



DRAMINSKI Mastitis Detector

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INTRODUCTION

Mastitis - inflammation of the udder - is one of the most important and costly problems in dairy farming.

Subclinical states of mastitis are particularly dangerous. In this state, milk looks normal and the udder or quarter affected appears healthy. Subclinical mastitis can rapidly become clinical mastitis or can continue at subclinical levels, affecting milk production, milk quality, and spreading infection to other cows in the herd.

Research carried out over many years has established that the development of subclinical mastitis is accompanied by a rise in the level of salt in the milk, which immediately lowers its electrical resistance. Since the discovery of this relationship, electronic methods of detecting subclinical mastitis have become widely accepted and practical.

The relationship of milk electrical resistance and health of the udder resulted in the development of the DRAMIŃSKI MASTITIS DETECTOR by Mr. J. Damiński in 1989 with the co-operation of Polish agricultural universities.

Since then, the instrument has been widely sold in Europe, the Americas, Australia and New Zealand. Its simplicity of use, robustness, speed, low power usage and overall functionality combined with a wide-scale digital readout for interpreting severity of infections, has resulted in the success of the DRAMIŃSKI Mastitis Detector over competitor devices.

The DRAMIŃSKI ELECTRONIC MASTITIS DETECTOR consists of a measurement cup with electrodes, electronic unit with LCD panel, handle containing a standard 9 volt battery and a switch. The instrument is made of polypropylene, resistant to atmospheric conditions, most chemicals, shock, breakage, and not easily wet by milk. It is sealed and waterproof, for easy washing and cleaning.

OPERATION

A minimum of 15 ml of milk (indicated by the line inside the cup) is required, and the sample must be first foremilk for the most accurate readings to be taken. Later milk samples will give slightly different readings as this milk comes from other parts of the quarter, which are often uninfected.

Before use, ensure the electrodes in the cup are clean.

Contamination of electrodes with skin-oil from handling or examination while on display in stores and/or dried milk fat can result in incorrect (high) readings. If required, wipe the electrodes with methylated spirits on a clean cloth or tissue, or similarly with kitchen detergent and rinse off.

The DRAMIŃSKI Mastitis Detector is a highly sensitive electronic instrument designed to measure very small changes in milk electrical resistance accurately. The instrument has been designed for use in the often hostile environment of the milking area and is sufficiently robust, shockproof, and waterproof to resist most normal working conditions.

However, as a sensitive electronic instrument, its accuracy is best maintained by keeping it clean and free from injury, physical abuse or extreme temperatures.

MEASUREMENTS

When switched on with no milk in the cup, first the LCD will display two dashes (a), indicating that the battery is connected and the instrument operating, but no measurement is being taken. Press the switch once again. The numbers "1 0" will be displayed (b).

a)
--

b)
1 0

Taking a reading:

1. Press the ON/OFF switch. After pressing the button two dashes are displayed (a).
2. Place the cup under the teat A. Squirt the milk directly into the cup to fill it up (minimum 1 cm from the cup edge).
3. After about 1 second press the switch to turn the detector on – the result will be displayed (c)

c)
370

4. Pour the milk out and shake off the milk remaining into the empty bucket.
5. Repeat these actions for the tits B, C and D to take measurements for all 4 quarters.
6. After examining the udder it is necessary to clean the measurement cup in the following way: immerse the cup in the water moving and turning the handle so that all milk remaining have been removed.

Note! Rinsing should be completed also after detecting subclinical mastitis in one of the quarters. Thanks to that the remaining of the milk will not influence next readings.

INTERPRETATION OF RESULTS

The DRAMIŃSKI Mastitis Detector has a wide scale of readings on the LCD providing the opportunity to interpret the results. There is no fixed point or number where mastitis is definitely present, or not present. Rather, there are increasing or decreasing degrees of infection as resistance changes.

1. Readings above 300 units:

The milk sample is of high quality and is healthy. The incidence of subclinical mastitis is very low.

2. Readings between 300 and 250 units:

A progressively increasing incidence of subclinical infection as readings decrease.

3. Readings below 250 units:

This is an indication of a rapid increase in the severity of infection as subclinical mastitis progresses to clinical states. This is typified by somatic cells present rising from less than 1 million up to many millions.

Comments

1. **The point or reading below which treatment is required can not be precisely defined** and is also determined by farmer (or veterinary) choice. Quarters showing readings of 280 units or less should be regularly monitored as any rapid reduction in reading is an indication of increasing infection or of mechanical injury occurring.
2. **Each animal ought to be treated individually** therefore slight variations from typical results presented in this instruction manual do not necessarily indicate illness. To accurately evaluate udder health and detect subclinical mastitis simply observe the readings and variations of results typical for the given cow. For dairy cows giving average readings ranging between 330-340, only a decrease below 300 units is an indication of a mastitis threat. For animals with typical results in the range 370 - 380, a reading of 330 units is a similar warning.

3. It is vital to **note the differences between individual quarters** of the same dairy cow.

Example 1:

FR FL HR HL
340 330 260 330

Example 2:

FR FL HR HL
390 380 330 390

HR quarter - a threat of subclinical mastitis

In both instances regular monitoring is recommended.

4. **Among young milk cows (1-2 lactations)** the most common readings approach the vicinity of 400 units (ex. 2).
5. **Older cows (e.g. 9 years or older)** physiologically have increased levels of *salt and somatic cell count* in their milk and can typically result in readings of around 290 units even though they are healthy. It is important with such older cows to measure milk from all four quarters - if three quarters should measure 290 units and one 250 units, then there is a risk of infection in the lower reading quarter.
6. **Milk-fat content has an effect** on the magnitude of **readings**. Fatty milk gives above average readings.
7. **Illnesses other than mastitis, pharmaceutical procedures as well as heat may influence readings**. The recommended interpretations given in the instruction manual are not applicable in such cases.
8. **Dirty, fat-coated electrodes negatively influence readings**. The first step to take when higher than normal results occur, is to thoroughly clean the electrodes of any fat.
9. **Cows with visible clinical mastitis** will generally return to a reading above 300 units because of the essential changes occurring in severely infected milk.

10. Although **frequent measurements increase reliability of the test**, it is sufficient for large herds to be examined at established intervals. The data obtained from these measurements provide the basis for selecting the infection-threatened cows, which should be thoroughly investigated.

11. **In herds where a large number of cows have milk samples below 300** units a mechanical check of the milking machine by a machinery specialist is desirable, as wide-spread lower readings throughout the herd can indicate over-milking of cows or acidosis is occurring.

12. Although there is the **correlation between somatic cell count** and the Mastitis Detector's readings, the Detector cannot be used for somatic cells counting. The somatic cell count of milk is an insufficient diagnostic tool for determining mastitis. Udder health disorders may be present even with a low somatic cell count. There are microbes such as nonhaemolytic Staphylococci, which cause only minimal increases in the somatic cell count and as they multiply they cause inflammation of the udder.

CARE & CLEANING

WHEN USED REPETITIVELY, RINSING BETWEEN QUARTERS OR BETWEEN COWS IS NOT USUALLY NECESSARY.

Milk does not wet or stick to the polypropylene cup and any minute droplets remaining after a shake are too insignificant to materially affect the next reading.

Rinsing with water to prevent milk fat drying on the terminals, is only necessary when the detector is not in constant use. It is also recommended whenever subclinical mastitis has been detected in a milk sample to avoid affecting the next reading.

DO NOT USE BOILING OR VERY HOT WATER for washing or immersing the instrument;

DO NOT DRY THE DETECTOR IN AN OVEN OR MICROWAVE, OR STORE IN AN ENVIRONMENT ABOVE 50 DEGREES C AS DAMAGE TO ELECTRONIC COMPONENTS CAN RESULT.

When not in use clean the Detector with methylated spirits or detergent, rinse and dry, and store in its box in a dry place at normal room temperature.

In regions with high iron, calcium or phosphate levels in water, the terminals in the measurement cup should be periodically cleaned with a mildly abrasive kitchen detergent to remove any chemical residue or oxidation.

BATTERY REPLACEMENT

Under normal use, power consumption is very low and a 9 volt alkaline battery will provide many thousands of tests.

Lower battery power is indicated by the words "LO BAT" flashing on the LCD. A new battery is required when this indicator appears.

To change the battery:

1. Unscrew both screws which fix the small cover on the end of the handle.
2. Remove the battery from inside the handle and unclip the battery harness.
3. Clip the harness onto a new 9 volt or 9 volt alkaline battery, insert the battery into the handle.
4. Replace the cover, ensure the rubber gasket is in place and tighten the screws.

TECHNICAL DATA

Total weight:	approx. 300 gm
Power:	9 volt battery, standard or alkaline
Power consumption:	approx. 12 mA
Display:	LCD 3.5 digits
Smallest unit:	10 units
Low - battery indicator:	LO BAT