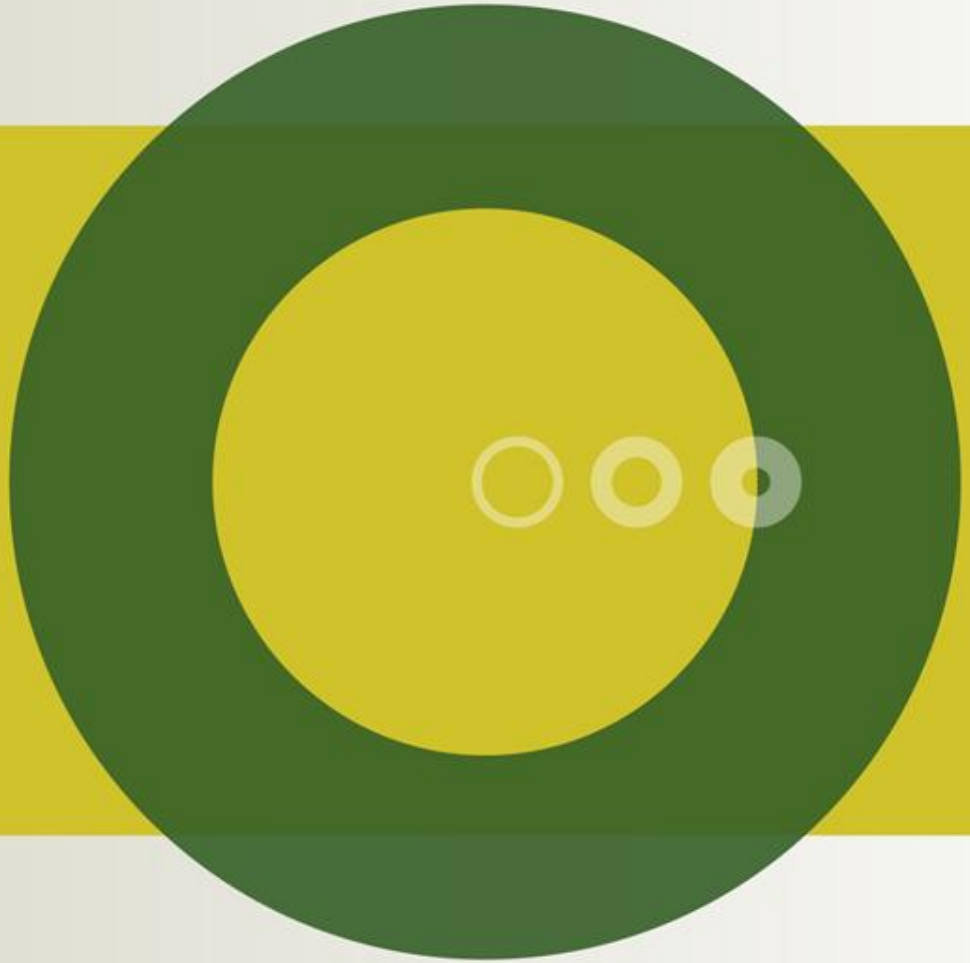
VIDENCENTRET FOR LANDBRUG

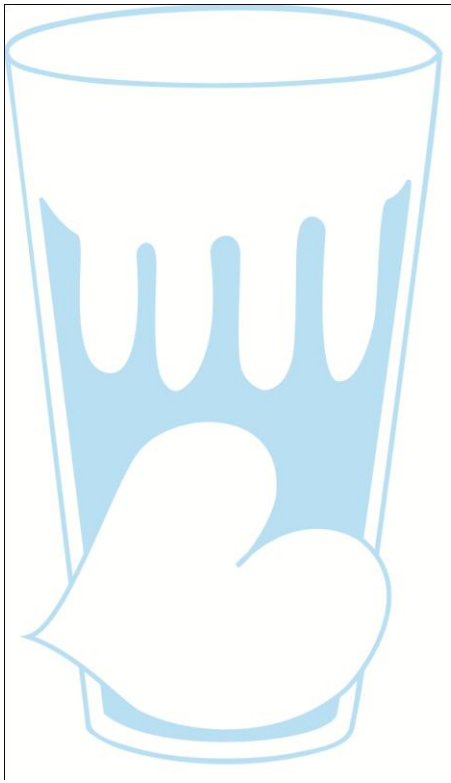
Vores Mælk
- en ren fornøjelse

Visit from Scotland 10 – 11 February 2011

Strep agalactiae



PARTNER I
DLBR
DANSK
LANDBRUGSRÅDGIVNING



This project has been subsidised by
the European Agricultural Fund for Rural Development
and the Danish Ministry of Food, Agriculture
and Fisheries.

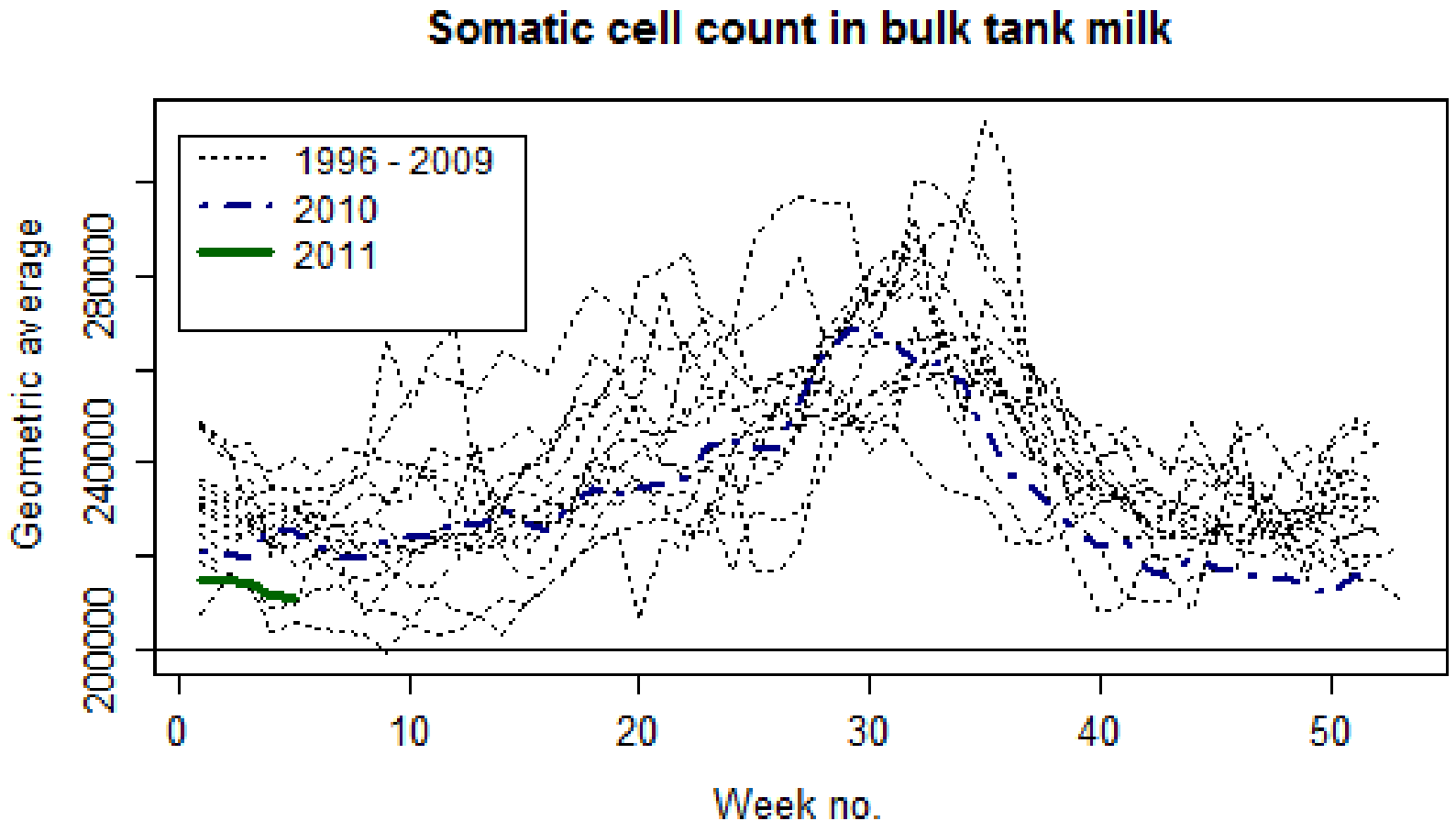
Vores Mælk

- en ren fornøjelse

Goals

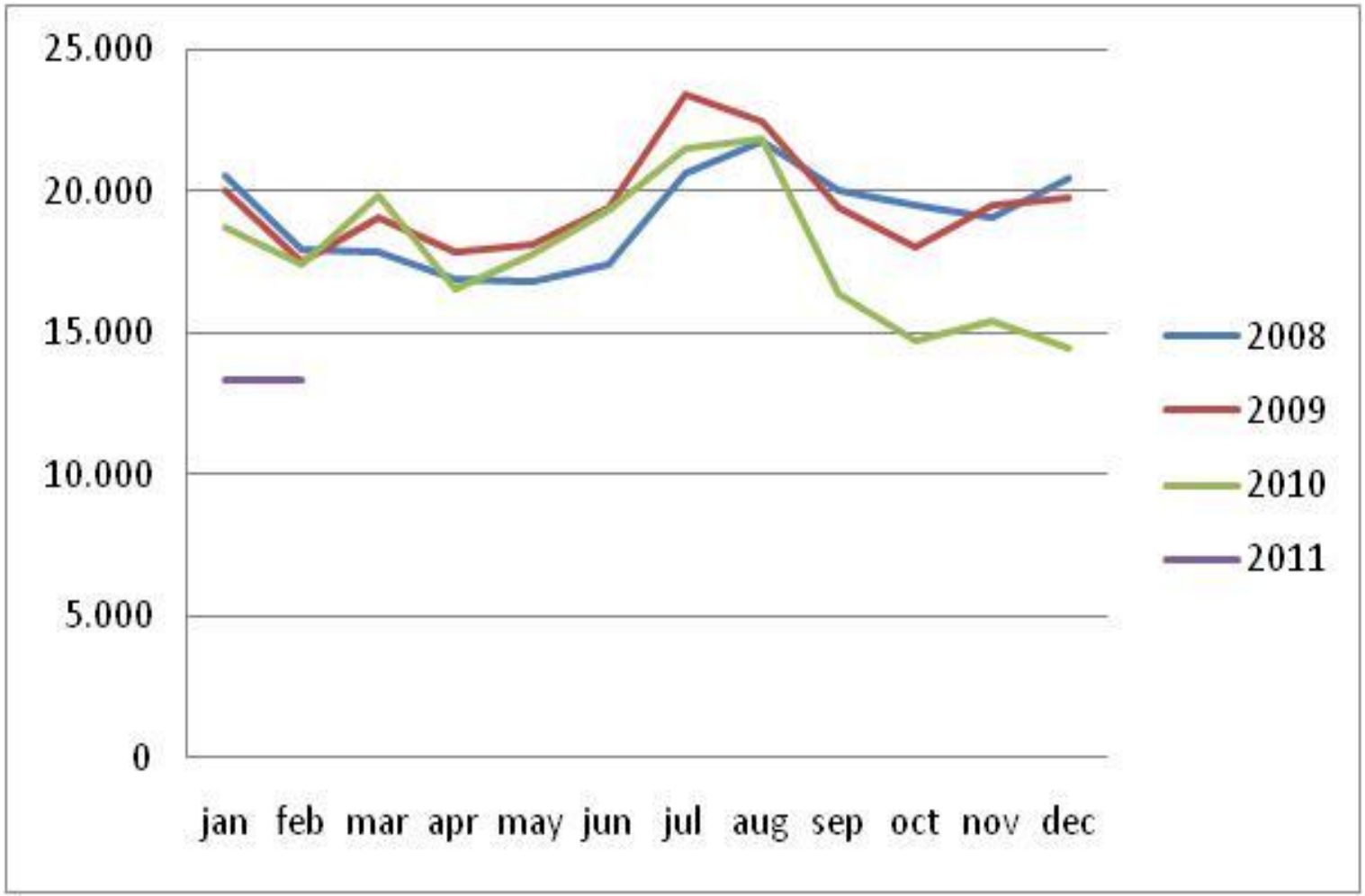
Bulk tank Somatic cell count	150.000
Total bacterial count	< 5.000
Anribiotics in BTM	None
Mastitis cases	200.000 (-50%)
Dry cow therapy	some increase

Geometric Bulk tank milk 1996 – 2011 (4 mdr under 220.000)

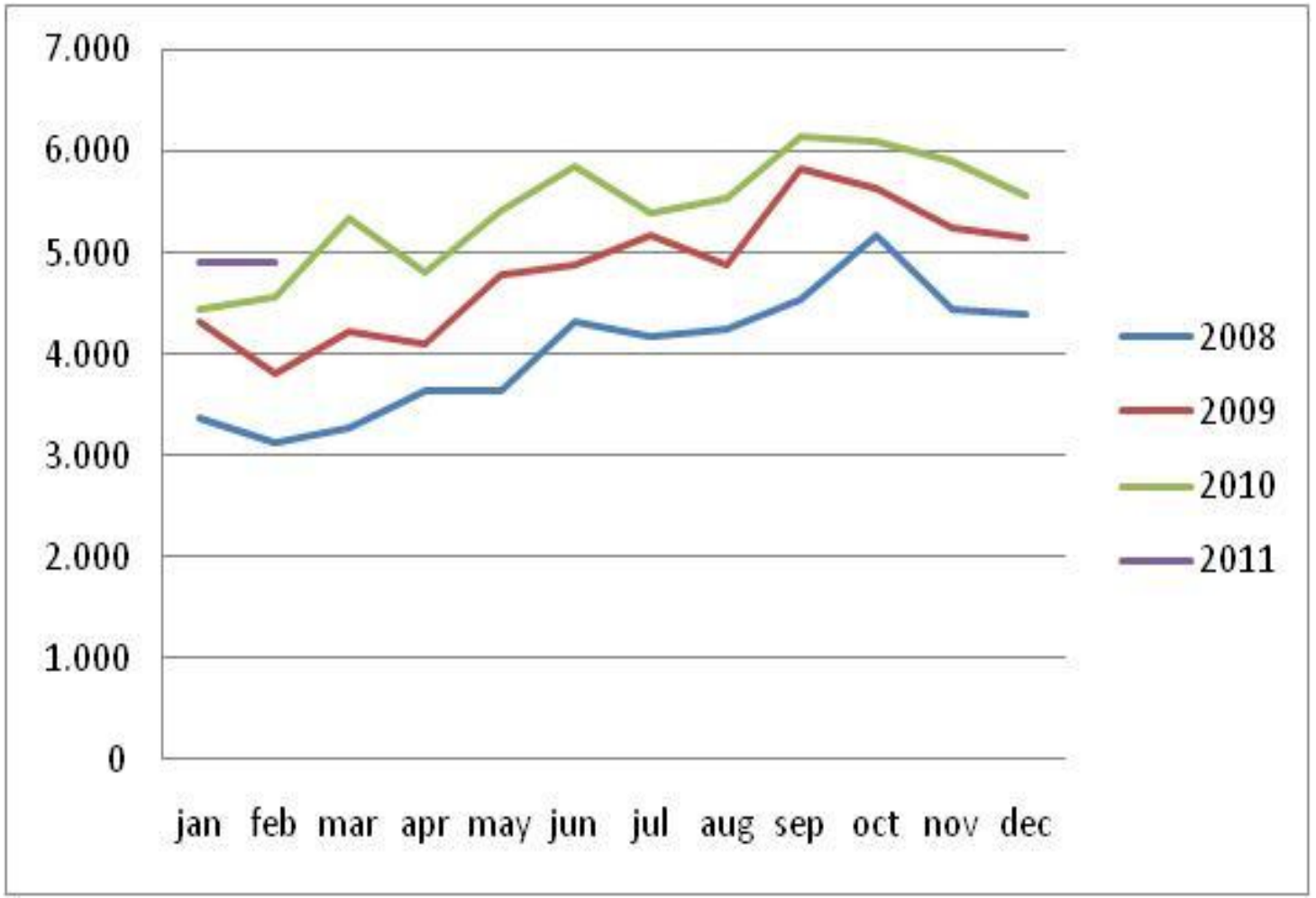


Treatments for mastitis 2008-2011

200 herds has stopped sending data

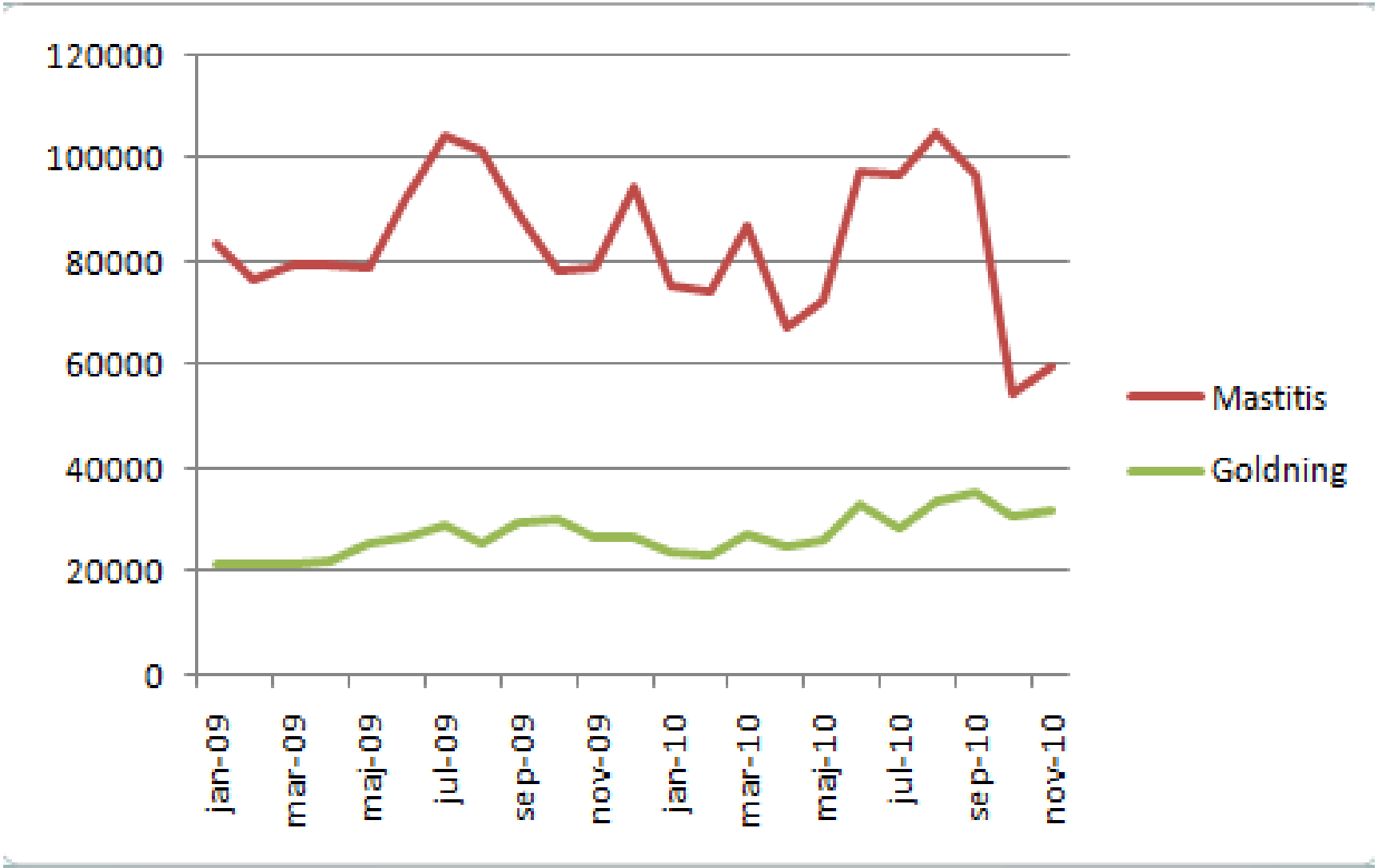


Dry cow therapy 2008-2011

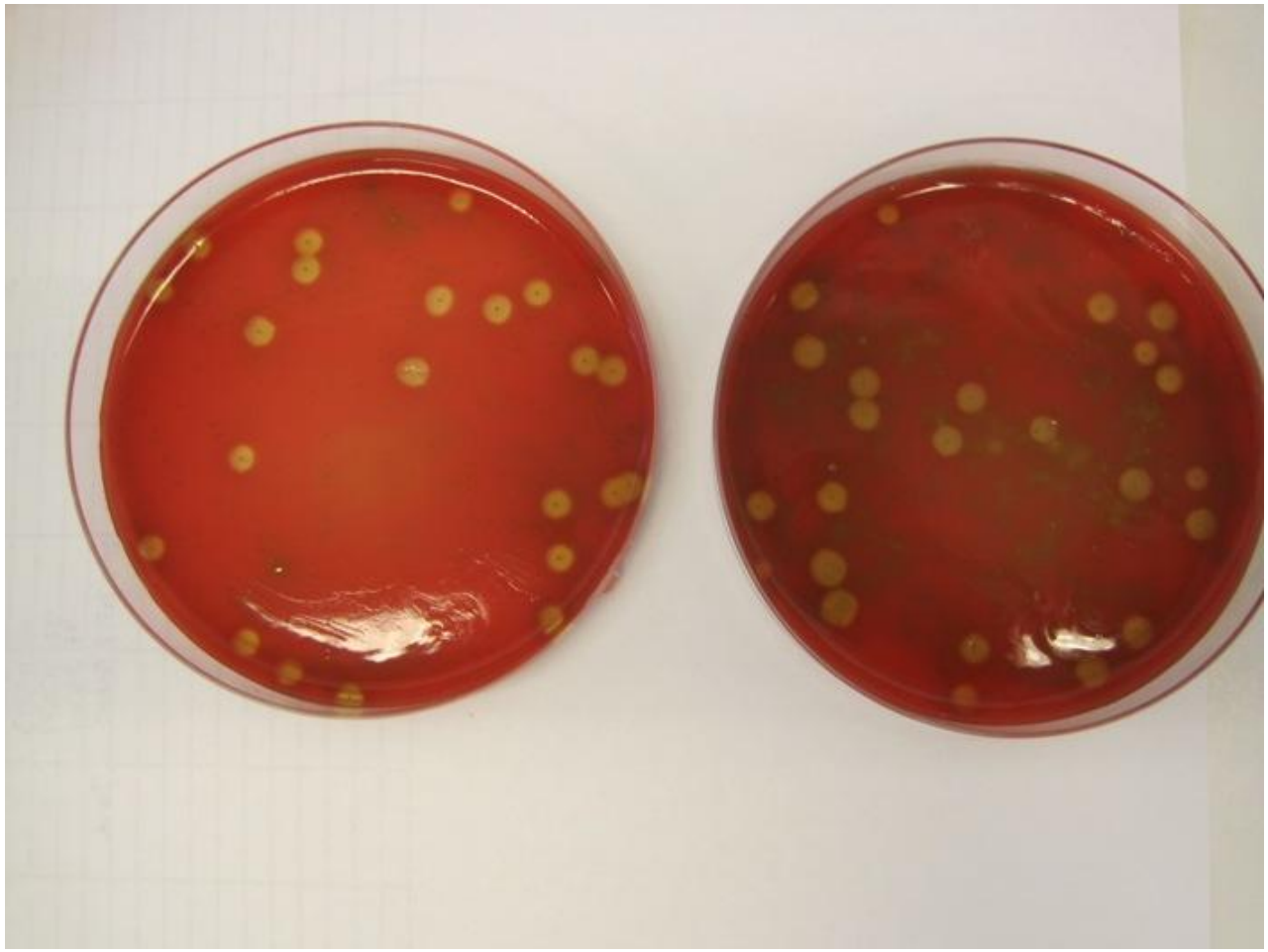


Intramammary sold mastitis and dry cow

Sold and registered by Vet Stat 2010



Blodagar
+ Stafylokok ß - Toxin



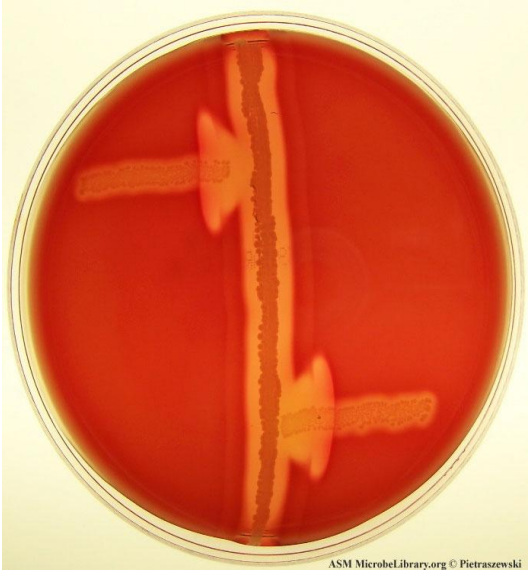
Yearly test of bulk milk from all herds

Yearly since 1995. From 1963-1995 different intervals

Card with barcode to start inload of milk
Sampling device at truck
VM OVP valve, company VM Tarm A/S
First 30-40 l, no sampling
Thereafter 1.5 ml 40 times at interval depending on last herd milk load
Total sample 60 ml
Cleaning of device with pressure air
Label from farm with barcode
Stored on ice until testing

Culture of bulk milk sample

- 120 µl mixed with 12 ml streptococci selective media deep culture
  - Polymyxin B, neomycin, fucidin
- Suspected colonies
  - Haemolytic
  - Aesculin negative
- CAMP reaction
  - Evt. agglutination



B-register

Herds enter the register if positive at yearly screening

and new sample (120µl + 500µl)

if positive	B-herd
if negative	
new sample	
if positive	B-herd
if negative	Free

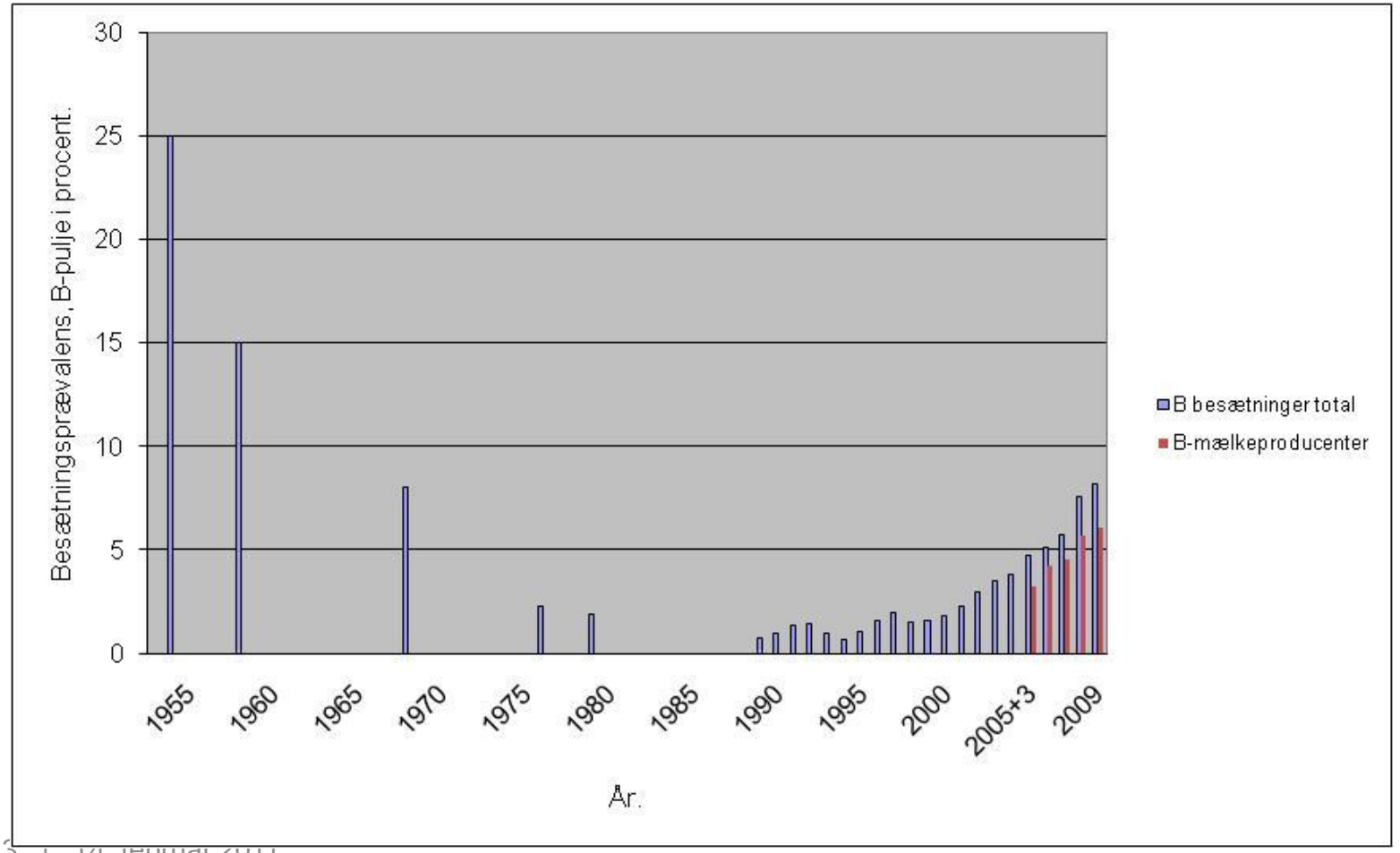
Clear of register

Neg. 4 BTMS more than 1 month apart	Free
Neg.individual sampling of all quarters	Free

Strep. agalactiae infections in the Nordic countries

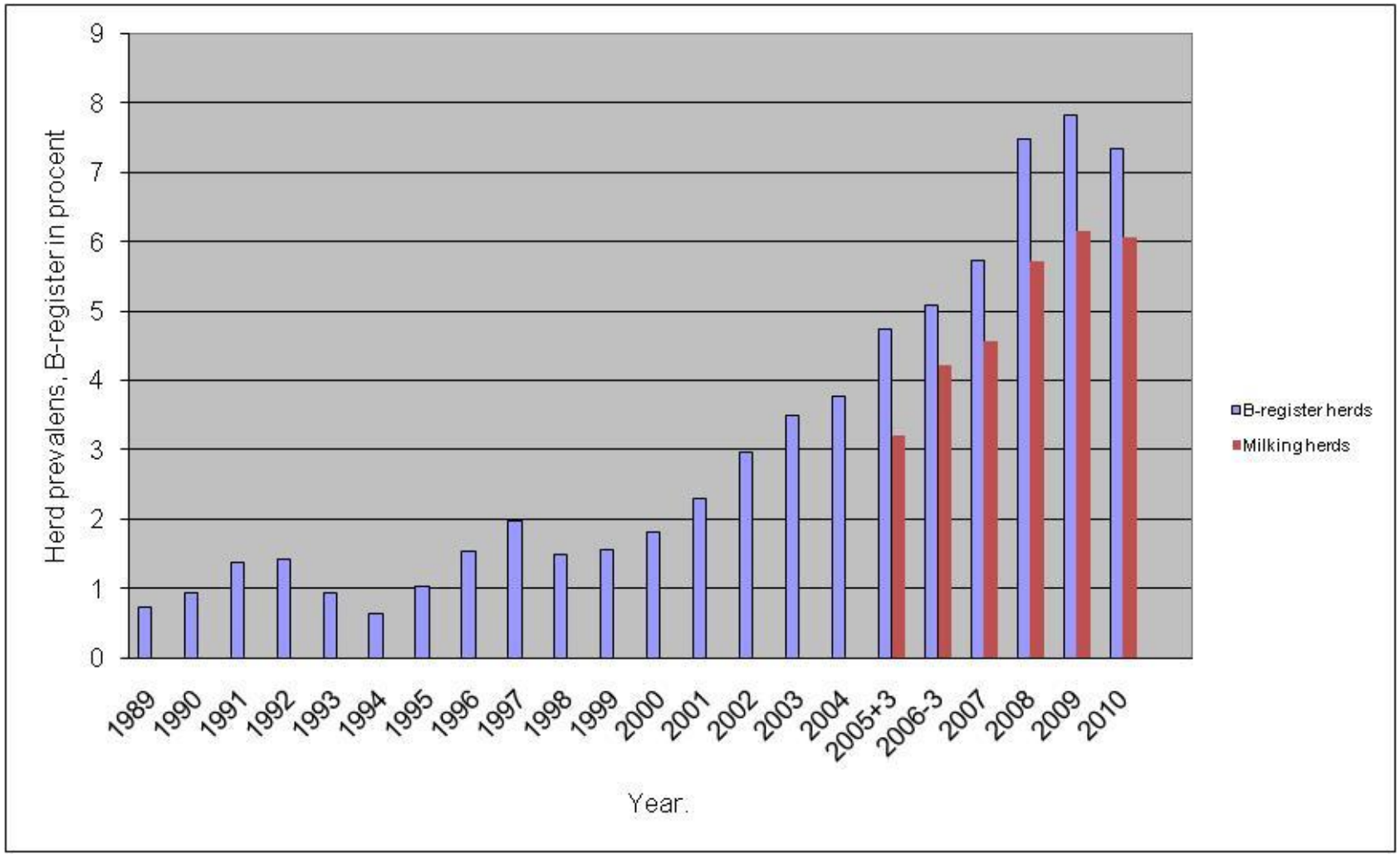
Country	Herds	% infected	
		Culture	PCR
Denmark 2009	all	4.6	7.3
Sweden	AMS		4.9
Norway	>35 cows		3.3
Finland	clinical cows		0.7 cows
	25,000 cows 2006 - 2010		
Faroe Islands	all	23	23

Herds in B-register, percentage
Denmark 1955 - 2009



Procent herds in B-register

Milking herds and total 31. december 1989-2010

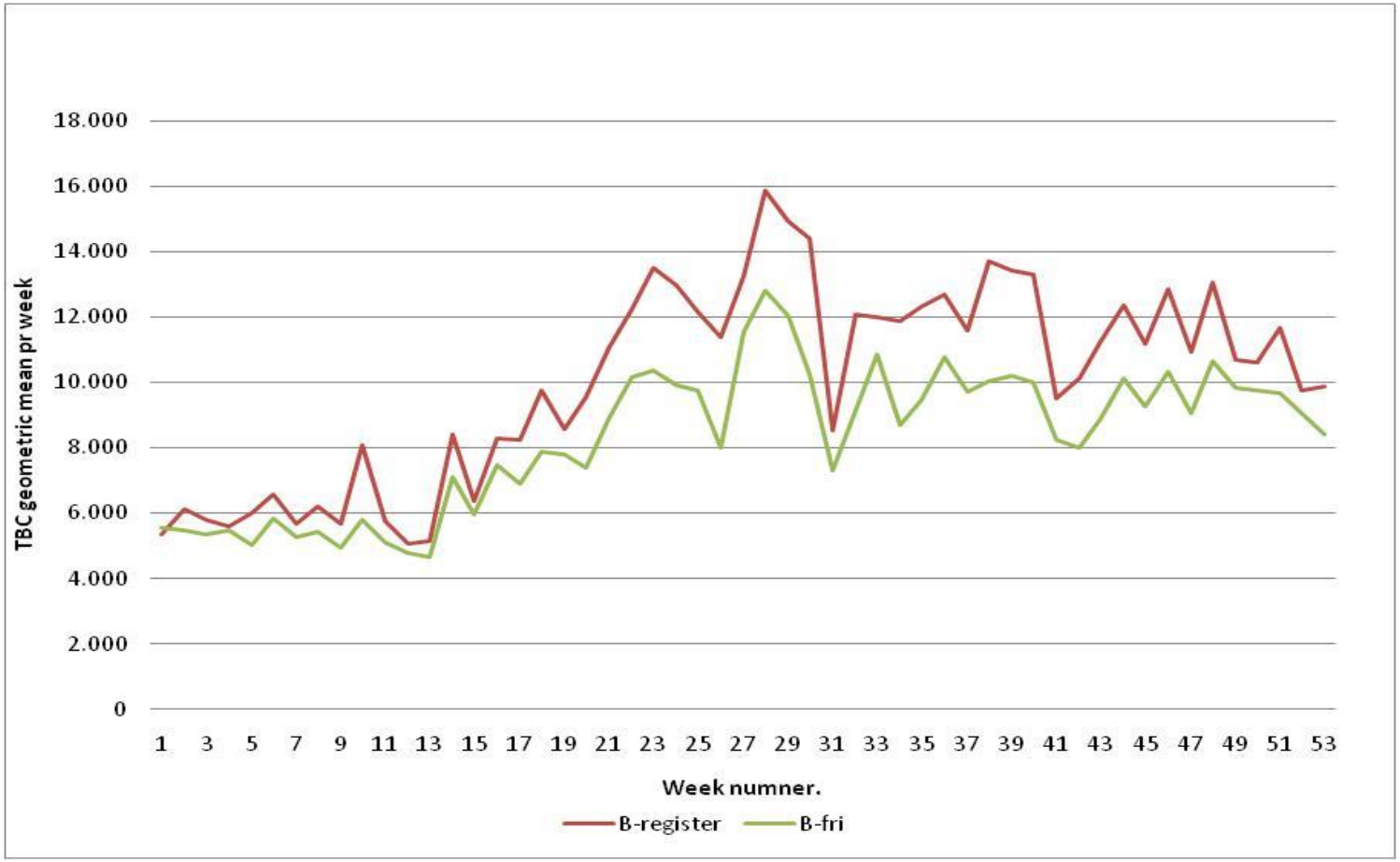


Geometric BTSCC - 2009

Free herds green, B-register herds red

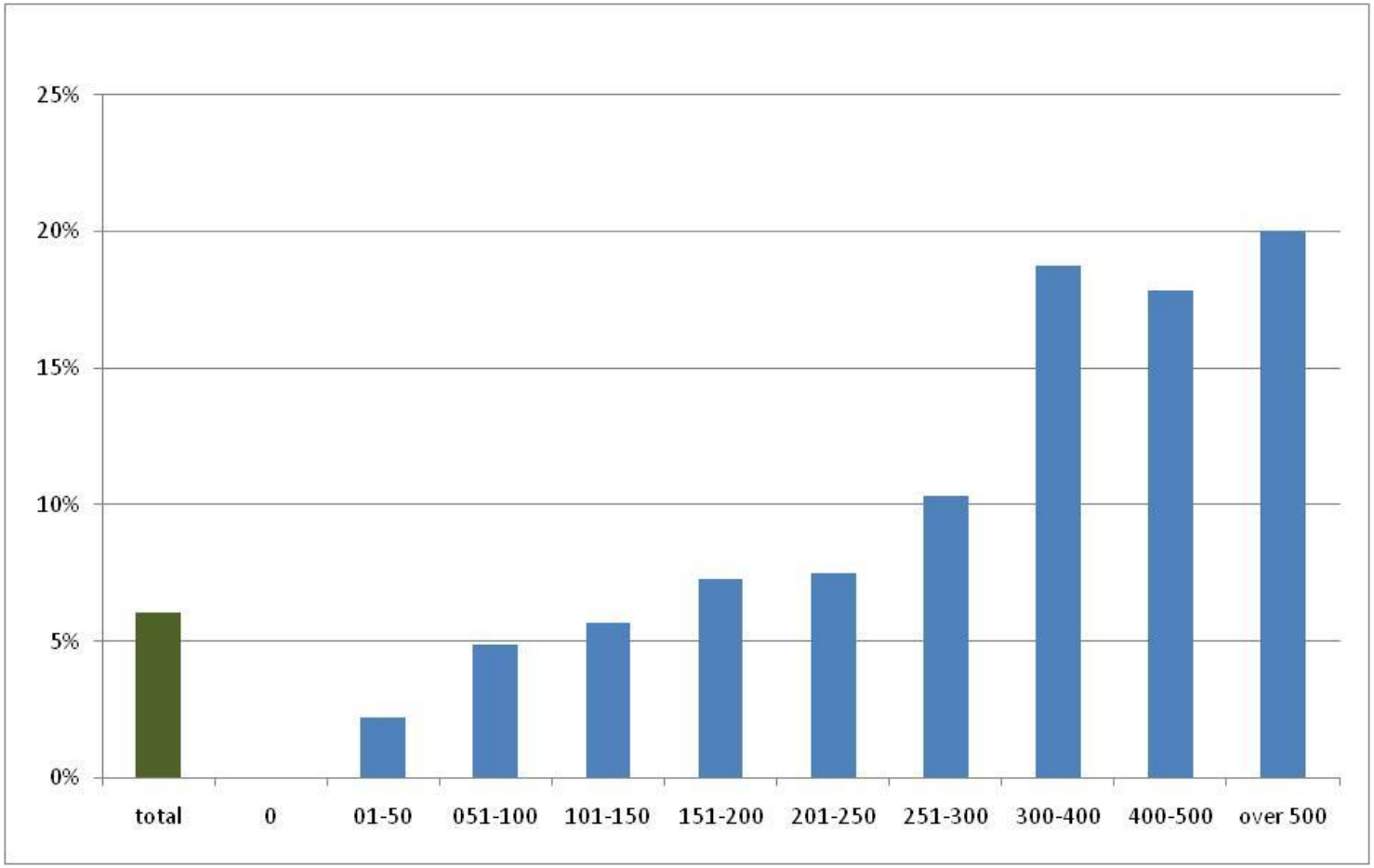
Geometric TBC - 2009

Free herds green, B-register herds red



Milking herds in B-register, percentage

Relation to herd size DK 2009



Herds in B-register, percentage 2009
Relation to milking system and producer

Herd type	Number of herds	% herds in B register
Lely	401	10.2%
DeLaval	392	4.6%
Other AMS	67	9.0%
Konventional	3391	5.7%
Total	4251	6.1%

Data on the 21 december 2009

Herds in B-register, percentage 2010
Relation to milking system and producer

Herd type	Number of herds	% herds in B-register
Lely	437	10.3%
DeLaval	392	5,9%
Other AMS	46	4,3%
Conventional	3207	5.8%
Total	4093	6.0%

Data 21 December 2009

Ability of bulk milk culture for etimating *Streptococcus agalactia* prevalence in Danish dairy herds

Correlation 0.59

Sensitivitet af tank prøve i dette studie 100% på 50 besætninger 45 positive

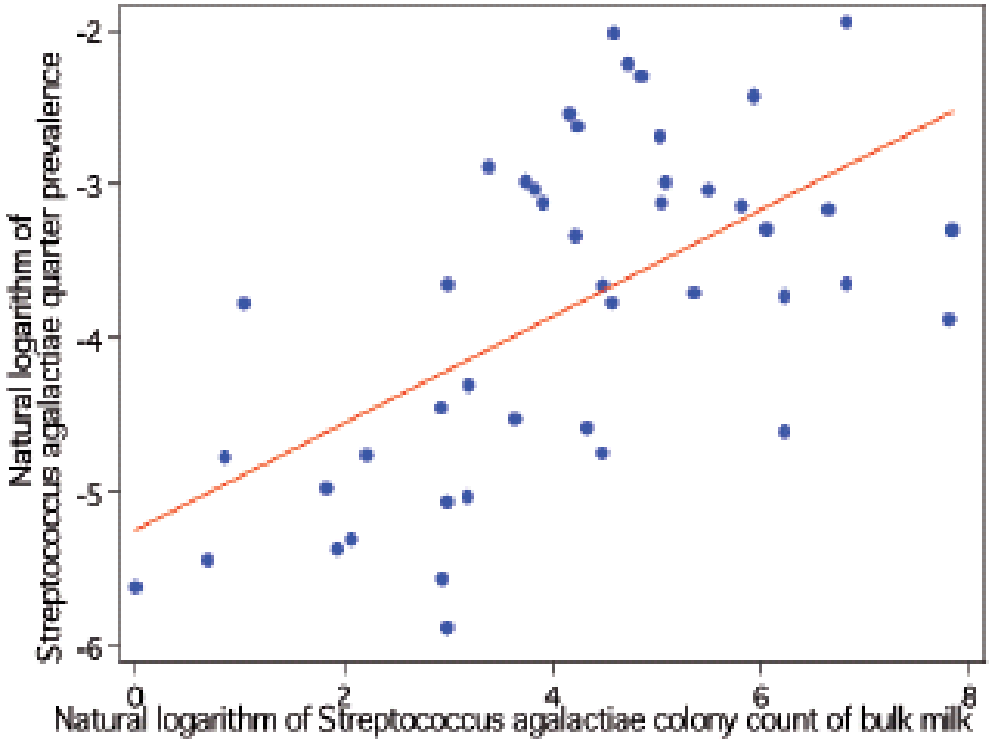


Figure 2. *Streptococcus agalactiae* quarter prevalence against colony count in bulk milk.

R.G.M. Olde Riekerink[1], O.C. Sampimon[1], L. Holst Pederson[2], J. Katholm[3], and T.J.G.M. Lam[1,4]

Comparison of PCR and culture
4,258 bulk tank samples

Test for B-strep	PCR	
Culture	Positive	Negative
Positive	177 (12)	20*
Negative	133 **(35)	3.928

Numbers in brackets are herds between 37 and 39.9

* 11 herds in B-register - 9 only this test positive

** 28 herds in B-register

Distribution of bacteria in 4258 bulk tank samples from all Danish dairy herds in 2009

Percent herds with NoCt, median, mean and standarddiviation of herds with a Ct value

2010 (2009) Bakteria/gen	% NoCt	Median Others	Mean Others	± sd Others
Staph aureus	19 9	33.7 32.4	33.7 32.5	2.87 2.91
Staph spp	1.3 0	31 29.8	31.2 29.8	2.48 2.07
Beta lactam	23.3 22	34.5 34.8	34.6 34.8	2.67 2.65
Strep agalactiae	93,4 (93)	32,3 31.5	32.2 (31.5)	4.21 (4.80)
Strep dysgalactiae	20,0 14	32.7 31.6	32.7 31.6	3.10 3.18
Strep uberis	10.6 5	31.5 30.3	31.4 30.3	3.67 3.44
Coryne bovis	17.3 10	33.9 33.5	34.1 33.7	1.94 1.67
Enterococcus	33,1 22	35.2 33.7	34.9 33.6	2.85 2.84
E. coli	59,5 39	36.6 35.8	36.1 35.2	3.04 3.54
Klebsiella	82.8 87	36.4 36.5	36.0 35.8	2.83 3.54
S. macescens	99 98	37.5 37.8	36.3 37	3.16 2.96
A. pyo / P.ind	38.2 37	35.7 35.7	35.3 35.2	2.99 2.95

Distribution of bacteria in 4258 bulk tank samples from all Danish dairy herds in 2009

lowest Ct value, median and fractil

Bakteria/gen 2010 (2009)	Lowest Value	Fraktil 10	Fraktil 25	Median	Fraktil 75	Fraktil 90
Staph aureus	19.8 (19.5)	30.1 28.9	31.9 30.5	33.7 32.4	35.6 34.4	37.6 36.3
Staph spp	19.5 17.7	28.4 27.3	29.8 28.6	31 29.8	32.4 31.0	34.3 32.1
Beta lactam	20.4 22.2	31.3 31.5	32.8 33.1	34.5 34.8	36.4 36.6	38.4 38.4
Strep agalactiae	19.8 (17.3)	27,2 25.7	29,2 28.5	32.3 31.5	35.3 35.1	37.7 37.9
Strep dysgalactiae	19.9 15.9	28.8 27.7	30.7 29.6	32.7 31.6	34.7 33.6	36.7 35.6
Strep uberis	11 13.9	26.7 26.0	29.1 28.1	31.5 30.3	33.8 32.4	36.1 34.5
Coryne bovis	24.5 24.5	31.9 31.9	32.8 32.6	33.9 33.5	35.3 34.5	36.8 35.8
Enterococcus	20.8 20.8	31.1 30.0	33.1 31.9	35.2 33.7	37 35.6	38.4 37.3
E. coli	19.4 17.6	31.9 30.4	34.5 33.2	36.6 35.8	38.6 38.1	39.4 39.3
Klebsiella	22.4 18.9	32.5 31.3	34.2 33.7	36.4 36.5	38.2 38.6	39.2 39.6
S. macescens	26.5 25.4	32.5 33.8	35 36.4	37.5 37.8	38.5 38.9	39.2 39.4
A. pyo / P.ind	19.7 18.5	31.5 31.8	33.9 33.9	35.7 35.7	37.4 37.2	38.8 38.5

Culture on composite samples and PCR on yield control samples

3 herds 442 samples

Test for B-strep.	PCR	
Culture	Positive	Negative
Positive	38	8*
Negative	93	303

Herd (1) 2513 (3 –NoCt) and 2710 (8 – NoCt)
Herd (3) 2322 (2-NoCt), 2316 (20-39,67), 2341 (645-NoCt), 2249 (2-37,45), 2285 (5 – NoCt), 2478 (32 – 37.11)

Newinfektion ≥ 200.000 (eks)

Procent infected cows

2009	32,2
2010	30,2

Infektion and laktation nummer 2010

1 calvs	18,0
2 calvs	31,6
others	43,9

Infected at 1. kontrol after calving

Heifer	23%

Dynamik in cowcellcount at DHI infections in lactation (All Denmark 2010)

	All	1 calvs	2 calvs	others
% fresh	61,2	74,9	59,0	45,9
% Newinfected	10,1	7,9	11,0	12,1
% Chronic	19,7	9,6	20,5	31,8
% Cured	9,0	7,6	9,5	10,2

Dynamic in dry periode. Between DHI

	2 calvs	Others	Total
% Fresh	53,8	31,8	41,7
% Newinfected	22,0	18,8	20,2
% Chronic	10,7	25,2	18,7
% Cured	13,5	24,2	19,4

Antibiotic dry cow therapy and teatsealant

	no	Ab	ITS	Ab+ITS
No of cows	282.162	51.834	4545	818
% Fresh	42,4	37,1	49,4	35,6
% Newinfected	21,7	12,0	25,0	9,5
% Chronic	18,7	19,0	14,0	16,0
% Cured	17,2	31,8	11,6	38,9
Infected at calving	40,4	31,0	39,0	25,5

Brug af patteforsegling

Forsøg i Australien i en kort periode 6 besætninger 1000 køer i hver gruppe

	Alle cloxacillin +/- patteforsegler			
	+	-		
Alle kliniske tilfælde	%	%	OR	P
<21 d	1,20	3,90	0,33	<0,0001
<30 d	1,68	4,44	0,39	<0,0001
<100 d	7,66	12,90	0,58	<0,0001
Miljø patogen				
<21	0,65	2,39	0,25	<0,0001
<30	0,93	2,39	0,34	<0,0001
<100	3,82	7,26	0,49	<0,0001

Runciman , Malmo and Deighton JDS 2010

Udpegning

- 5 dage før ydelseskontrol
- SMS til ejer
- Undersøgelse alle køer under 40 dage til gns forventet goldning ved besætnings indberetning
- Ellers under 90 dage før forventet kælvning
- SMS om prøvesvar evt til dyrlæge
- OBS der kan komme to svar

- Svar gyldigt 35 dage fra kontroldato

Goldkobehandling (bestemmer dyrlægen)

Staf aureus	hvis	< 40
Strep dysgalactiae		< 40
Strep uberis		< 40
Strep agalactiae (B)		< 40
Øvrige bakterier	eks	< 30-32

Selektiv goldkoudpegning

- Næstsidste kocelletal — Vælg eks > 200.000
- Næstsidste celletalsværdi — Vælg eks > 3
- 3 sidste kocelletal alle — Vælg eks > 200.000
- 3 sidste celletalsværdier — Vælg eks > 3
- Evt flere kriterier samtidig

Udtagningsmåned	Antal PCR-prøver fra tankmælk	Antal PCR-prøver fra enkeltdyr
.	8996	8774
200907	.	1
200908	1	38
200909	.	162
200910	2277	40
200911	2008	421
200912	20	186
201001	12	352
201002	21	708
201003	19	273
201004	26	199
201005	24	486
201006	57	211
201007	22	142
201008	116	616
201009	57	1204
201010	2291	1421
201011	1951	1228
201012	35	865
201101	59	221

All cows treated (prevalence 85%)

105 cows tested

13 cows culled

Cows treated 14-16/9 Ethacillin/Carepen

	4/8 2010	13/10
Negative	15	90
Ct 40-37	9	6
Ct < 37	81	8

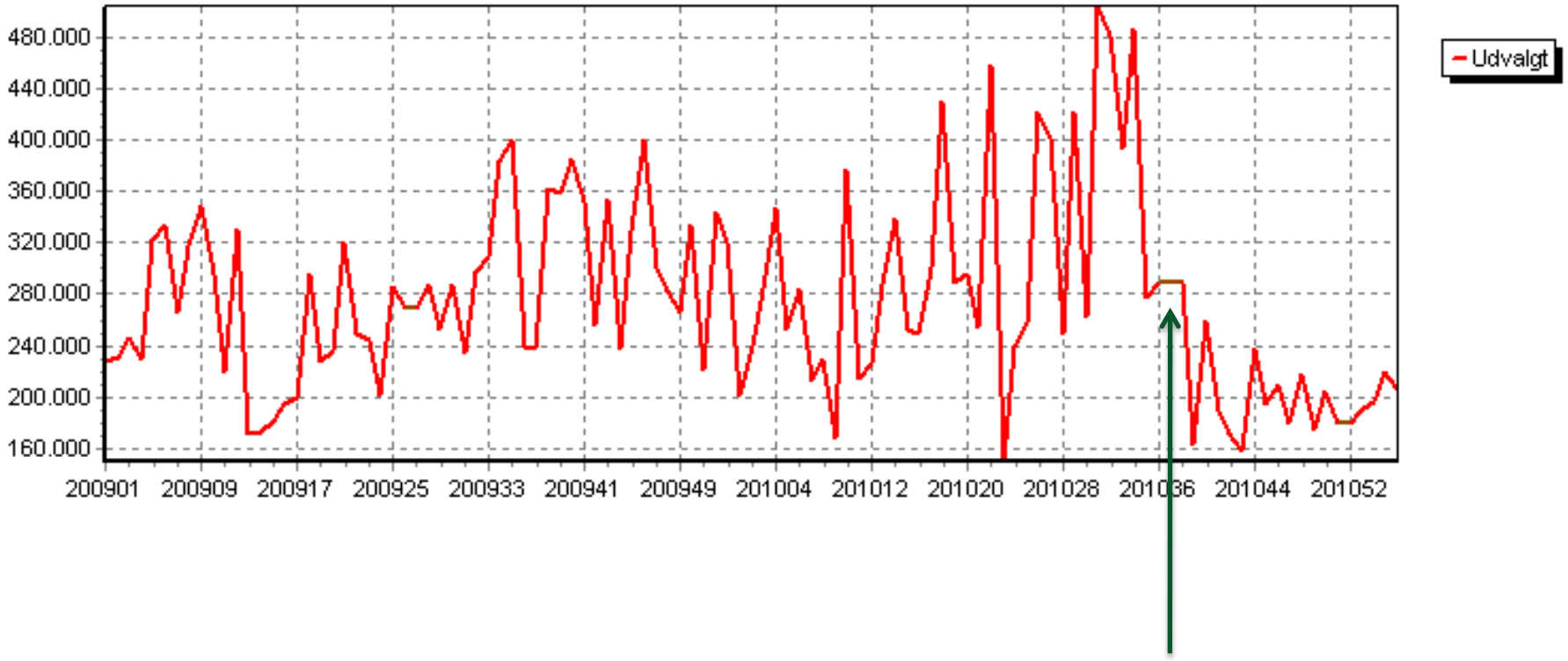
13 under 30 lowest Ct 21 lowest 32.5

Among 13 culled lowest Ct15

All cows treated (prevalence 85%)

105 cows tested 4/8 2010

First infected bulk tank 20/10 2009



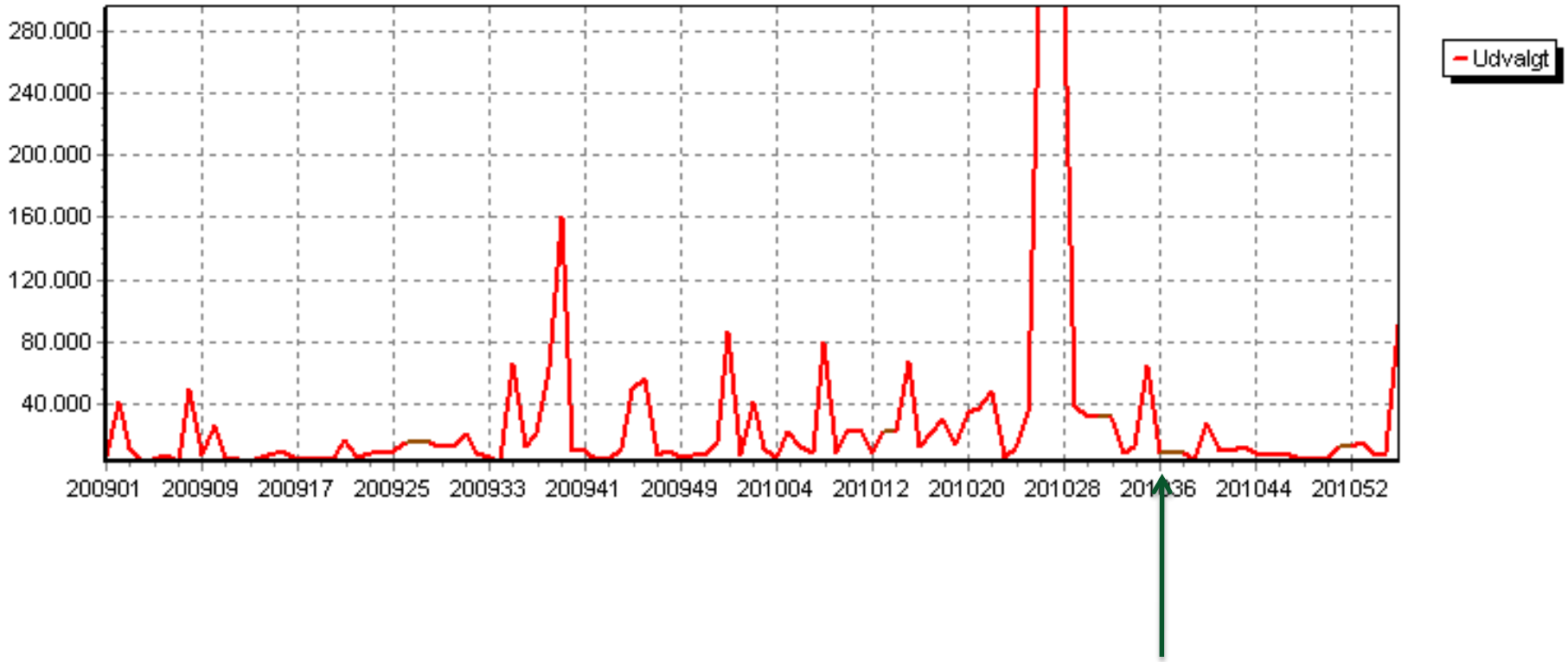
All cows treated 14-16/9 Etha/carp

All cows treated (prevalence 85%)

105 cows tested 4/8 2010

First infected bulk tank 20/10 2009

Total bacterial count 25/10 12000 free in culture and PCR 19/10 2010



All cows treated 14-16/9 Etha/carp

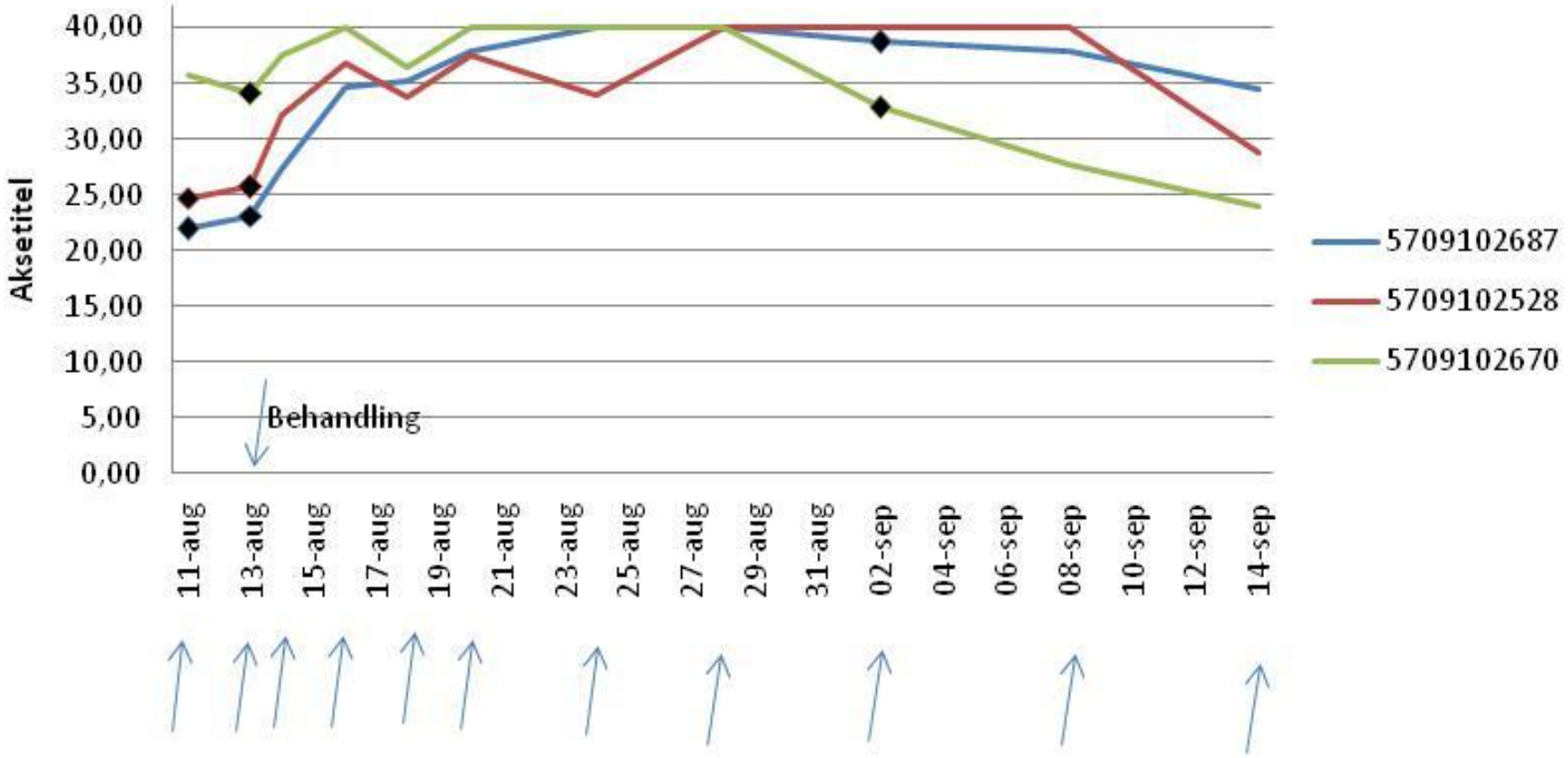
Correlation
blodagar Eurofins, selektiv agar og PCR

Date of sampling 9/9 2010 Owner Kim Jensen

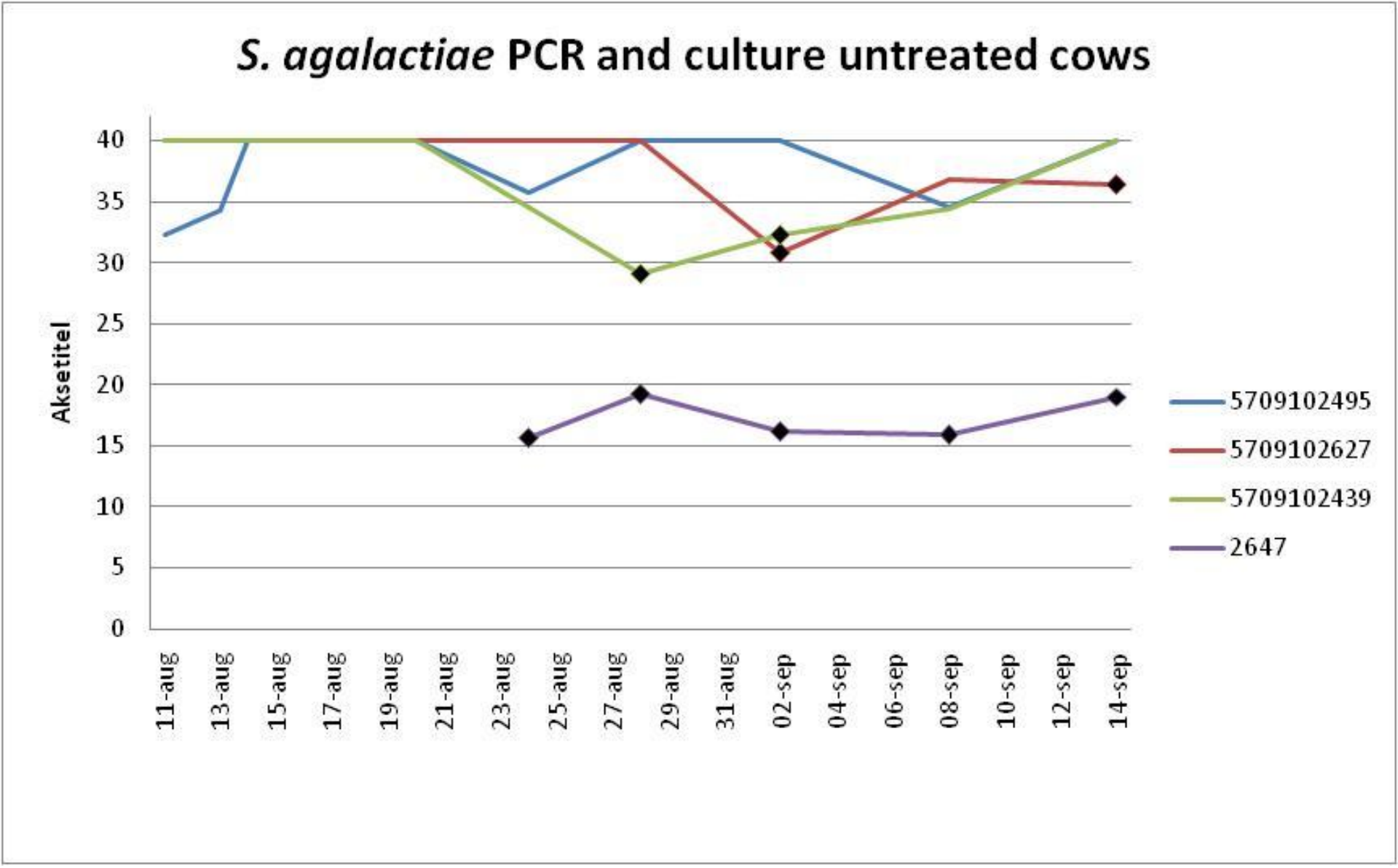
Number of samples 99

Testmethode	Blod agar	selektiv	PCR
Positive	10	3	27 (10 > 37)

S. agalactiae PCR and culture after treatment



♦ indicates that the sample also were positive in culture



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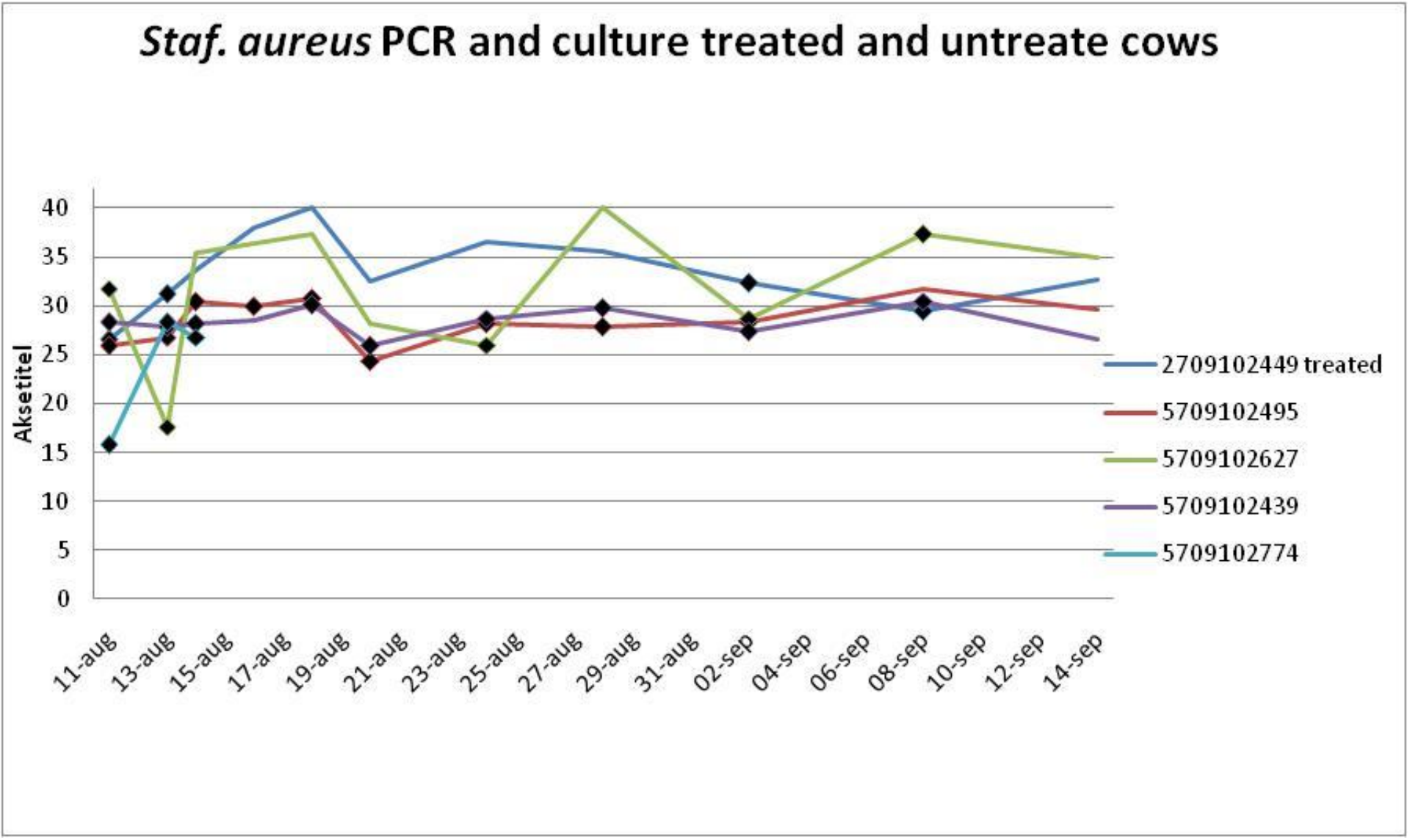

♦ indicates that the sample also were positive in culture

Yearly bulk tank testing

	PCR		
Year	Negative	Positive	of these culture +
2009	3948	310	177 (57%)
2010	3826	267	131 (49%)

Table 1. Clinical appearance, MLST and serotype of *S. agalactiae* isolates from bulk tank milk samples from 25 selected Danish herds in 2009

Clinic	MLST	Serotype				Total number of
		Ia	III	V	NT[1]	Isolates
Acute	1				3	3
	8				1	1
	10			1	1	2
	19				1	1
	23	1			1	2
	103	2			2	4
	New 3 - ST 462				1	1
	New 4 – ST 463			1		1

Table 1. Clinical appearance, MLST and serotype of *S. agalactiae* isolates from bulk tank milk samples from 25 selected Danish herds in 2009

Clinic	MLST	Serotype				Total number of
		Ia	III	V	NT[1]	Isolates
Chronic	1				3	3
	19		1			1
	23	1	1		1	3
	41				1	1
	New 1 – ST 460				1	1
	New 2 – ST 461	1				1

Predominant Danish Bovine types 25 herds 2009

Clinical appearance	MLST	
Acute	ST 103	4 of 15
	ST 1 + 23	5 of 15
Chronic	ST 1 + 23	6 of 10
Total	ST 1 + 23	11 of 25
	ST 19	2 of 25