Practical Considerations to Reduce Carry-Over in Design of Recording & Sampling Devices

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Abstract

Traditionally, the main objective of collection of milk samples from individual animals was to provide an objective estimate of the proportion of fat, protein and lactose present in that animal's milk. Noting that fat percentage particularly rises towards the end of the milking, carryover of significant residues may have a negative effect on the accuracy of the results. Milk recording organisations continue to seek opportunities to add value to the routine sample through availability of additional analyses such as ELISA based pregnancy tests and PCR based mastitis pathogen identification. Culling and/or treatment decisions can be influenced or based on these types of tests. As a result, the importance of accuracy in this type of testing cannot be over stressed. The sensitivity of such tests emphasises the need for limitation and/or avoidance of carryover.

The physical properties of milk result in a liquid which tends to stick to the surfaces of the milking machine and to drain only slowly. Milk tubes, by necessity, need to be flexible enough to permit attachment to teats and so that milking clusters can be stored out of the way of cows' feet and operators. Those contrasting needs result, inevitably, in the potential for milk to be trapped at the end of an animal's milking.

Attachments and/or components included in the milk tube may also create the potential for trapping of small quantities of milk. Some milk yield measurement devices work on a "fill and dump" principle. Inevitably, the final flow from an animal does not fill that measuring chamber resulting in the need for an arbitrary final emptying of the valve. Sampling devices themselves may add to the potential for residue carryover.

In contrast, the speed of operation in many milking facilities means that, practically, there is little or no time for any clean of equipment between animals to remove residues.

This paper considers the potential for carryover of milk, and cleaning solutions, the difficulty in eliminating residues and practical considerations in design and operation of milking machines and sample collection devices to minimise the effects.

Keywords: carry-over, design, best practices