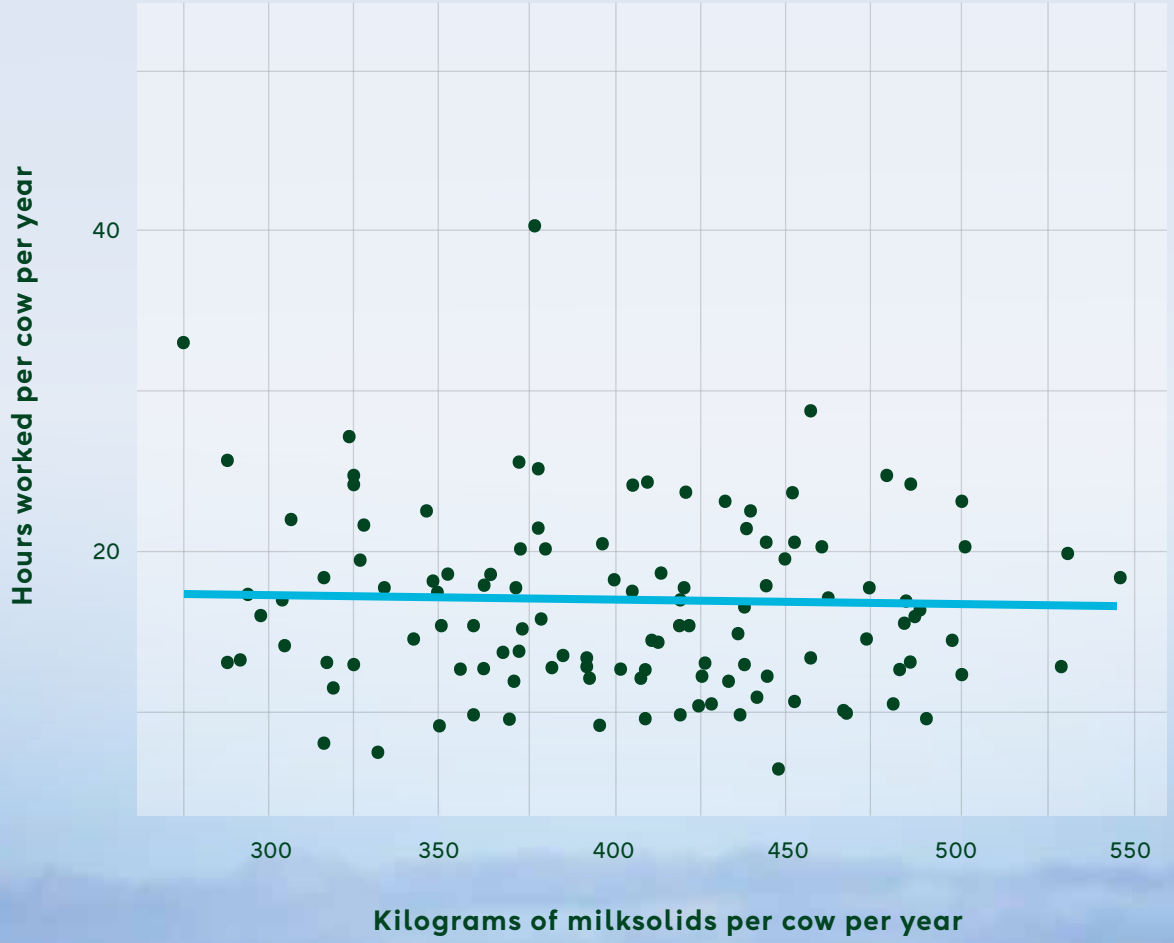
Does higher milk production require more staff hours?

It might seem that higher milksolid production would equate to more hours worked. However, data from the surveyed farms showed hours worked per cow per year is not influenced by kilograms of milksolids per cow, and that some farms are achieving higher milksolid production without increasing the number of hours worked (Figure 2).

This is because, as shown in Figure 1, the number of total hours spent on farm tasks is closely linked to herd size. A herd of higher producing cows might cause small increases in total milking time and more time spent on feeding, but this doesn't have a major influence on the number of hours spent per cow per year.

Figure 2.

2021/2022 milking season hours worked per cow by kilograms of milksolids produced



Measuring milking efficiency

As the most time-consuming task on most farms, milking is an opportunity to increase efficiency and reduce hours worked.

The survey captured data on time spent milking and the number of people required for milking at calving and mid-late lactation. Data for all surveyed farms is shown in Table 1a, and then for farms with a herringbone (Table 1b) or rotary (Table 1c) dairy platform.

This survey showed there is little difference in milking metrics between calving and mating while the herd is near peak production. However, there is a large increase in cows milked per hour and cows milked per person per hour in mid-late lactation for the top 25% of efficient farms. These farms were able to significantly reduce time spent milking later in the season, which means fewer work hours over the course of the year. These farms achieve this by using milking efficiency practices (e.g. implementing a maximum milking time (MaxT) strategy and engaging the team in continuous improvement processes around milking routines) and automation technologies to reduce the number of people needed at each milking.

The 2023 DairyNZ Technology and Workplace Practices Survey highlights and full report are available at dairynz.co.nz/tech-survey

The 2023 DairyNZ Technology and Workplace Practices Survey also gathered information about milking efficiency on a larger dataset of 500 dairy farmers. This information is available at dairynz.co.nz/tech-survey

Factors that affect milking efficiency:

- The type of milking platform – a rotary can increase the cows milked per hour compared to a herringbone.
- How many people are needed to complete the milking.
- Use of technology in the dairy shed – ACRs and automatic teat spraying increase milking efficiency, particularly in a rotary system.
- Find out more about implementing milking efficiency practices such as using the MilkSmart App and MaxT, at dairynz.co.nz/milking-efficiently

Milking efficiency summary from productivity survey

Table 1a.

All milking platforms

Milking efficiency	Calving			Mid-late lactation		
	Average	Highest 25%	Lowest 25%	Average	Highest 25%	Lowest 25%
Cows milked per person per milking	252	>410	<193	278	>574	<217
Cows milked per hour	217	>278	<148	267	>345	<195
Cows milked per person per hour	113	>167	<85	166	>252	<120

Table 1b.

Farms with herringbone platforms

Milking efficiency	Calving			Mid-late lactation		
	Average	Highest 25%	Lowest 25%	Average	Highest 25%	Lowest 25%
Cows milked per person per milking	205	>247	<157	227	>252	<173
Cows milked per hour	163	>210	<113	213	>274	<138
Cows milked per person per hour	91	>112	<69	135	>193	<100

Table 1c.

Farms with rotary platforms

Milking efficiency	Calving			Mid-late lactation		
	Average	Highest 25%	Lowest 25%	Average	Highest 25%	Lowest 25%
Cows milked per person per milking	407	>617	<295	565	>833	<322
Cows milked per hour	268	>330	<229	300	>400	<267
Cows milked per person per hour	159	>214	<114	227	>300	<141

Looking at weekly hours worked

Data modelling was used to estimate the hours per week required to run farms with different herd sizes, so farmers have a benchmark to compare with their own farms (Table 2).

Table 2.

Estimated hours work required to run a dairy farm per week by period and herd size (modelled data)

Productivity benchmark	100 cows	200 cows	400 cows	600 cows	800 cows	1000 cows
Calving	96	121	169	218	267	316
Mating	85	104	143	182	220	259
Mid lactation	72	89	122	156	189	223
Dry period	47	62	93	124	155	186

Factors that influence the hours required to run a dairy farm

- Technology, e.g. the use of collars for mating, ACRs for milking, robotic calf feeders
- Use of contractors for fertiliser spreading, fencing and other tasks to reduce hours worked by staff
- Milking frequency – once a day vs twice a day
- Managing a run-off block for bought-in feed or wintering
- Farm irrigation and irrigation type
- Farm topography – whether a farm is flat or steep
- Business structure – e.g. farm owners spending more time on compliance compared to contract milkers

Weekly hours by season

The volume of work needed on a farm fluctuates throughout the milking season, which is why the survey results showed a large range in the average hours worked by full time staff at different times of the year.

During the calving period, just 25% of the surveyed farms averaged less than 50 hours per week per person. Over the mating period, 25% of farms averaged less than 45 hours per week per person.

Table 3.

Average weekly hours worked per person in different seasonal periods.*

	Range	Average	Lowest 25% of farms	Highest 25% of farms
Calving 2021	38-98	55	<50	>63
Mating 2021	38-105	50	<45	>56
Mid-late lactation 2021/22	38-91	45	<42	>50
Dry period 2022	21-91	40	<35	>45

*This average is based on data for full-time workers (more than 37 hours per week over calving, mating or the rest of the lactation), and excludes those who are part-time, e.g. relief milkers. In the dry period, due to lower working hours, the analysis was based on information from people working 20 hours per week or more.

Time spent on daily tasks during the calving season

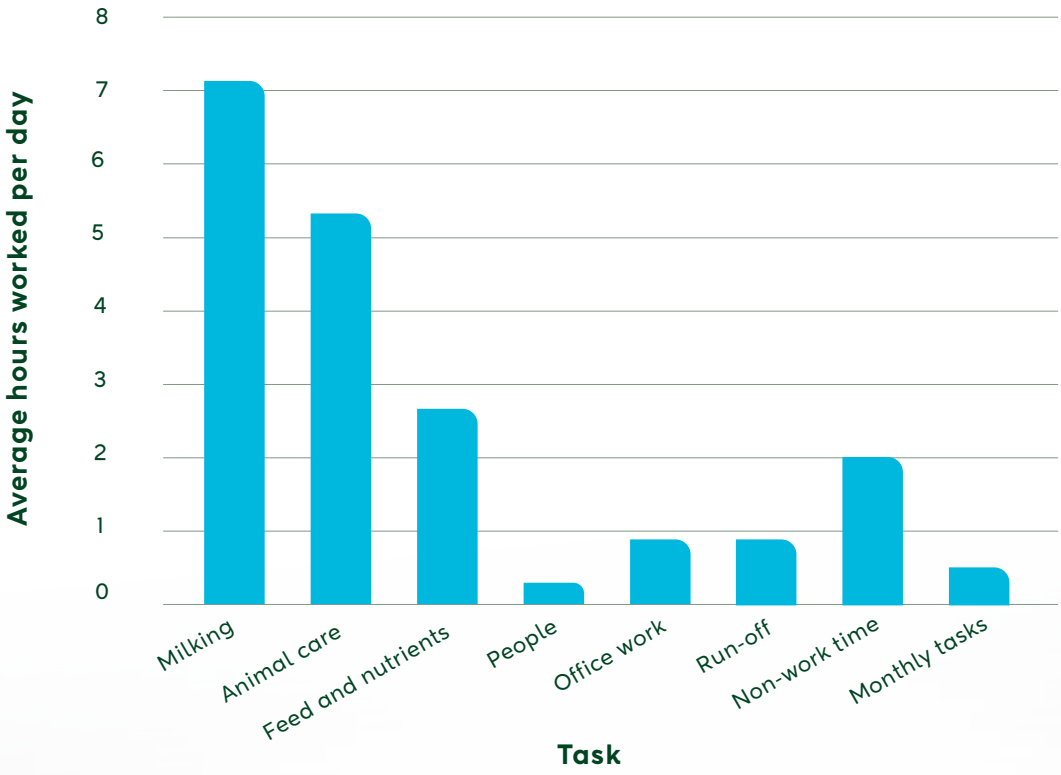
The breakdown of the working day by the time spent on daily tasks during the calving period revealed that the hours working on milking tasks was the most time-consuming and directly related to the size of the herd. Hours spent working on animal care tasks like calving and calf-rearing was the next most time-consuming task.

However, some farm tasks, including people management and office work, showed little variation by farm size, particularly on farms in the 300-600 and more than 600 herd size categories during the calving period.

Note: See glossary for descriptions of different categories.

Figure 3.

Average total hours spent on daily tasks during the calving period on farms with less than 300 cows



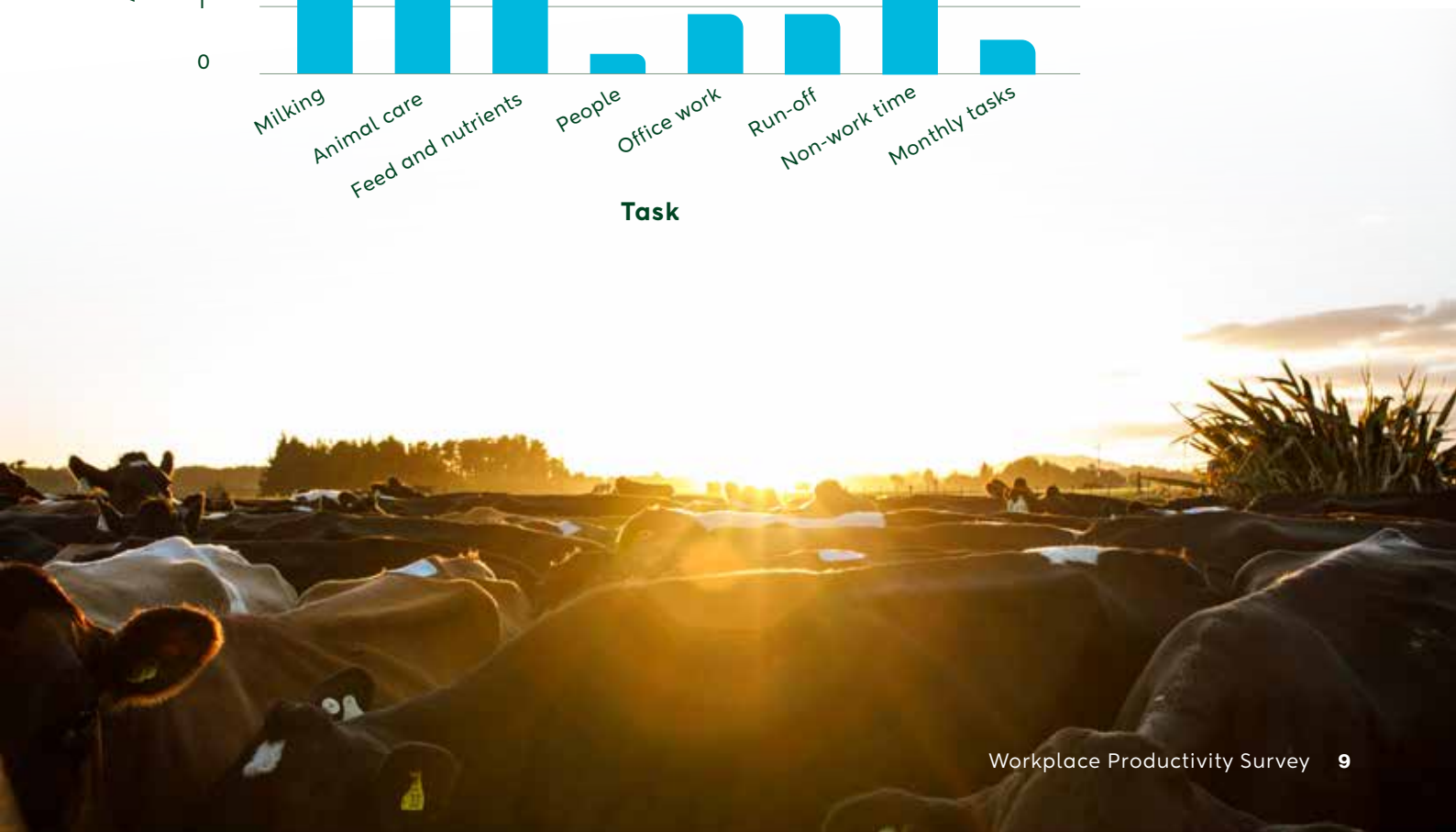


Figure 4.

Average total hours spent on daily tasks during the calving period on farms with 300 to 600 cows

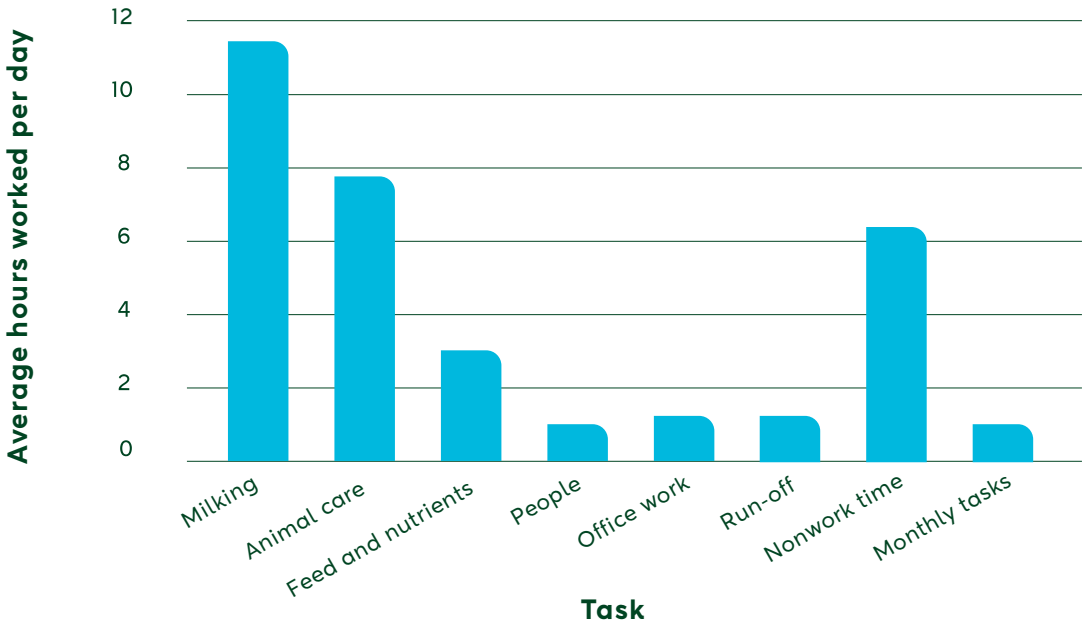
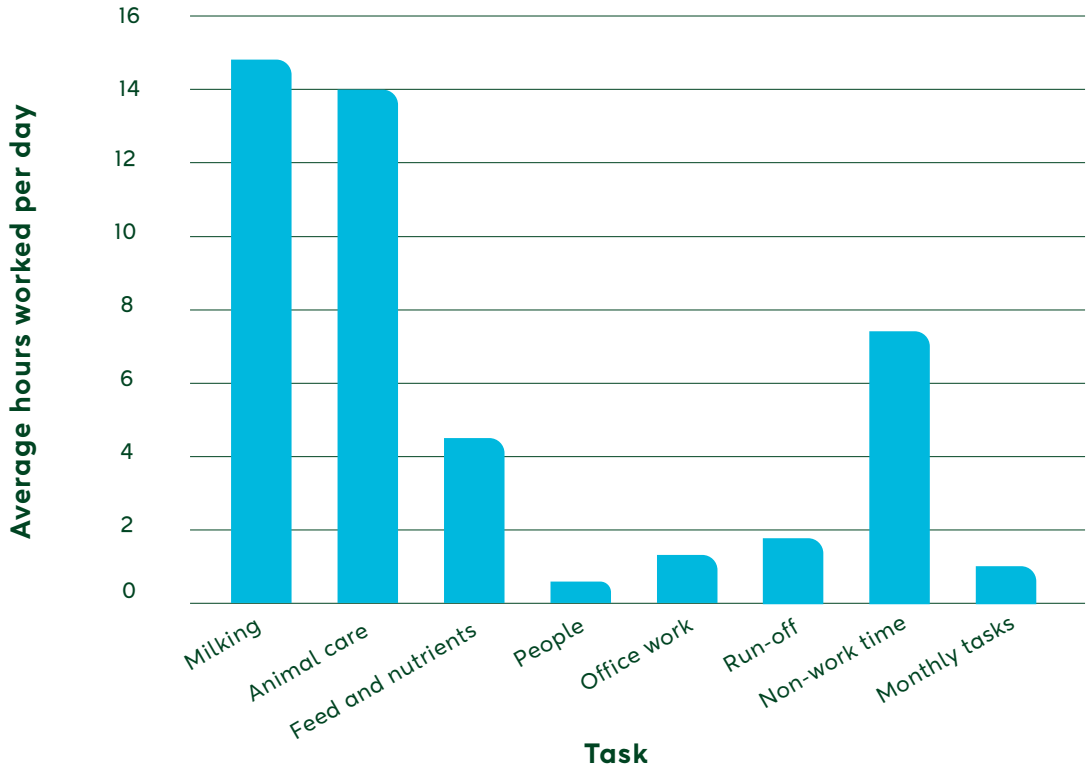


Figure 5.

Average total hours spent on daily tasks during the calving period on farms with more than 600 cows



Glossary

Definitions for categories in task breakdown:

Milking: herding cows, vat wash, milking (cups on to cups off), plant and yard wash

Animal care: calving, calf rearing, animal health, breeding and other stock work

Feed and nutrients: pasture assessment and planning, break fencing, feeding supplements, irrigation, fertiliser application, effluent management, weed control

People: team meetings and people management, daily farm planning

Office work: data entry/compliance, financial and other admin tasks

Run-off: time spent managing activities on a run-off/wintering block

Non-work time: time off/breaks during the day (not annual leave)

Monthly tasks: cropping and pasture renovation, pasture conservation, general repairs and maintenance, staff training, other meetings/professional activities

The project team express our thanks to the dairy farmers who gave their time and information to participate in the workplace productivity surveys.

Brian Dela Rue

Research Engineer

Brian enjoys working alongside farmers and technology developers to better understand farmer needs and opportunities to improve workforce productivity and workplace design. Providing information to support farmers in making investment decisions in technologies that will add value to their farm business and work well for their farm teams is a key part of his role.

Dr Callum Eastwood

Senior Scientist

A social scientist, Callum leads projects in workplace design, workplace productivity, reducing dairy sprains and strains, and technology adoption. He specialises in technology adoption and integration using innovative and practical solutions on farm. Callum works closely with farmers and enjoys using co-design approaches to bring different perspectives to solving farming challenges, this includes having farmers and other stakeholders in the room together. For Callum, it's not just about creating science solutions, but ensuring they work for farmers.

Dr Lucy Hall

Post-doctoral Scientist

A post-doctoral scientist, Lucy is passionate about and has developed research skills related to people on farms and farm systems. Her key research areas are workplace productivity, flexible milking, the impact of on-farm safety improvement practices, and farmer's sleep. Lucy has a wealth of practical on-farm knowledge. She has previously worked on dairy farms and supported farmers through running discussion groups at DairyNZ. After finishing her Ph.D., Lucy is eager to provide research that considers the whole farm system and helps farmers remain dairy leaders internationally.

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