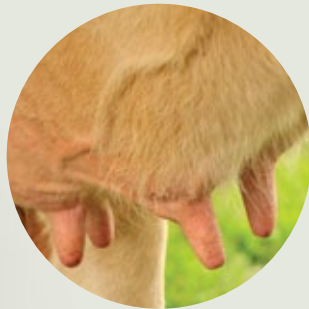


# LactiCyte™ HD Somatic Cell Counter

Automated Microscope based on Image Cytometry



## PRECISE SOMATIC CELL COUNT

- ✓ Rapid method (Test time < 1 minute)
- ✓ Accommodates raw & preserved milk
- ✓ Cow, Goat, Sheep & Buffalo
- ✓ Wide range (0.1 to 10,000,000 SCC/mL.)
- ✓ Wide screen, printout and USB Interface
- ✓ Customer defined thresholds
  - Warning Level
  - Critical Level

The robust PC driven LactiCyte-HD provides rapid, accurate and affordable somatic cell counts for cow, goat, sheep and buffalo milk.

Based upon a fluorescent microscope technique and magnification approach to cell counting, the results are recorded by a camera digitalization of the actual cells. Direct correlation with Direct Microscopic Somatic Cell Count (DMSCC) is established with the built in Automated Microscope.



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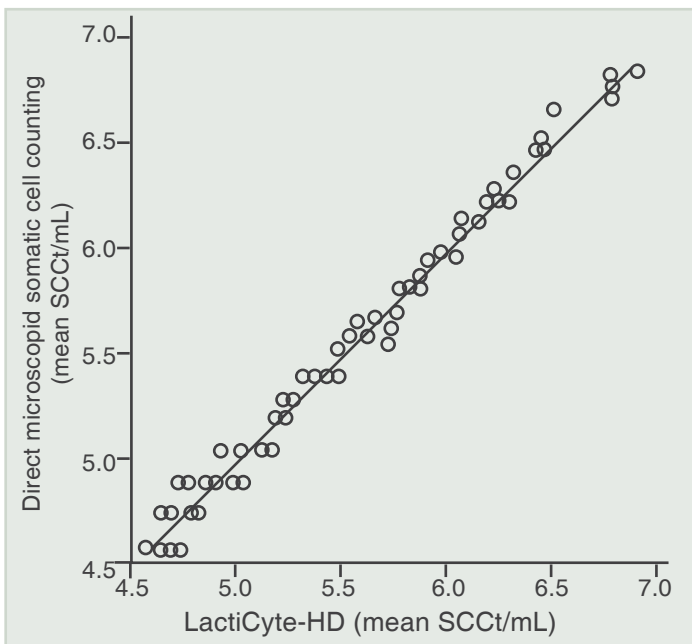
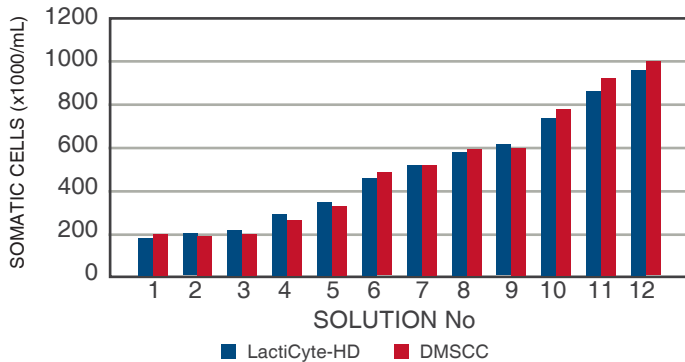
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# LactiCyte™ HD

## Somatic Cell Counter

### Automated Microscope based on Image Cytometry

The **LactiCyte-HD** provides direct correlation with the Somatic Cell Count Reference method – Direct Microscope Somatic Cell Count (**DMSCC**) ISO-13366-1/IDF148-1 or FDA 2400d /ADAC.2000 Method #17.13.01 978.26 for results you can have confidence in!



### LactiCyte-HD - Fast & Easier

	DMSCC	LactiCyte-HD
Chemicals locally Required	Yes	No
Chemical Preparation	Local	Pre-made
Shelf life	Short	Long
Pipetting fixed volume	Yes	Yes
Drying of sample	Yes	No
Sample Preparation time	~45 Min.	3 Min.
Test Time	3-5 Min	1 Min
Documentable Results	No	Yes
<b>Accuracy</b>	<b>&lt;+/-10%</b>	<b>&lt;+/-5%</b>
Evaluating cell Sizes	Yes	Yes
User's Lab experience Level	High	Low
Closed System	No	Yes
Definable Range Alerts	No	Yes
Ruggedized system	No	Yes
Field usable	No	Yes

### Accuracy of other methods:

- Flow Cytometry (Foss-Bentley-Perten) +/- 3 to 5%
- Image Cytometry (Test Volume >3uL) +/- 2 to 5%
- Image Cytometry (Test Volume 1 to 3uL) +/- 5 to 10%
- Image Cytometry (Test Volume < 1uL) > +/- 10 to 15%
- California Mastitis Method >15%

Test Volume is the actual volume tested by the instrument, not the sample size used for the test.

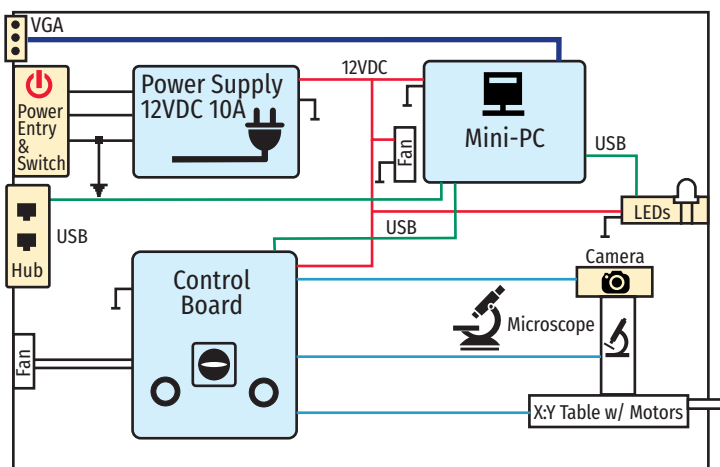
### Technology:

The technology used in the LactiCyte-HD Automated Microscope is what is known as Image Cytometry, based on pictures of the cells taken and processed by the built in Mini-PC.

### Summary of Procedure:

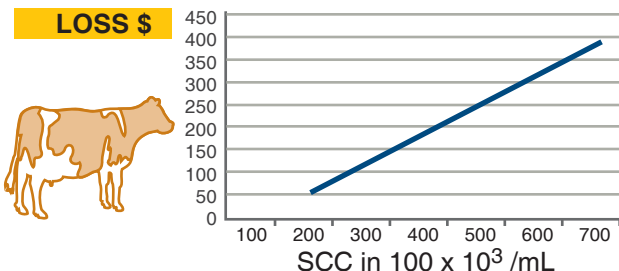
- Sample preparation consisting of 100uL of sample pipetted into the supplied ampoule which contains lyophilized dye, mix it and incubated at room temperature for 3 minutes.
- Pipette 7uL of this mix (milk/dye) into a chamber in the cartridge chamber of the LactiCyte and start the test.
- The LactiCyte-HD will now take 16 pictures of the sample, identify the cells to be counted, and count the cells from all the 16 pictures and provide a final result in SCC/mL. The result and the pictures are saved in the instrument as well as the result is saved in the CyteTrak software for further analysis or recording.

### LactiCyte-HD Block Diagram



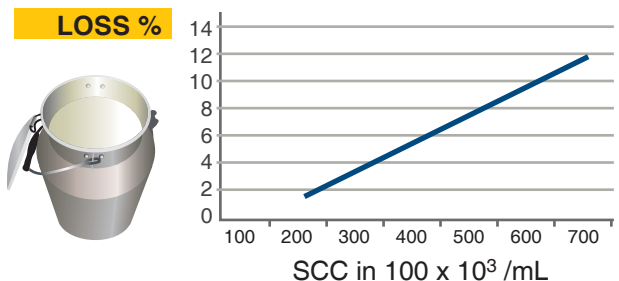
The Key Benefits offered by the **LactiCyte-HD** are to improve yield and avoid milk quality issues.

### On Farm



This graph is based on a cow giving 90Lbs of milk per day with a Somatic Cell count of 100K SCC/mL, over a period of 200 DIM (Days in Milking), and with a milk price of \$18 per hundredweight. The loss is calculated on an annual basis.

(*Journal of Dairy Science Vol 101, Issue 4 Page 3588-3596*)



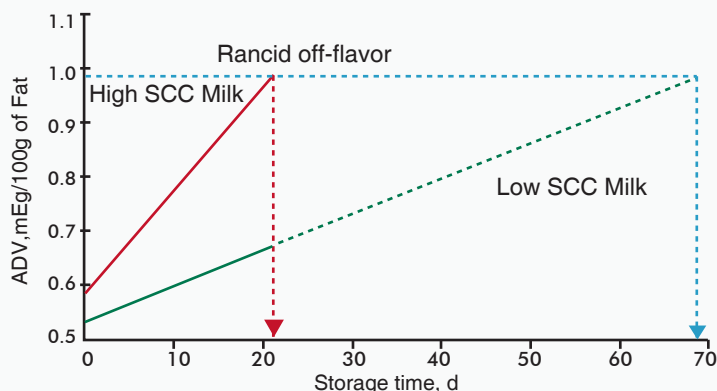
SCC Midpoint (range)	Linear Score	Milk Loss for Lact 1	Milk Loss for Lact 2+
25,000 (18,000-34,000)	1	0	0
50,000 (35,000-68,000)	2	0	0
100,000 (69,000-136,000)	3	200 lb	400 lb
200,000 (137,000-273,000)	4	400 lb	800 lb
400,000 (274,000-546,000)	5	600 lb	1200 lb
800,000 (547,000-1,092,000)	6	800 lb	1600 lb
1,600,000 (1,093,000-2,185,000)	7	1,000 lb	2,000 lb

Adapted from Raubertus and Shook, 1981

To view more benefits in on farm SCC testing - and there are many – see Page & Pedersen’s SCC Farm Benefit sheet.

### Milk Bottlers

#### Impact of SCC on rancid flavors in milk



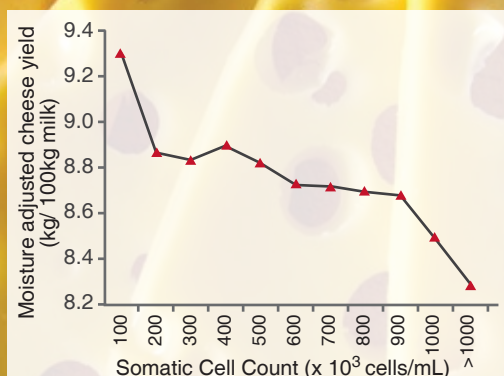
- Facilitates proactive decisions with real time results
- Store and access data improving management and process control
- Prevent off flavors due to high SCC
- Build brand name with consistent quality
- Optimize dairy production

Acid degree values (ADV) in pasteurized, homogenized, 2% fat milks stored at 5 degrees C for 1, 7, 14 and 21 days for pasteurized milks with low and high SCC. Barbano, D.M., et al, Northeast Dairy Foods Res Ctr, Dept. of Food Sci, Cornell Univ., Ithaca, NY 1485. 2006. Influence of Raw Milk Quality on Fluid Milk Shelf Life. *J. Dairy Sci.* 89(E.Suppl.):E15-19

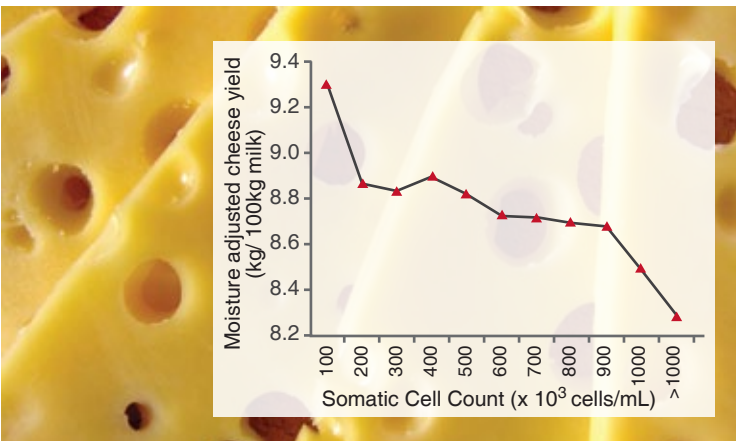


### Cheese Makers

Studies have shown that there is a direct link between SCC and cheese Yield.



- Increasing SCC from 100 x 10<sup>3</sup> to 200 x 10<sup>3</sup> cells/mL = reduction in yield (i.e. ~0.4 kg/10 kg Cheese)
  - Increasing SCC from >300 x 10<sup>3</sup> to >500 x 10<sup>3</sup> cells/mL in late lactation (220 DIM) results in:
    - 9.3 % decrease in moisture-adjusted (to 35.5%) yield of Cheddar cheese
    - Decreases in the recovery of fat (90.1 to 86.6%) and protein (78.3 to 74.4 %)
  - Increasing SCC 83 x 10<sup>3</sup> to 872 x 10<sup>3</sup> cells/mL = 4.3% reduction in the percentage yield efficiency Cottage cheese
- (*B. O'Brien and T. Guinee Animal and Grassland Research and innovation Centre, Moorepark and Teagasc Food Research Centre, Moorepark Ireland*)



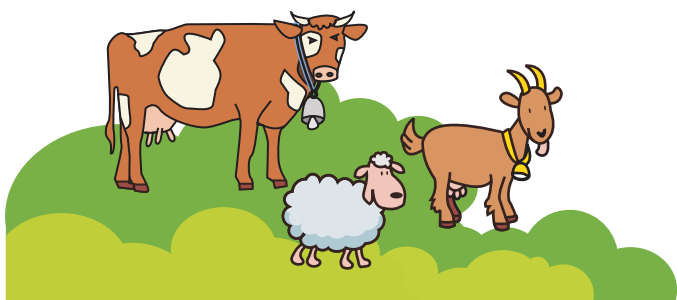
# LactiCyte™ HD Somatic Cell Counter

## LactiCyte™ HD SCC Specifications:

Correlation to DMSCC\*

Measuring Range	0.1 to 10,000,000 SCC/mL
Data Transfer	Via USB Thumb-drive
100,000 SCC/mL	5%
400,000 SCC/mL	3%
600,000 SCC/mL	2%
Time per Test	<60 Sec (using x4 Chip)
Test per Chip	4 (x4 Chip)
Binding Sites per Test	16 (x4 Chip)
Carry-Over Effect	0%
Sample Size	100 uL
Sample Temperature	+10 to +35° C
Test Volume	~4uL
Power Consumption	<50W
Power Requirement	100 to 240VAC 50/60Hz
Environmental:	
Ambient Air Temperature	+15 to +35° C
Humidity	30 - 80% Relative
Technical Data:	
Dimensions (W x H x D)	15.2 X 10.2 X 12 inches (38 X 26 X 30 cm)
Net Weight	22 lbs (10 kgs)
Gross Weight	41 lbs (18.6 kgs)

\*DMSCC = Direct Microscopic Somatic Cell Count



## APPLICATIONS:

- ✓ **Dairy Farm:** Regularly monitoring the SCC of individual animals provides information critical to milk yield, fertility and cost of care. Keeping real time records of bulk tank milk helps to monitor herd health and confirm the quality of the milk you are supplying.
- ✓ **Milk Reception/Milk Collection Stations:** Test results can be printed out via the built-in printer for suppliers. Easy to use, simple system (prepare sample, insert cartridge & push START - results are ready in 1 minute per test!)
- ✓ **Laboratory:** An exceptionally practical instrument for small or mid-sized labs! The budget priced rapid test (16 pictures per test) uses four chamber cartridges. It is the best test on the market for small ruminants.
- ✓ **Field Extension Service and Farm Level:** See positive outcomes in herd health, milk production and quality while realizing cost savings. Treatment can be closely monitored for timely and positive outcomes.
- ✓ **Dairy Science Studies and R&D:** The digitized, visual image of somatic cells counted can be enhanced to assist in specific studies. The precision and accuracy of the LactiCyte-HD provides an excellent and affordable tool for introducing students to total somatic cell counting techniques.

## The LactiCyte-HD Start-Up Kit includes:

- 1 x LactiCyte-HD Somatic Cell Counter
- 1 x Mini Vortex Mixer
- 1 x AC power cords
- 1 x Comprehensive User's Guide
- 1 x Starter Kit with LactiChips/supplies for 100 tests
- 2 x Automatic Pippettes preset for 7uL and 100uL
- Sample vials and racks
- 1 x PC Monitor
- 1 x keyboard and mouse



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