



Investing in automatic cluster removers Technical Note B02

Summary

This technical note examines the managerial benefits of automatic cluster removers (ACRs), compares the costs with the potential labour saving benefits and asks farmers who have recently invested in ACRs if they believe this investment has paid off.

ACRs are pieces of automation found in dairy sheds that remove a cluster from a cow when her milk flow falls below a set rate.

ACRs can reduce labour requirements and over-milking that can lead to improved herd health.

An economic analysis of ACRs found that as the scale of a dairy increased, so did the economic returns from installing ACRs.

This analysis also showed that in Queensland dairies, introducing ACRs into a 25 unit swing over dairy, milking 300 cows generates a payback period of 2 years if 0.75 labour units are saved.

A survey of farmers who recently installed ACRs found that no farmers claimed to have benefited financially from ACRs but many farmers had increased the scale of operation without increasing their demand for paid labour, thus saving a potential cost.

Surveyed farmers found milking to be easier and quicker; milking was simplified and consistent with less rushing.

The reduction in over-milking has resulted in reduced somatic cell counts and mastitis in half of the farmers surveyed. Farmers were confident that the cows were happier and herd health had improved.

Introduction

Mechanisation of the milking process started over one hundred years ago. Labour efficiency, milk quality and herd health pressures continue to push further mechanisation and improvements in milking machine technology. The significance of labour efficiency to the Queensland dairy industry was shown in the 2008-09 Queensland Dairy Accounting Scheme (QDAS) report which found that surveyed farmers spent \$64,193 on paid labour (5.1 cents per litre). This was the second highest input cost after feed related costs.

Recent years have seen a spike in investment in milking machine technology, including automatic cluster removers (ACRs), as a result of favourable cash flows for dairy farms. The 2008-09 QDAS report showed that farmers achieved a favourable dairy operating profit of \$804 per cow. Adding to this were government incentives for investment and capital inflows to many dairies as a result of the sale of the Dairy Farmers Cooperative.

This report will examine the managerial benefits of ACRs, compare the costs with the labour saving benefits and ask farmers who have recently invested in ACRs if they believe this investment has paid off.



What are automatic cluster removers?

ACRs are pieces of automation found in dairy sheds that remove a cluster from a cow when her milk flow falls below a set rate. ACRs can be fitted to new dairies and to existing milking machines.

The advantages of automatic cluster removers

The CowTime guidelines for milk harvesting lists the advantages of ACRs as:

- Clusters will always be removed, regardless of the labour in the dairy
- Milking may be quicker (not always the case)
- Clusters are removed promptly at the end of milk flow, which reduces over-milking
- More accurately and reliably detect the end of milking or low flow rate than people
- If clusters are kicked or fall off after the initial period, they are quickly hung up, reducing the risk of sediment problems in the milk
- ACRs reduce milker stress

Source: CowTime

Do automatic cluster removers pay?

The Victorian Department of Primary Industries published an economic evaluation of ACRs in 2009. The benefits and costs of installing ACRs into sixteen different dairies were modelled with different cow number and cluster number configurations. It was found that as the scale of the operation increased, so did the economic returns from installing ACRs.

While the installation and operating costs of ACRs are easy to measure, the financial benefits of ACRs are difficult to estimate. In this analysis, the financial benefit was based on the reduction in labour units required in a dairy.

In the case of a 15 unit swing over herringbone dairy, milking 150 cows, there was a labour saving of only 0.1 labour unit. In this case the introduction of ACRs generated a negative Internal Rate of Return (IRR), showing that this was not a sound financial investment.

However, when the scale of the operation is increased to a 25 unit swing over dairy, milking 300 cows (similar to Queensland larger herds), there was a 0.75 labour unit saving, generating a 57% IRR and a payback period of 2 years. Though, if only half of the estimated labour saving is obtained, then the IRR drops to 20% and the pay back period increases to 5 years.

The analysis of double-up herringbone and rotary dairies also showed that as the scale of operations increased, so did the investment return from ACRs.

The Victorian analysis assumed milking 300 days per year. By changing this assumption to milking 365 days a year (as is the case in Queensland), the investment returns of ACRs are improved. The 25 unit swing over dairy, milking 300 cows now generates an 80% IRR and a payback period of 2 years.

This calculation assumed a reduction of 0.75 labour units, worth \$24,515 per year. This would be a significant reduction in labour costs for Queensland dairies and would represent a saving of 1.9 cents per litre.

What do farmers think?

A survey of farmers who installed ACRs over the last three years in southern Queensland was conducted to record the desired benefits that motivated the investment by these farmers and record the actual benefits that these farmers have found from using ACRs.

The farmers surveyed had swing over and double up dairies, and installed new and second hand ACRs. They had installed ACRs alone, through to full computerisation, individual cow identification, monitoring and drafting.



What benefits motivated farmers to install automatic cluster removers?

The survey found that farmers purchased and installed ACRs to: 1) eliminate the need for more labour as shed size and herd size increased; 2) to reduce the somatic cell count level in milk and; 3) to reduce the instances of mastitis throughout the herd.

Rather than a decrease in paid labour, a major motivation for investment was the desire to keep labour (in many cases, 1 milker) at the same levels when the number of clusters and cows were increased. ACR retailers also reported that many farmers purchased ACRs to eliminate the need for paid labour at milking time.

Over-milking cows was another major factor for the investment in ACRs. Farmers identified that they were not removing clusters soon enough, and saw ACRs, rather than employing more labour, as the solution to this issue. Eliminating over-milking could potentially reduce elevated somatic cell count levels in milk and mastitis incidences, resulting in milk price quality bonuses and extra litres sold.

What benefits have farmers had from automatic cluster removers?

Farmers whose motivation was to maintain labour at present levels achieved their aim. Comments included:

- Milking is easier and quicker, even with 40 more cows
- Milking has been simplified, and I feel more comfortable when relief milkers are in the shed.
- If something needs my immediate attention, I can leave the pit and not worry about over-milking
- Milking is now consistent, it's no longer a big job, there is less rushing
- Milking is easier. People want to work here.

Fifty percent of the farmers surveyed reported that the reduction in over-milking decreased somatic cell counts and mastitis. All farmers were confident that the cows were happier and herd health had improved.

No farmers indicated that they had benefited financially from ACRs. Some expected milk price bonuses to flow in the future due to reduced cell counts but this had not yet occurred. While there were no direct financial benefits reported, many farmers had increased the scale of operation without increasing their demand for paid labour, thus saving a potential cost.

Advice to others considering automatic cluster removers

The surveyed farmers were overwhelmingly positive about their experience with ACRs, some saying they don't know how they did without them. They encouraged others to shop around, do their research and talk to other farmers before picking an ACR. The farmers suggest that if someone was interested in ACRs they should go all out with a dairy management system or at least make sure that the ACRs they pick can be fitted to a dairy management system in the future.

Further information

Contact the DAFF Customer Service Centre by Phone 13 25 23, or
Email callweb@daff.qld.gov.au

More technical notes can be found at:
www.dairyinfo.biz

Cow Time web site www.cowtime.com.au

Feasibility of automatic cup removers in the dairy – do they pay?
<http://www.murraydairy.com.au/irrigated-dairy-farming-systems.html>

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