Milk metering and herd testing

1. Introduction

Herd testing measures milk yield and composition of individual cows over sample periods in order to estimate production over their lactation. About 50% of Australian farmers herd test using mobile milk meters to estimate milk volume and collect samples for analysis. The milk sample is usually a fixed proportion of the cows' milk and is weighed in a laboratory to provide an estimate of the cows' total milk production (typically over a 24 hr period for each month of lactation). Most samples are measured for fat, protein and individual cow somatic cell count (ICCC). This Quick Note examines the herd testing process and discusses ideas to make it less time consuming and more pleasant.

2. Interpretation and relevance to Australian conditions

Herd testing allows farmers to grade cows in the herd on production, and udder health. The data is also used by the wider industry for sire progeny testing. However, herd testing usually involves considerable set up time and interruption to the milking routine, leading to low adoption rates.
Fortunately there are some strategies that can be used to collect this important information that can reduce the impact on the milking routine. Automation of some aspects also shows promise in improving herd test day.

3. Relationship to CowTime goals

Herd testing directly impacts on the profitability of farms through support for management decisions on culling, feeding and udder health. It is also an issue of increased workload on the day of herd test. The extra activity impacts on the smooth operation in the dairy and increases operator stress.

4. Features of milk metering and herd testing

General comments

The benefits of herd testing are many and new technologies have significantly reduced the hassles associated with collecting the data. These include more convenient routines, better services, automation, and sampling techniques.

Minimising herd test day hassles

There are many ways of reducing the negative impact of herd testing on the milking routine, while retaining the important benefits. These include:

- Test less often or test at only one milking each month. Farmers who already herd test could consider how often they need to herd test and whether they could manage their herd with information from less testing events (am or pm, alternate pm/am and bimonthly testing plans) and greatly reduce the work involved. The relative accuracy of various herd recording testing regimes were tested over two lactations at Agriculture Victoria Ellinbank (Clarke *et al* 1997). They showed that some efficient low frequency regimes could provide results that could be used to effectively grade cows in a herd. Countdown Downunder recommend at least 4 cell count results per lactation for accurate cow sub-clinical mastitis identification.
- Have a professional sampling technician do the sampling for you or get extra help for test day.
- Improve your cow identification system.
- Use electronic cow identification (from your NLIS ear tags) to streamline sample identification. Many herd test centres offer portable readers to produce bar-coded sticky labels based on the cow's ear tag to identify sample containers. This greatly improves the accuracy of the data too.
- Use electronic milk metering/sampling to replace herd test day altogether. Metering every milking greatly increases the accuracy of production testing because there are 60 readings a month compared with only 1 or 2. Regular metering also becomes an indicator of cow health by giving daily feedback on yield versus the cow's expected yield. For most farms, the cost of permanent electronic milk meters is not justified for herd testing purposes only. However, many farmers may install such meters to help them monitor, manage and automate the milk harvesting process. A discussion of the acceptable limits of error for permanently-installed meters has been published (Mein et al, 2000). A spreadsheet that models the precision of any herd recording regime has been prepared by Tim Clarke at the National Milk Harvesting Centre (Clarke 2003).
- Farmers that do not require herd production data may consider use of a simple 'milk thief' sampler to take samples for somatic cell counting only. About 80% of surveyed non-testing farmers indicated that they would use such a service (Clarke et al, 1997).

5. Potential challenges with implementation

Herd testing less frequently may result in a slight reduction in accuracy of grading cows in a herd. However, this slight reduction rarely affects the quality of most farm management decisions. Across the whole dairy industry, the lower accuracy will affect the rate at which AI bulls can be proven. This would probably be offset by increased participation in herd testing due to the simpler herd testing regimes on offer.

6. Robustness of this information

Many of the ideas suggested in this Quick Note are commonly practised in other dairying areas around the world. Less frequent herd testing regimes have a sound scientific basis. Readers who are looking for a more comprehensive summary of the main types of milk meters available and a brief explanation of their measurement principles are referred to Akam & Spencer (1992).

7. References and further reading

Akam, D.N. & Spencer. S.B. (1992) Design and operation of milking machine components. Chapter 5 in "Machine Milking and Lactation" edited by AJ Bramley, FH Dodd, GA Mein and JA Bramley, Insight Books, Burlington, VT, USA

Clarke, T. (2003) Personal communication. National Milk Harvesting Centre, RMB 2460 Hazeldean Rd, Ellinbank 3821.

Clarke, T. (1997) Project reports to NHIA: Accuracy of alternate am/pm testing regimes; accuracy of 'Milk Thief' samplers; improved interpretation of cell count data for farmers. National Milk Harvesting Centre, Dept of Natural Resources and Environment, Ellinbank, 3821.

Mein, G.A., Hannah, M. & Clarke, T. (2000) Limits of error for permanently-installed milk meters used for herd recording or for daily herd management purposes. International Committee for Animal Recording, 32nd Session, Bled, Slovenia, pages 159-162.

CowTime Guidelines for milk harvesting - Chapter 5, edited by Klindworth, D. et al (2003). Available on the CowTime website www.cowtime.com.au

Quick Note 3.2: Checklist for making changes to milk harvesting infrastructure