

## Healthy cows ensure quality milk

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A technician testing milk samples in the Milk Laboratory

Mastitis is the most costly disease affecting dairy cattle in first world countries around the globe. It is an inflammation of the udder, mainly caused by bacterial infection. Mastitis changes the composition and decreases the quality of milk produced by affected cows and also causes damage to the cow's udder. More than 80% of losses due to mastitis are caused by an unseen, or so-called subclinical, infection that can only be diagnosed in a laboratory and not in the milking parlour. This makes the disease difficult to control. While mastitis has potentially devastating effects, it can be controlled through effective farm management.

The small-staffed, but highly efficient Milk Laboratory, part of the Department of Production Animal Studies in the Faculty of Veterinary Science at the University of Pretoria (UP), is the go-to place for nearly half of the commercial dairy farmers in South Africa when they require diagnostic services relating to udder health in dairy cows. Thanks to its unique approach when it comes to ensuring udder health, as well as its meticulous administration and training offerings, the Milk Laboratory has earned the respect of farmers, the government and the international research community.

The standard approach when dealing with udder health in dairy cows typically used to be a reactive approach – only cows that were already infected were treated. This is no longer sufficient and producers need to adopt a pro-active approach in order to prevent the spread of the disease. Some of the bacteria that cause mastitis are very contagious and can spread easily during the milking of cows. In previous cases it was found that one cow can infect up to seven cows that are milked with the same unit. Management therefore plays an important role when it comes to ensuring optimal milk quality and udder health.

The Milk Laboratory uses a unique, pro-active approach to ensure the early detection of bacteria and thereby achieving optimal udder health. Their approach starts with determining the status of the udder and then moves on to critically analysing every point within the dairy process. This approach utilises micro-

cytology data, whereby all lactating cows in a herd are examined by performing microbiology and somatic cell counts on milk samples. This ensures the identification and separation of all cows affected by potentially devastating bacteria to prevent them from infecting other cows. Infected cows can then be treated and dealt with much more effectively. This critical, step-by-step analysis has proved highly successful and encourages pro-active management, effectively preventing disease rather than merely reacting to a cow that is already infected. The Laboratory has already helped many herds to overcome outbreak situations in the shortest possible time.

The Milk Laboratory is headed by laboratory manager, Dr Inge-Marié Petzer, who has worked in this field for several years and has earned respect as a leading expert in dairy health. As well as completing her PhD, Dr Petzer is also currently writing her second book on udder health and the different approaches needed to combat different bacteria that cause mastitis. Dr Petzer is assisted by research officer, Joanne Karzis, who is also working on her PhD, Corrie Watermeyer, who is in charge of the technical side of the laboratory, as well as a small handful of highly skilled technicians. The Laboratory's fundamental focus is on improving udder health and ensuring hygiene in the process of harvesting milk. The Laboratory conducts research that is relevant to the current needs of the Dairy Industry.

Over the years, the Milk Laboratory has gained the trust and respect of farmers through the accurate service it offers them. Dr Petzer maintains that the reason farmers return seeking assistance from the Laboratory is that its scientific findings are put into language the farmers understand and are able to apply. Farmers are therefore able to learn from the findings and improve their entire system.

The Laboratory's work is not confined to the academic world and top-level management of farms. Dr Petzer values the importance of training and applying her knowledge and expertise at all levels of this chain. She receives many queries from farmers on how they can adequately train their milkers. Milkers are an essential component of a dairy farm, as well as playing a vital role in limiting the transmissions of diseases such as mastitis. The Laboratory is planning to produce training CDs and videos for milkers and farm managers that may help in this regard. This material will provide a very practical guide to the 'dos and don'ts' and will be presented in the languages of the milkers to ensure clarity and understanding. Dr Petzer also provides veterinary students with practical experience by including them in farm visits where they are exposed to real-life case studies. Students are included in the solving of problems, taught how to monitor herds and treat the individual animals.

While the Milk Laboratory started off as a diagnostic service, it has evolved into a research-intensive unit, despite its small staff. Part of its success is its impressive database of over 1,5 million cows' test results, providing critical information on bacteria, antimicrobial resistance against antibiotics and reverse zoonosis. This database enriches the feedback provided to farmers and the industry and also allows for a wide range of future research opportunities.

Regarding Ms Karzis' research on antimicrobial resistance, she notes that, in general, resistance is increasing, but as a result of good farm management, South Africa's top producing farms are actually seeing a decrease in resistance. This is proof that the unique approach advocated by the Milk Laboratory is working.

The Laboratory is approved by the Department of Agriculture, Forestry and Fisheries (DAFF), and is in the process of being accredited by the South African National Accreditation System (SANAS). SANAS is also linked to the International Laboratory Accreditation Co-operation (ILAC). The Laboratory also does work for the Milk Producers' Organisation (MPO), South Africa's leading industry organisation. 85% of all milk producers in South Africa are members of MPO.

- Author Louise de Bruin