

WP3: Can the cows contribute to high bacteria counts in bulk tank milk?

Workshop Str. agalactia

11. November 2024

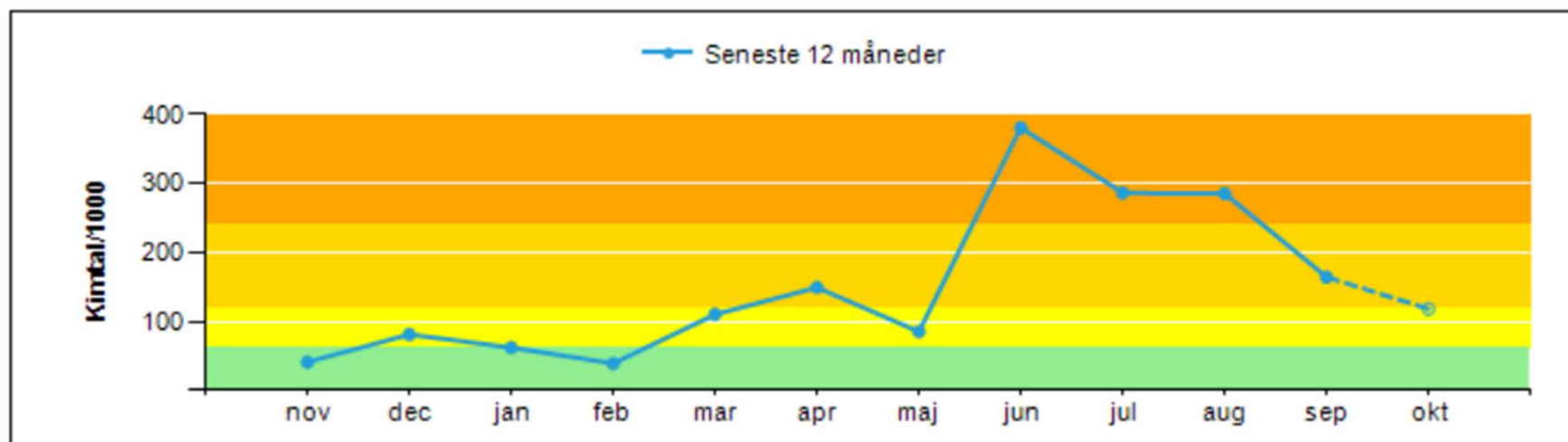
STØTTET AF

Mælkeafgiftsfonden

SEGES
INNOVATION

Why a high bacterial count is a problem

Geometrisk kimaltal (IBC) pr. måned i leveret mælk, seneste 12 måneder



Betydning for mælkepris:

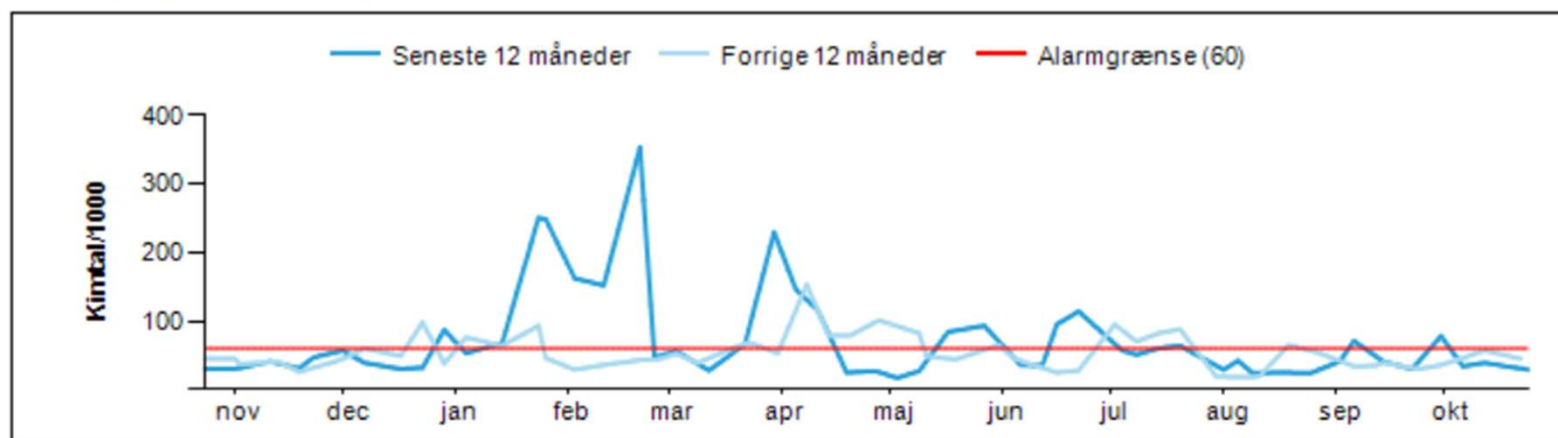
Red	Geometrisk kimaltal med højeste fradrag (over 480)
Orange	Geometrisk kimaltal med fradrag (240 - 480)
Yellow	Geometrisk kimaltal uden tillæg/fradrag (120 - 240)
Light Yellow	Geometrisk kimaltal med nedsat tillæg (60 - 120)
Green	Geometrisk kimaltal med højeste tillæg (0 - 60)

Kimaltal, 1 måneds gennemsnit (1000 IBC/ml)	Tillæg eller fradrag (%af råvareværdien)
0 - 60	+2 %
61 - 120	+1 %
121 - 240	0 %
241 - 480	-5 %
481 -	-10 %

Causes

- Failure of cleaning the milking equipment and tank
- Cooling failure
- Lack of hygiene
- Cows?

Kimtal (IBC) i leveret mælk, seneste 24 måneder



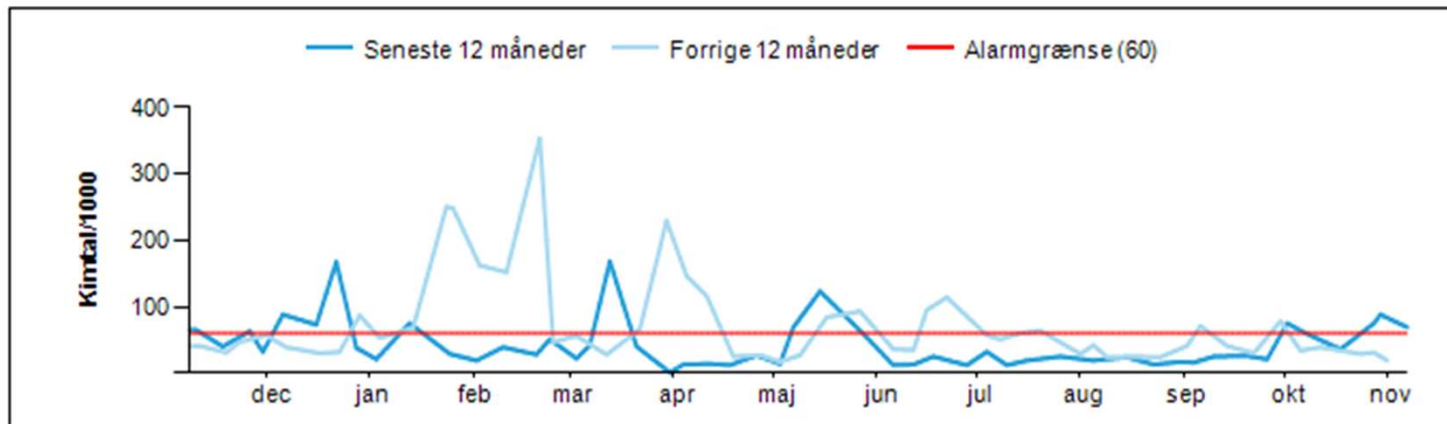
Literature

- Bulk tank milk from 13 farms were cultured during a 2-week period. "Spikes" in bacteria count was often caused by streptococci. (Hayes et al. 2001)
- Streptococci and especially Str. Uberis can be a contributing factor for high bacteria count in bulk tank milk. Strain typing shows that Str. Uberis primarily originates from the cows and not the bedding. (Zadoks et al. 2004)
- Variation between farms in the number of streptococci in bulk tank milk and variation from day to day within the farm. (Skeie et al. 2019)

Pilot study –farm 1

- 340 Holstein cows
- Milked 2x times (late lactation) or 3xtimes (start lactation) daily
- Bulk tank positive for str.agalactia (ct = 30)
- SCC in bulk tank milk is 314.000

Kimtal (IBC) i leveret mælk, seneste 24 måneder



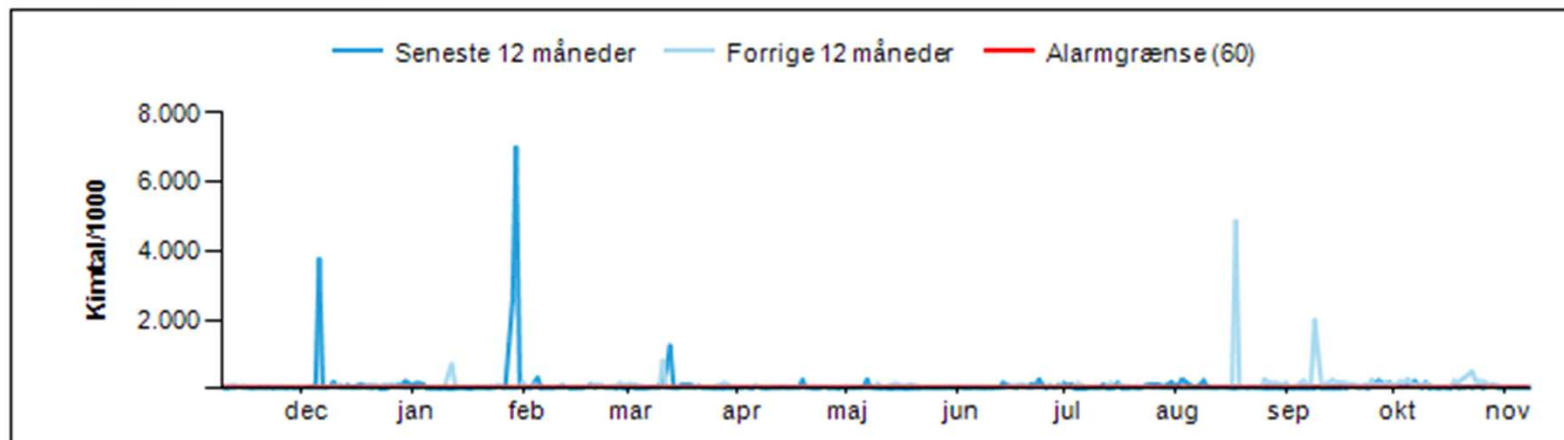
Methods

- Bacteria count on milk from all milking cows at DHI (291 cows)
 - Analyzed at Eurofins
- Repeated 13 days later
- Hygiene score both days
- Milk samples for culture from 25 cows with high bacteria count at the last test

Extra data – farm 2

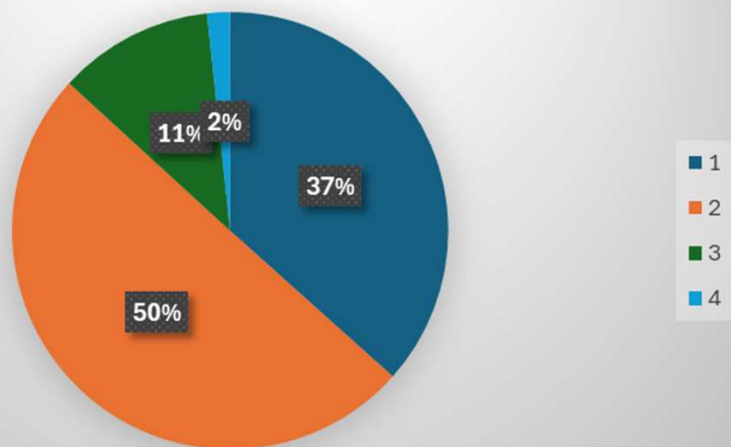
- 900 Holstein cows
- Lely robots
- All milking cows (751) tested at DHI once
- SCC in bulk tank milk 214.000

Kimtal (IBC) i leveret mælk, seneste 24 måneder

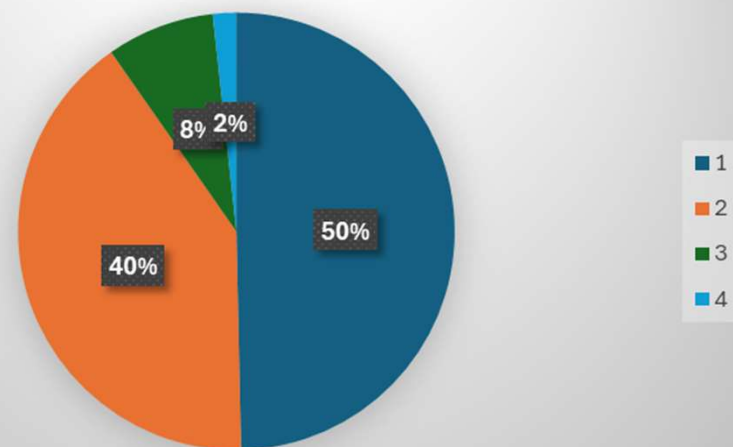


Results farm 1

Hygiejnescore 1

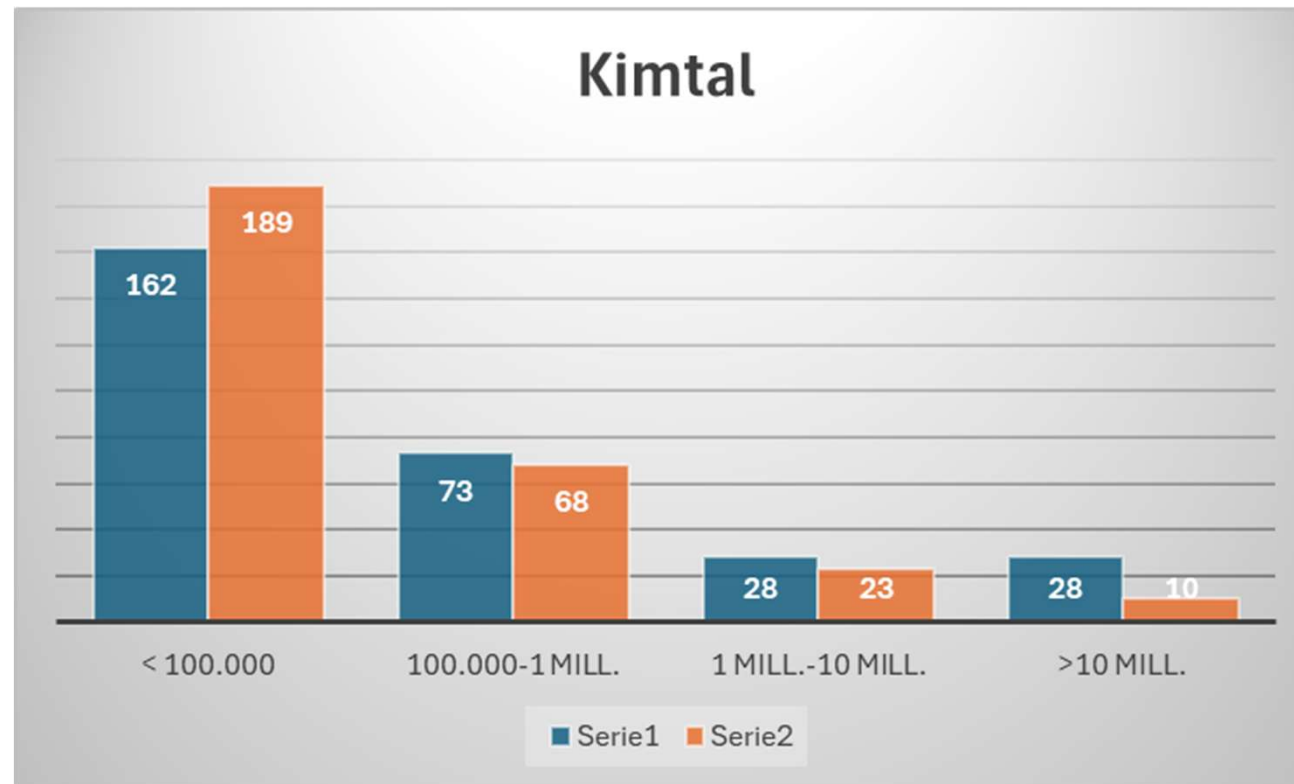


Hygiejnescore 2

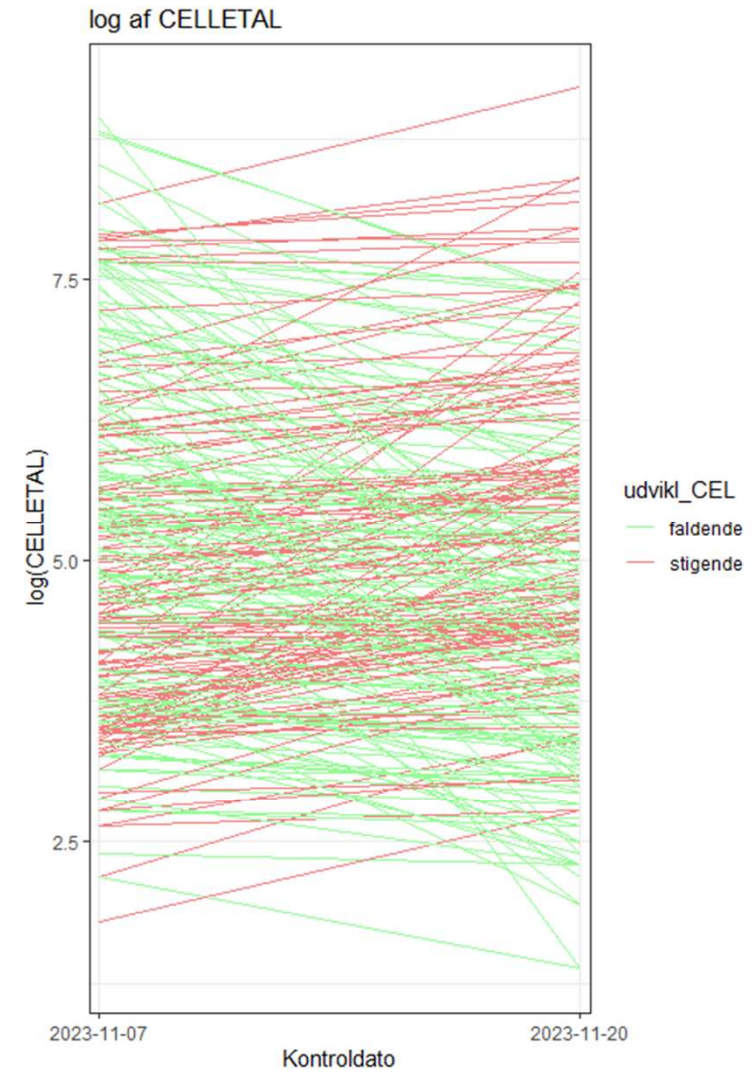
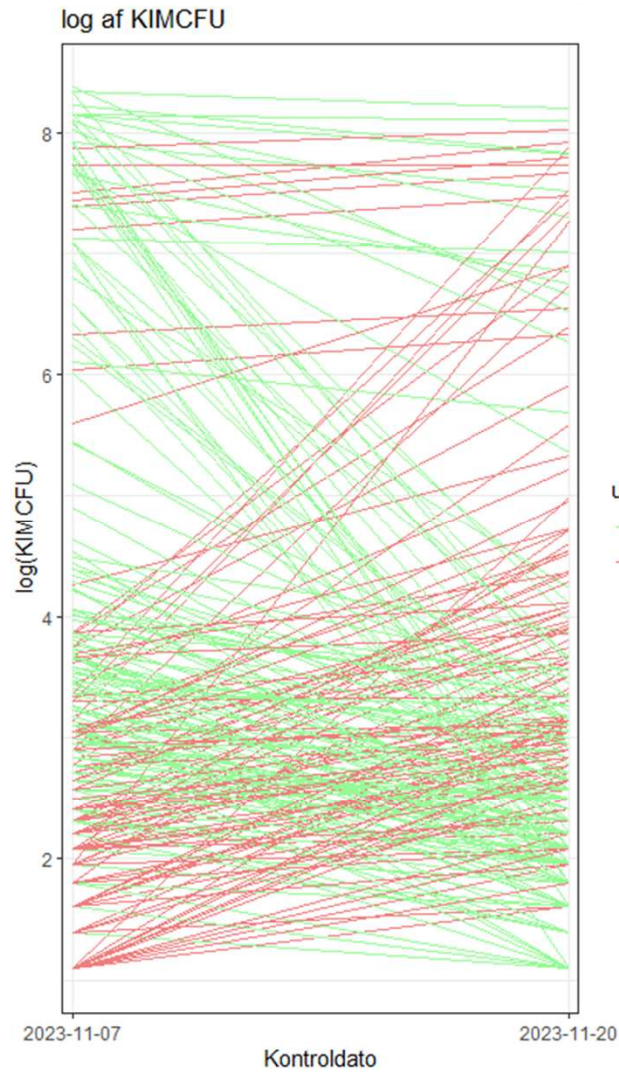
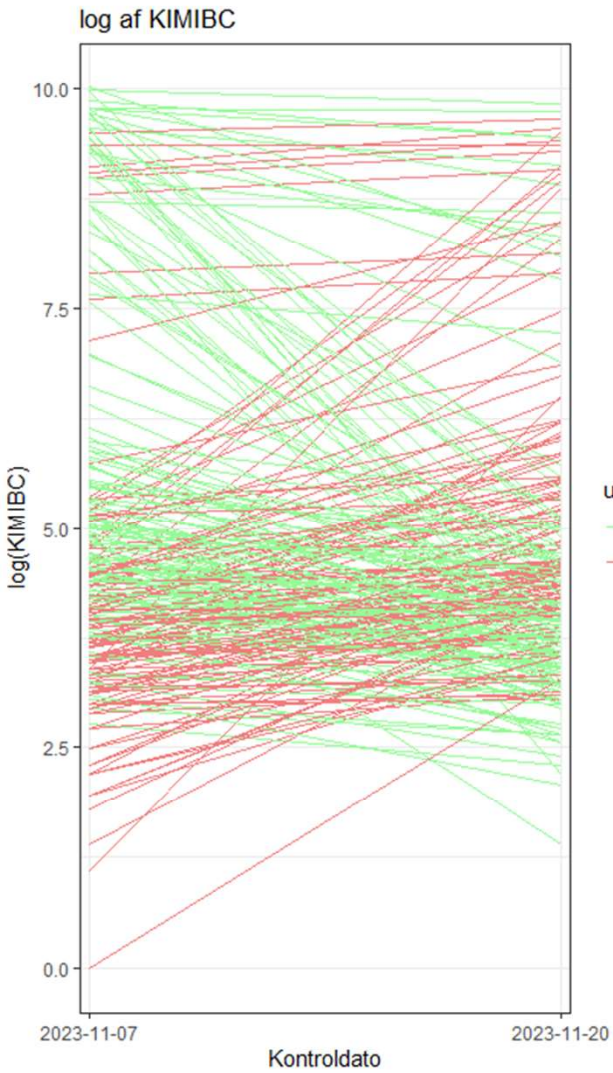


Results – farm 1

- Huge variation - Bacteria count range from 3.000 to 22.322.000



Udvikling mellem de to kontroldatoer (besætning 54168)



Log af kimtal vs. log af celletal grupperet efter besætning og periode, samlede korrelation: 0.827048035304069



For celletal $\geq 400\ 000$ er korrelationen 0.750.

For celletal $< 400\ 000$ er korrelationen -0.0572.

Besætning og periode

- 032_1
- 168_1
- 168_2

Number of cows with high and low scc and bacteria count

High SCC ≥ 400.000
 High bacteria count (IBC) $\geq 500\ 000$

Farm 1 Bacteria count IBC	SCC		Total
	Low	High	
Low	429	42	471
High	5	91	96

Farm 2 Bacteria count IBC	SCC		Total
	Low	High	
Low	592	65	657
High	43	51	94

Farm 1: 95 % of cows with high bacteria count have high SCC.

Farm 2: 54 % of cows with high bacteria count have a high SCC

What bacteria did we find in cows with high bacteria count

- 25 cows sampled – each quarter
- 3 cows no growth at all

Bacteria	
Str. uberis	11
Non-aureus staphylococci	8
Corynebacterium spp.	5
Enterococcus cecorum	3
Str. agalactia	2
Other streptococci	3
Other bacteria	4

Conclusion

- Cows can contribute to a high number of bacteria in milk
- Fluctuation in which cows have high bacteria count
- Herd variation
- The problem can not be solved solely with culling cows