

# **DSA Lab Services ... making a difference in the dairy industry**



**DSA Lab Services**

**By Nala Manamela**

# Microbiological testing

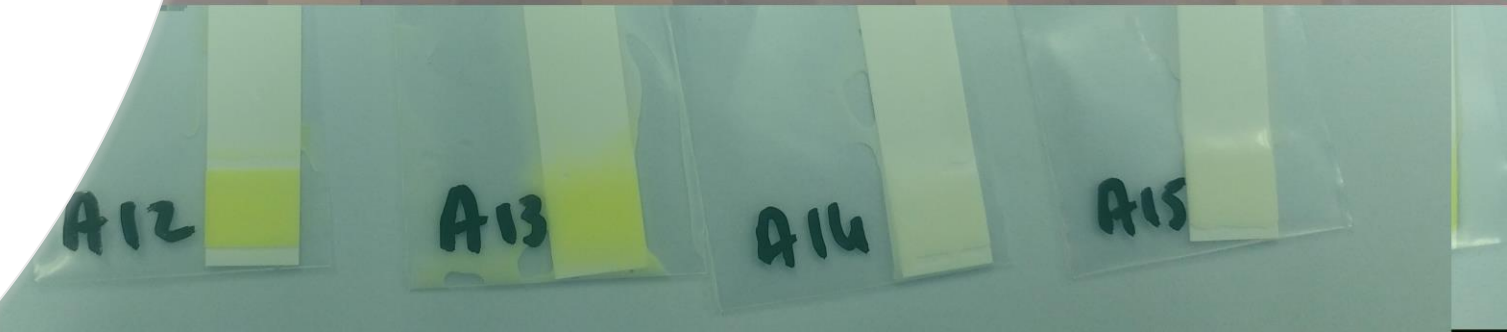
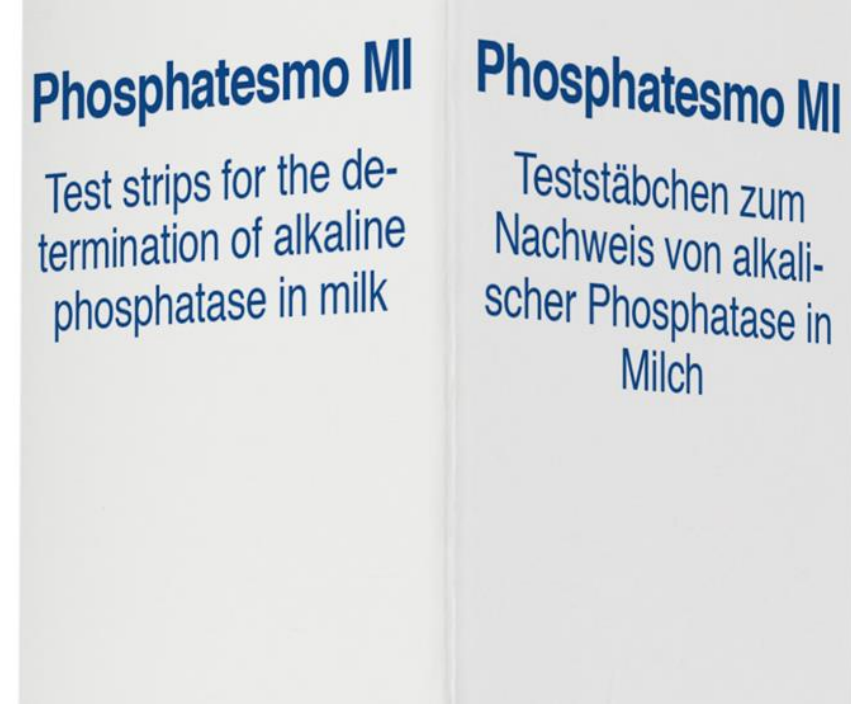
## Automated Tempo® system based on Most Probable Number technique

- Aerobic count
- *E.coli*
- Coliforms
- Enterobacteriaceae
- *Staphylococcus aureus*
- *Bacillus cereus*
- Lactic acid bacteria
- Yeast and moulds



# Phosphatase test

- Test is used to evaluate effective pasteurization of milk using Phosphatesmo test strips.
- Limit of sensitivity - 0,5% raw milk in pasteurized milk.
- Dip test strip in milk and incubate strip.
- Colour changes after 1h incubation at 36°C.
- Yellow indicates no, or un-efficient pasteurization.





## **Detection of *Brucella abortus* (Milk ring test)**

All Phosphatase positive/ raw milk samples can be tested for contagious abortion (*Brucella abortus*).

This test is outsourced to the Agricultural Research Council – Onderstepoort Veterinary Institute, as it may only be performed by an authorized veterinary technologist.

Personnel testing for controlled and notifiable diseases must be registered with / or authorized by the South African Veterinary Council to perform the duties of a Veterinary Technologist.

Results take between 7 and 14 days.

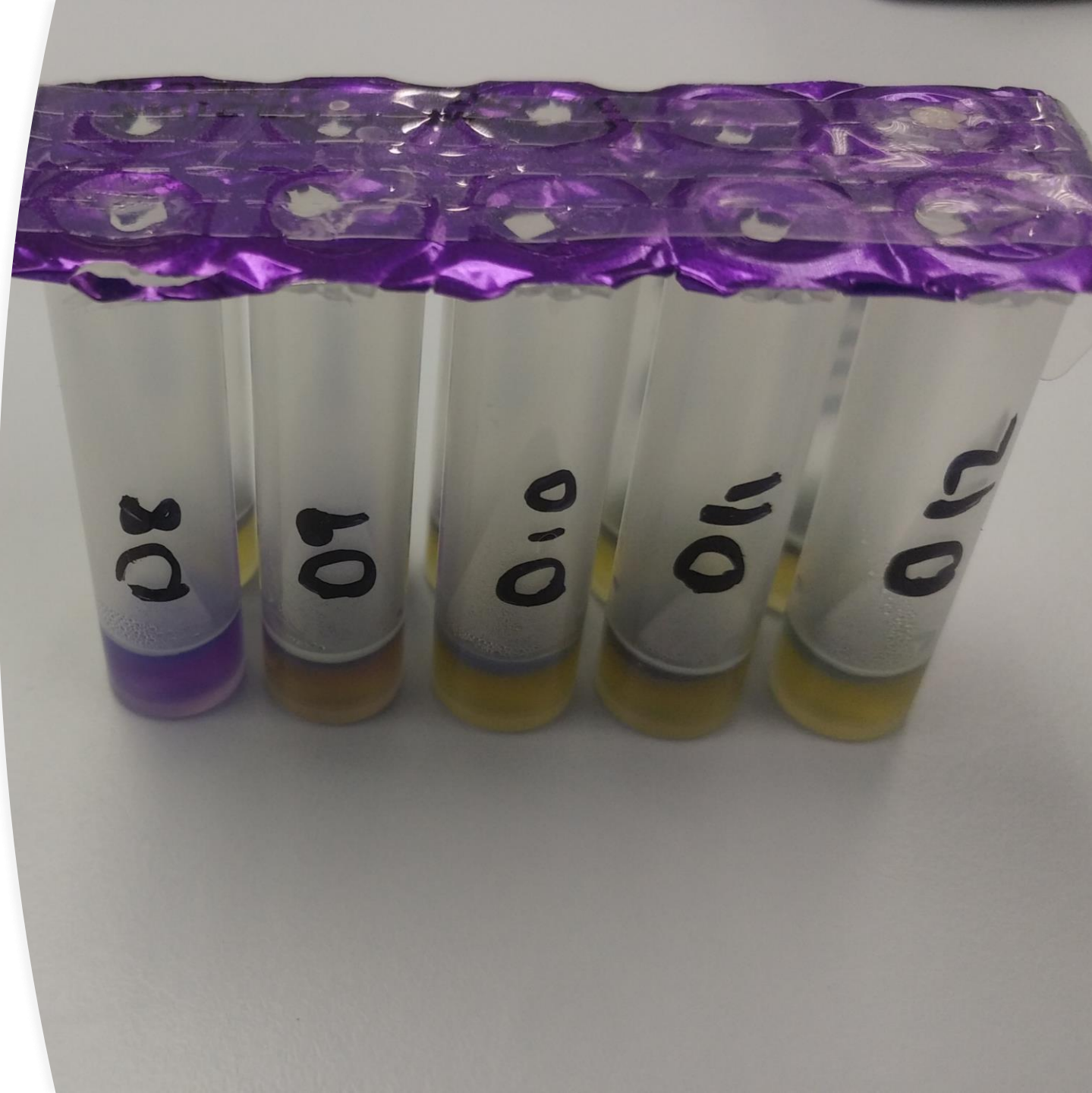
# Detection of Inhibitory Substances

- Copan test
- The wells contain spores of *Bacillus stearothermophilus* a fermentable sugar, and a pH indicator.



## Detection of inhibitory substances

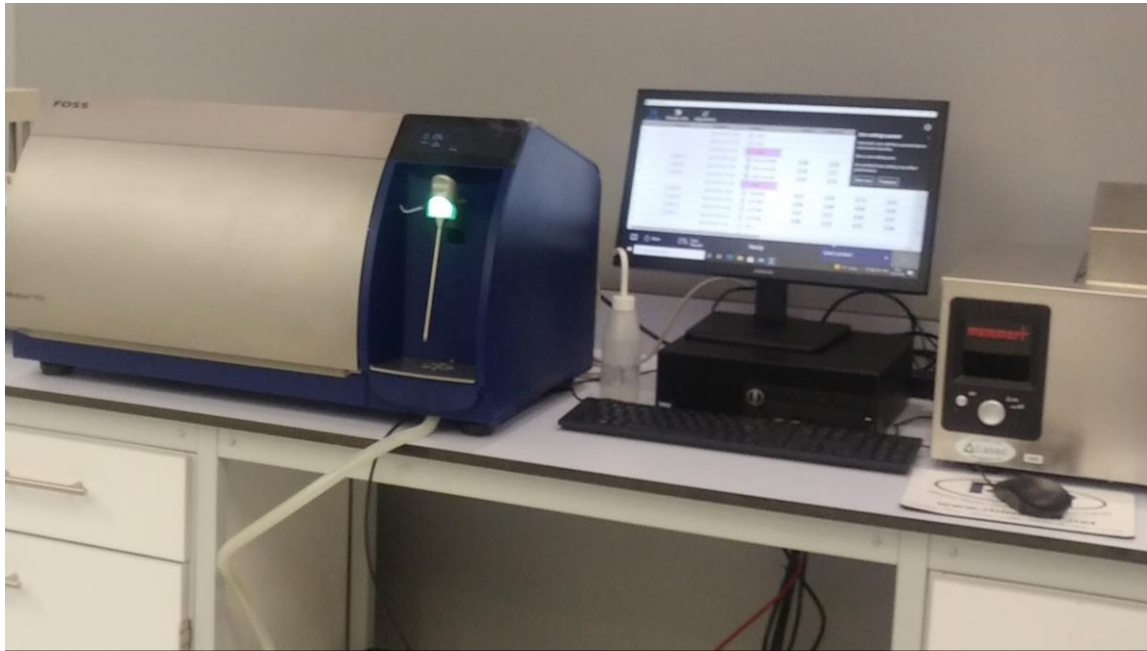
- 0,1ml sample - 65°C for 3 hours
- If there is no inhibitory substances in the milk the colour changes to yellow.
- If there is inhibitory substances in the milk the colour will remain purple.
- Milk that contain antibiotics/Inhibitory substances not for human consumption.



## Determination of added water by freezing point depression.

- Cryoscope instrument is used.
- 2ml of sample is supercooled to below its freezing point.
- The thermistor probe determines the freezing point to the nearest 0,001°C.
- The % added water value is read off a table.





## **Milk composition using a MilkoScan instrument (FT3)**

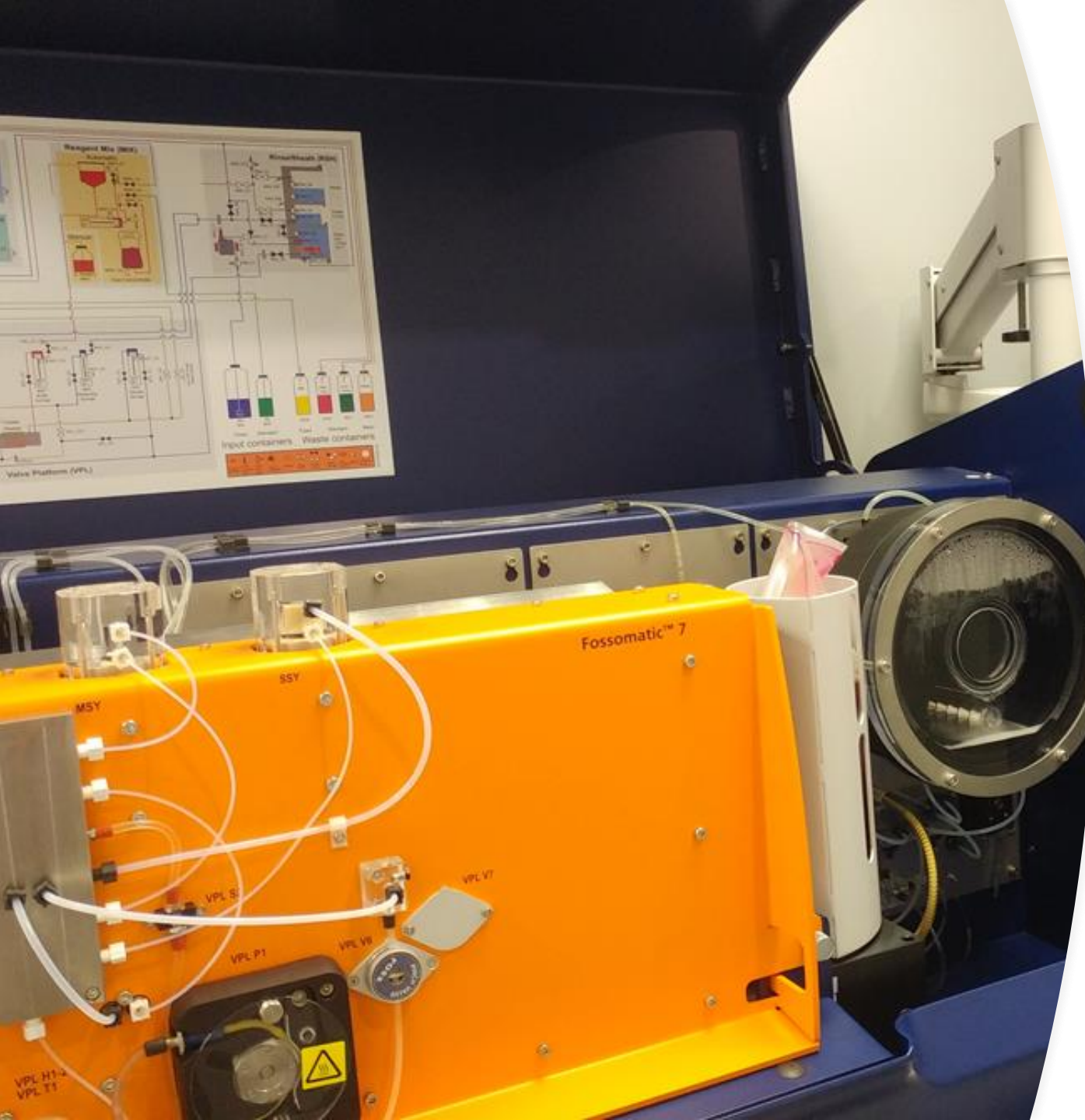
- Uses Infrared technology.
- Parameters: fat, protein, lactose, total solids, solids non-fat and urea.



# Milk composition using a MilkoScan instrument (FT3)

- Milk samples are heated to 40°C for 15 min, then gently, but properly mixed.
- Measurement per sample takes  $\pm 1$  min.
- Reported as %.
- Instrument is calibrated monthly and verified daily before use.





## Determination of the somatic cell counts (Fossomatic 7)

- Somatic cell count is recognized worldwide as the best single indicator for mastitis screening.
- The measuring principle of the Fossomatic is based on a technique called flow cytometry. With the technique, a suspension of cells is stained and forced through a capillary tube which is illuminated in front of a sensor.

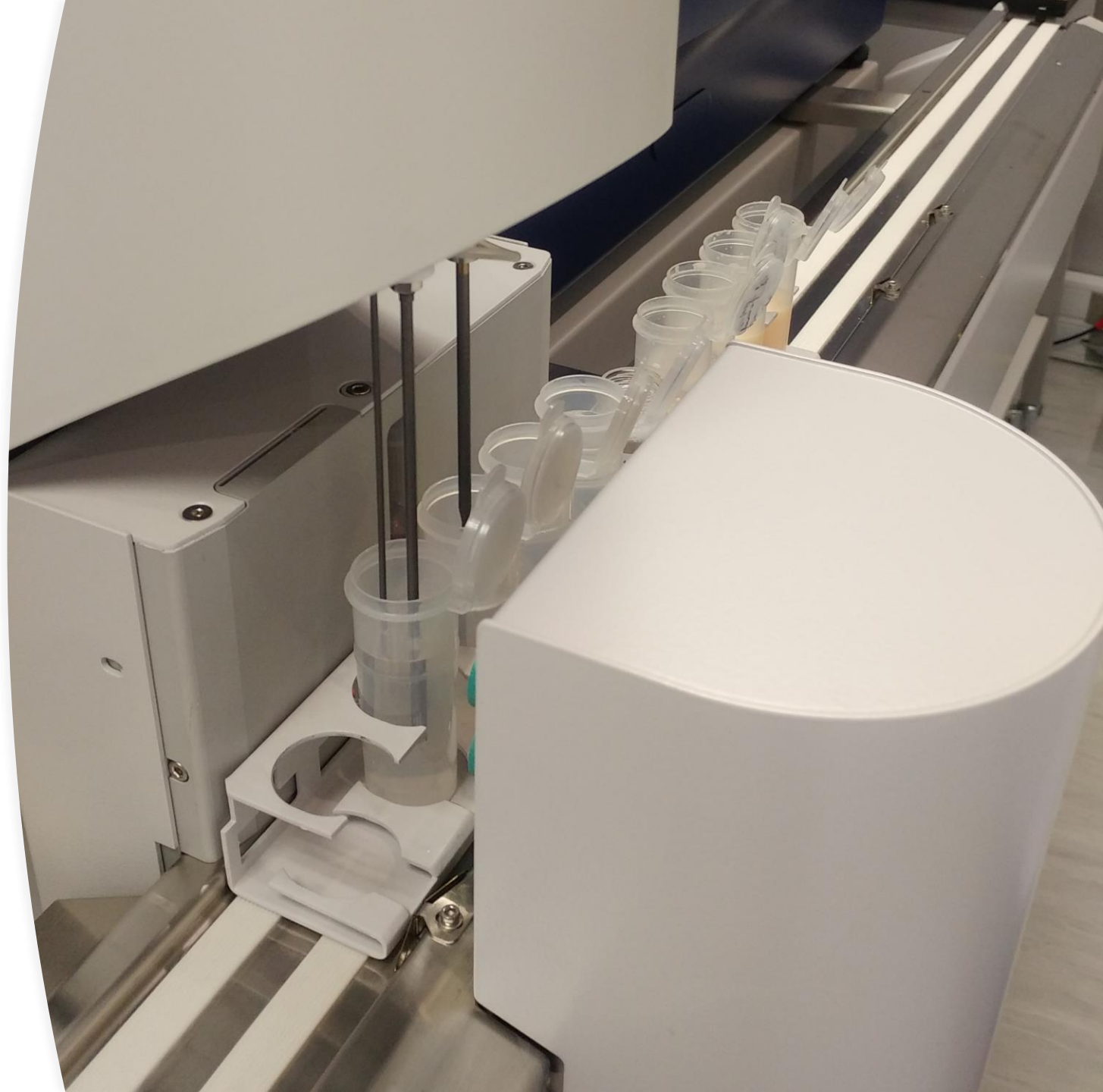
# Determination of the somatic cell counts

- In the flow cell, the stained somatic cells are exposed to light of a specific wavelength. The cells then emit fluorescent light pulses which are counted and displayed.
- Milk samples are heated to 40°C for 15 min. then properly mixed.

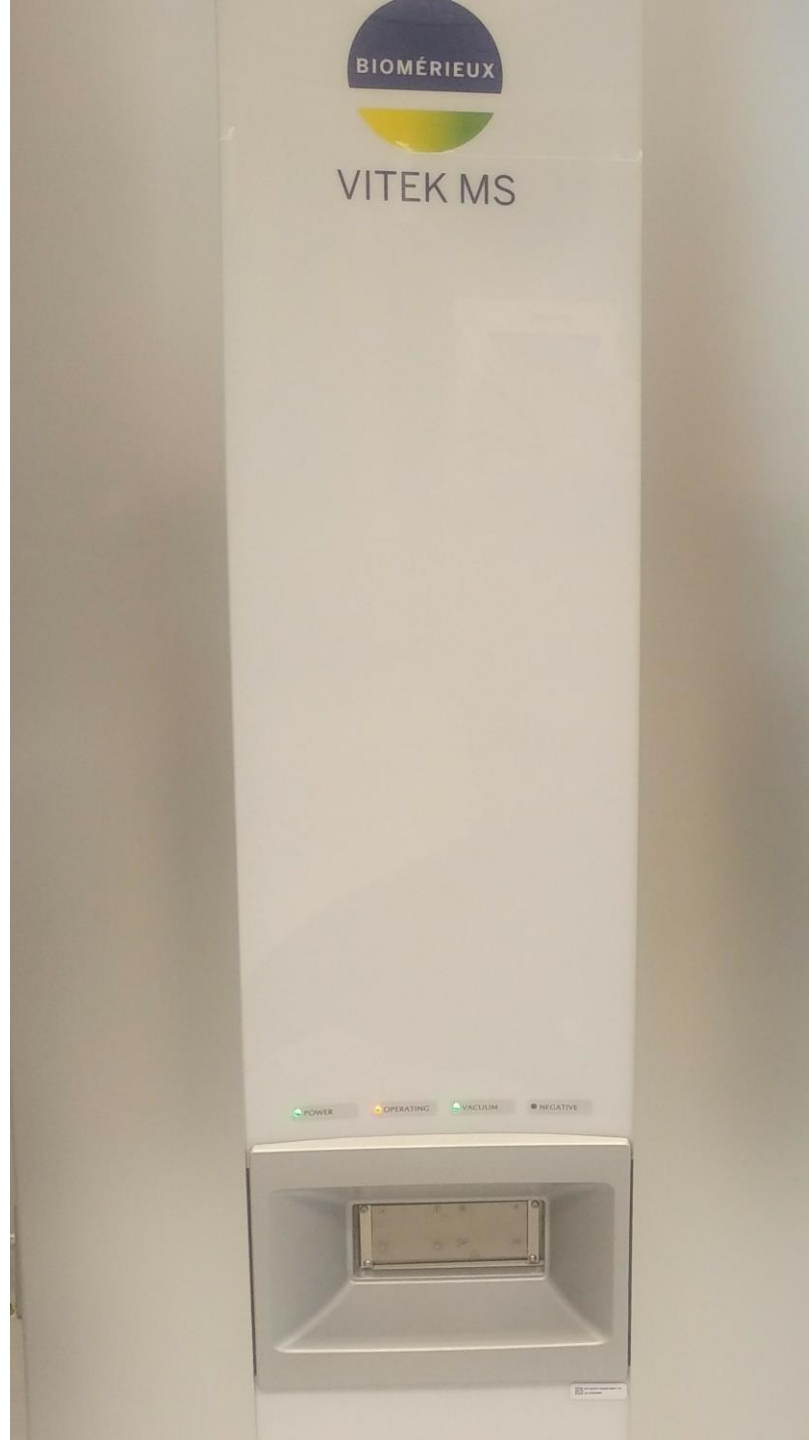


## Determination of the somatic cell counts

- Heated samples are placed on conveyor, instrument can test 100 samples/hour.
- A number of checks need to be done before testing (blanks, carry-over, repeatability, internal and external control samples)
- Results are reported as no. of somatic cells per ml.

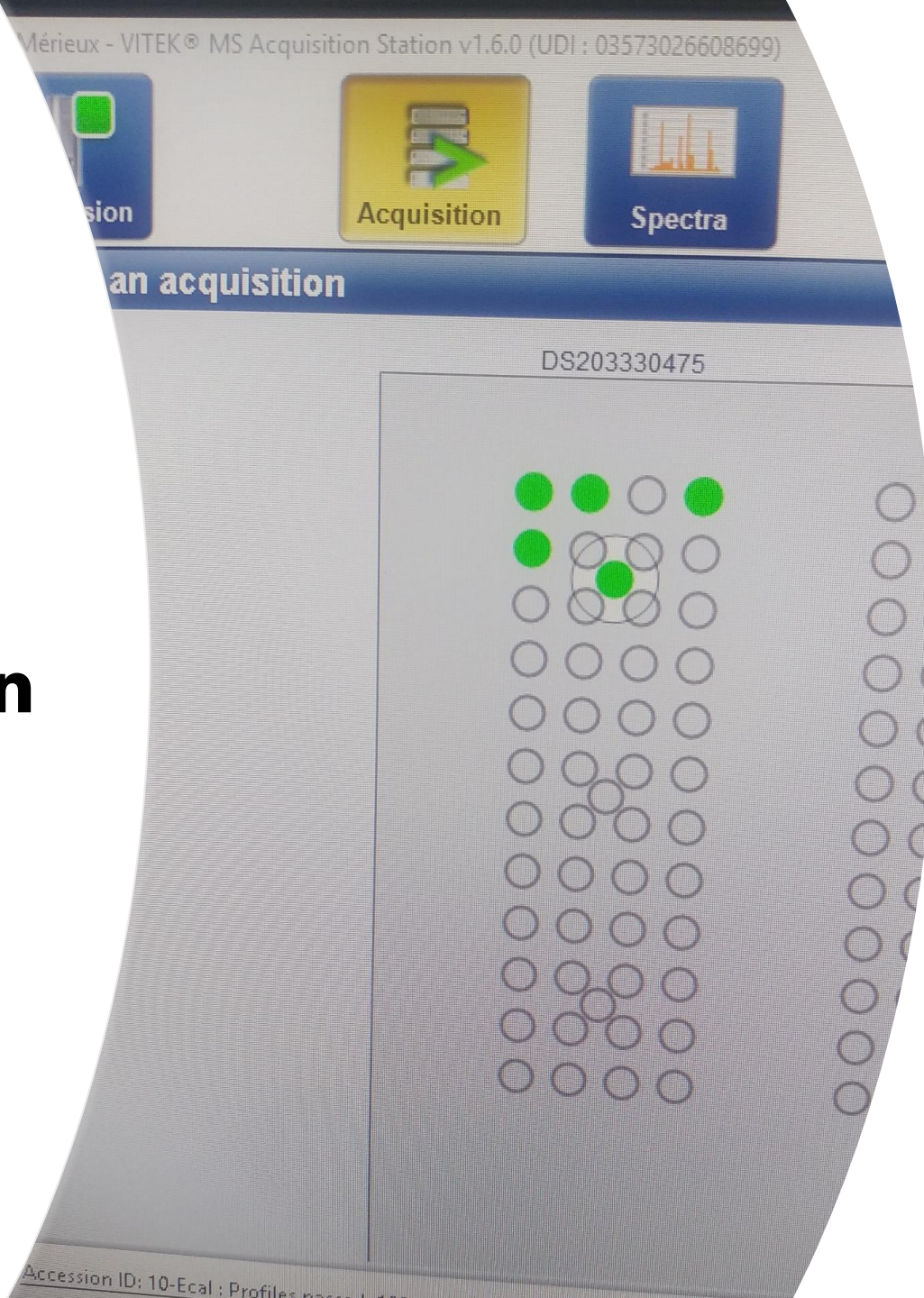


# Bacterial identification




- The laboratory is in the process to build up the capability to assist farmers in identifying the specific bacteria causing the high somatic cell count.
- This identification is done using a Vitek MS.

# Bacterial identification



- **M**ass spectrometry microbial **I**dentification **S**ystem.
- VITEK® MS is an automated mass spectrometry microbial identification system that uses Matrix Assisted Laser Desorption Ionization Time-of-Flight (MALDI-TOF) technology.



# Antibiotic susceptibility

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Once the causative organism has been identified, antibiotic susceptibility can be performed using a Biomerieux Vitek Compact.

# Turn Around Time (TAT)

- 24 hours from receiving samples - Chemistry tests.
- Extension depended on Microbiology tests.





## Type of samples analysed in the lab

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- Liquid Milk (Raw, Processed- Cow and Goat)
- Cream samples
- Yoghurt
- Butter
- Cheese
- Dairy Desserts



# Calibration samples...

DSA is the sole distributor of National and international calibration samples in the country.

## **National Cal. Samples: Every month**

- Fat, Protein, Lactose, TS, Freezing Point

## **International Cal. Samples (Qlip samples): Bi-monthly**

- Somatic cell counts
- Urea





**DSA Lab Services**



**Thank you for your attention.**

**For more information please contact  
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