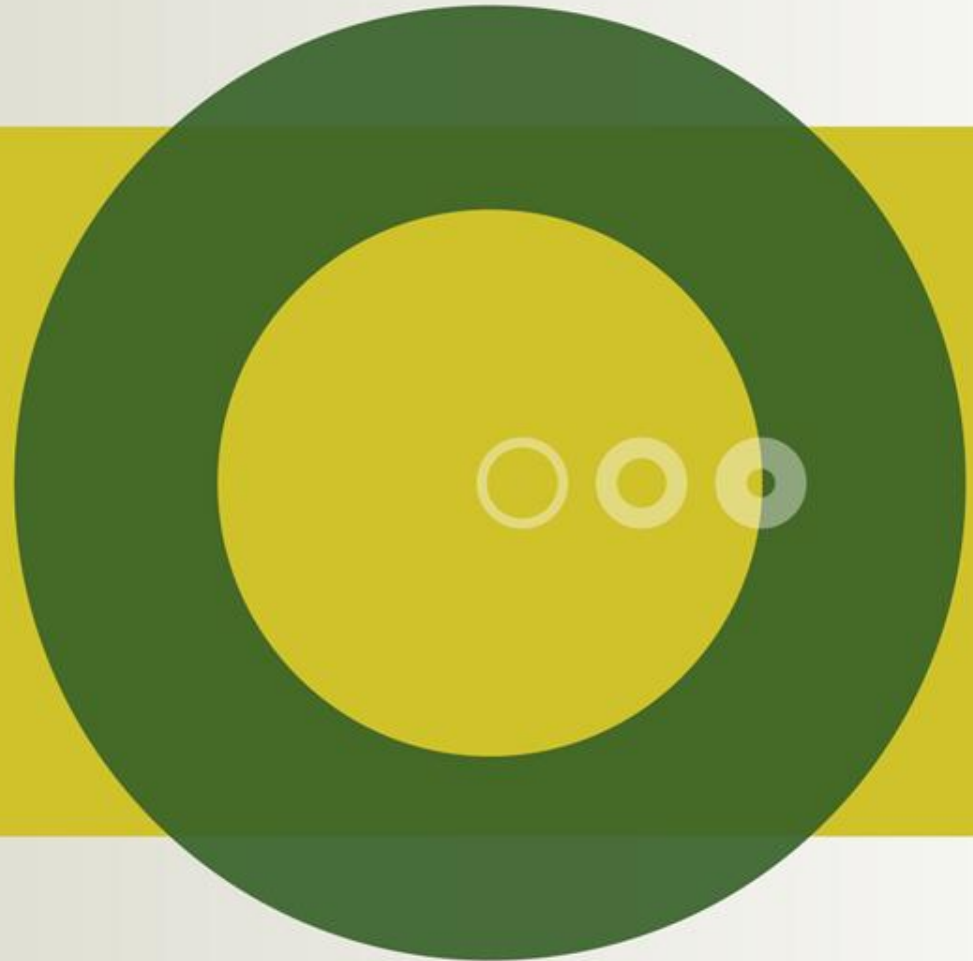




# Project mastitis 2011

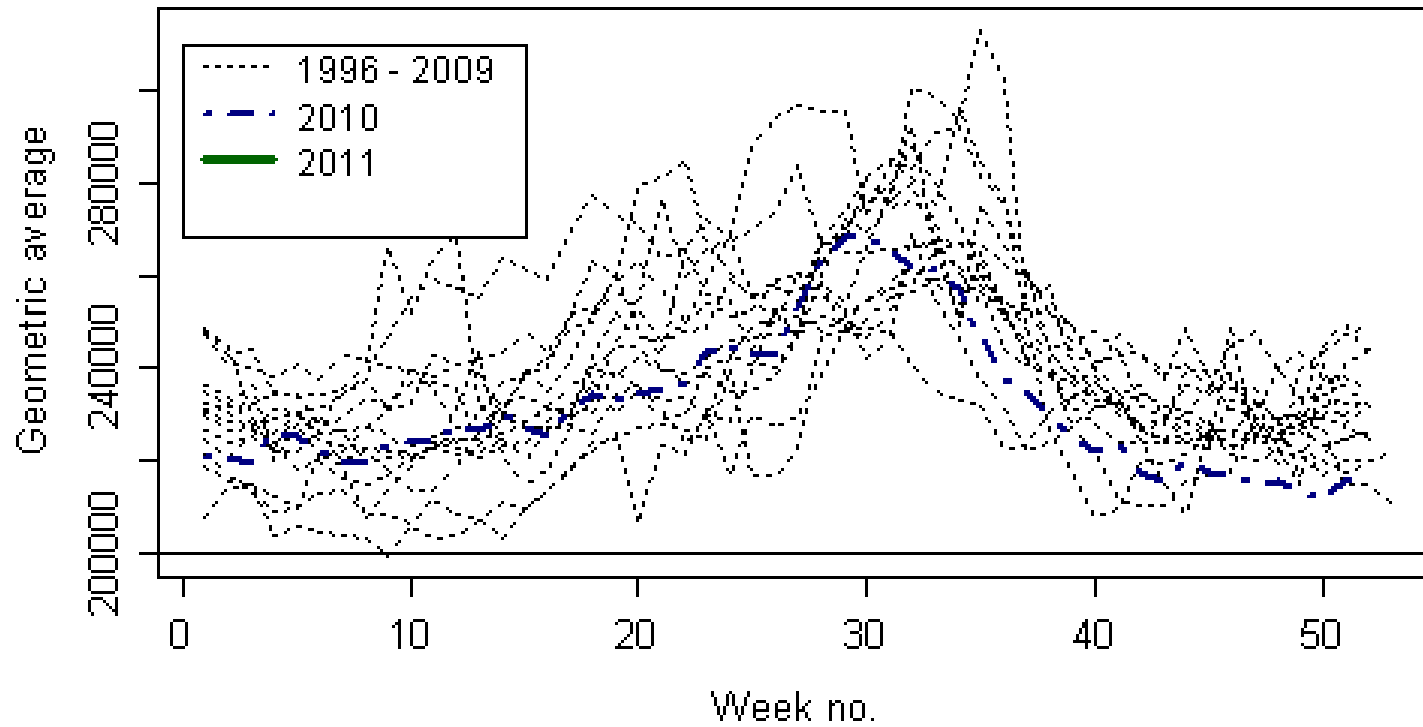
Surveillance of mastitis og penicillinresistente stafylococcei in Danish milking herds.





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

### Somatic cell count in bulk tank milk



Jan 12, 2011

# Design

- Selction of herds
- Lowest 10% with Ct in 2010 year testing
  - Str agalactiae 26 herds
  - Beta lactam ca 400 Lower than Ct 29 - 19 herds
  - Staf aureus ca 400 lower than Ct 27 – 19 herds
- Selection criteria average 200 cows
  - 12 Str. agalactiae 1 control 2504 Cows
  - 11 (+2) Beta Lactam 1770 cows
  - 10 (+2) Staf aureus 1468 cows
- 3 ecologic
- 2 low ct for agalactiae

## Design

- Bulk tank Ct every month ? Control?
  - Bulk tank 30 days march-april each delivery
  - Cow samples march-april at control extra set
  - Visit to all farms after Prevalence investigation
- 
- Testing of all Danish herds in Q4

# 34 Herds in Mastitis project 2011

chmr	Accept	mejn	lev	mejnnavn	BesEjerNavn	BesEjerAdr	BesEjerBynavn	BesEjerPostnr	BesEjerPostomr
15277	ok	268	2329	Bornholms Andelsmejeri	Milkco I/S	Hallegårdsvejen 5	Vestermarie	3720	Aakirkeby
15347	ok	268	5826	Bornholms Andelsmejeri	Gårdejer Carsten Nielsen	Centralvej 8	Klemensker	3782	Klemensker
15491		268	546	Bornholms Andelsmejeri	Landmand/Klovbeskærer Søren	Borrelyngvej 15	Rutsker	3790	Hasle
16836	ok	1		Arla	Vestergård v/Peter Banke Pedersen	Vesterskovsvej 33	Ommel	5960	Marstal
16907	ok	1		Arla	Jens Johansen	Grønholtvej 1	Nordenhuse	5800	Nyborg
17795		1		Arla	Nygaard Hansen Mælk	Brusbjergvej 6	Trunderup	5683	Haarby
23936	ok	1		Arla	Vindingvej Mælkeproduktion	Vindingvej 3	Burgårde	8740	Brædstrup
21058		1		Arla	Jens Marius Madsen	Vejlevej 11	Harresø	7323	Give
25166	ok	659	324	Them Andelsmejeri	Vindingvej Mælkeproduktion	Vindingvej 3	Burgårde	8740	Brædstrup
30221		802	162	Rørbæk Andelsmejeri	Poul Erik Grøn	Stausgaardsvejen 18	Stausgaard	9610	Nørager
30236	ok	1		Arla	Trads I/S Preben & Flemming	Rånen 3	Mejlby	9610	Nørager
31218	ok	1		Arla	Knud Møller Jensen	Gammel Viborgvej 1	St Binderup	9600	Aars
31619	ok	1		Arla	Erik Grønlund Nielsen	Ouevej 2	Redsø	9500	Hobro
34737	ok	836	34737	Asaa Andelsmejeri	Martin Hougaard Olesen	GI Kongevej 53	Ørsø	9330	Dronninglund
37654	ok	1		Arla	Jacob Gert Torensma	Hvidkildevej 7	Agersted	9330	Dronninglund
39107		1		Arla	Preben Glintborg Poulsen	Østermøllevej 38	Fredsø	7900	Nykøbing M
41716	ok	2298	100	Mammen Mejeri	Flemming Sørensen	Pittevej 18	Astrup	8881	Thorsø
44523		1		Arla	Reinder V D Wey	Vester Lintrupvej 2	Lintrup	6670	Holsted
47675	ok	1		Arla	I/S Britta og Hans B Nissen	Pluskærvej 9	Frøslev	6330	Padborg
48151	ok	1		Arla	Per Jørgensen	Vilbækvej 30	Vilbæk	6330	Padborg
48413		1		Arla	Søren Svennesen	Barsø Bygade 50		6200	Aabenraa
48671		1		Arla	Jørgen Bertelsen Kobbeltgaard	Hesselbjergvej 4	Genner	6230	Rødekro
49802	ok	1		Arla	Peter Beck Jørgensen	Bredevadvej 33		6372	Bylderup-Bov
51731	ok	1		Arla	Gøgholm I/S	Sodegade 18	Hejsager	6100	Haderslev
52429	ok	1		Arla	I/S Jægersborg v/H og L Lang	Grejsensvej 8	Skodborgskov	6630	Rødding
52932	ok	1		Arla	Lars Nielsen	Midtervej 10	Stenderup	6520	Toftlund
54690		1		Arla	Jørgen Johannesen	Hvidmosevej 2	GI Rønbjerg	7800	Skive
55835		1		Arla	Henning Holm Nielsen	Overgårdsvej 59		7430	Ikast
56592	ok	1		Arla	Per Futtrup	Nissumvej 80	Nørre Nissum	7620	Lemvig
56700		1		Arla	Lis Pedersen	Holstebrovej 1	Ravnsbjerg	6971	Spjald
57733	ok	1		Arla	Hendrikus J M Heutinck	Sdr Stabyvej 8	Staby	6990	Ulfborg
58628		1		Arla	Jørgen Poulsgård Jensen	Timringvej 10		7480	Vildbjerg
58955	5	13. januar 2011		Arla	Holmager Økologi v/Torben E	Holmager 6 A	Velling	6950	Ringkøbing
60393		1		Arla	Hans Nordvang Sylvest	Ellingevej 54		5540	Ullerslev

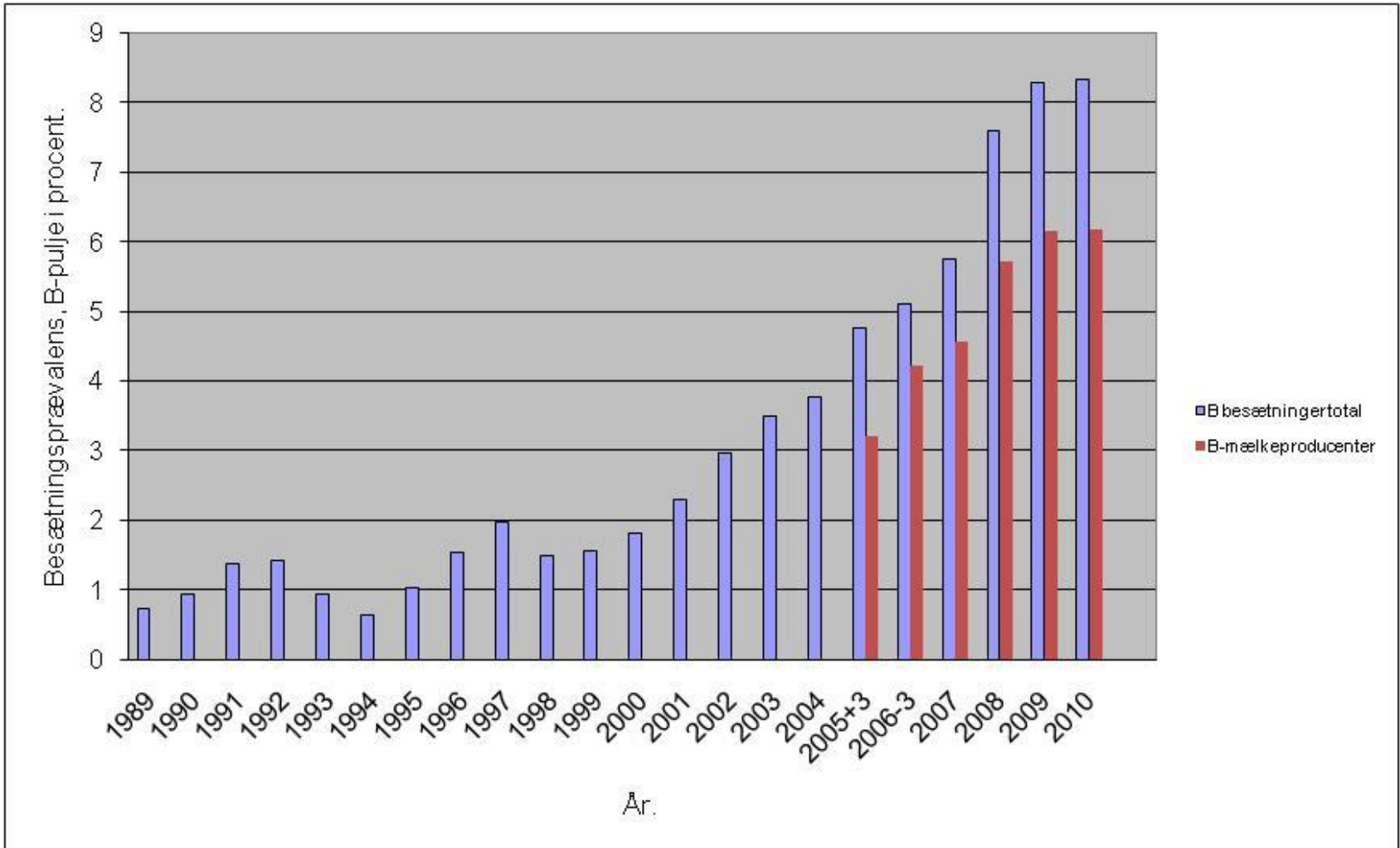
# B-strep N=2504    Beta lac N=1770    Staf a N=1468

B_Streptokokker		Staf a	Beta	B-strep				Mobil	2504	E-mail			
15277	19-10-2010	Påvist	29,4	34,4	26,8	Milcko	56972171	<a href="tel:21468879">21468879</a>	350	4 VMS	<a href="mailto:jahl@12m">jahl@12m</a>	11 kontroller	hver 2 dag
15347	19-10-2010	Påvist	32,5	33,4	27,1	Carsten Nielsen	40462539		197	3 VMS	<a href="mailto:pilegaard@">pilegaard@</a>	13 kontroller	hver 2 dag
15491	20-10-2010	Påvist	34,1	35,6	22,7	Klovb Søren Folkmar	56969015	20169115	289	5 VMS	<a href="mailto:tornegaar@">tornegaar@</a>	11 kontroller	hver 2 dag
16907	18-10-2010	Påvist	35	33	21,9	Jens Johansen	24422625		123	2 Lely	<a href="mailto:lisbethog@">lisbethog@</a>	11 kontroller	Hver 2 dag
30236	02-11-2010	Påvist	40	39,1	23	Camilla og Flemming	61745530	mming 202	321	5 Lely	<a href="mailto:camilla-fa@">camilla-fa@</a>	11 kontroller	Hver 2 dag
48413	19-10-2010	Påvist	33,3	34,7	27	Søren Svennesen	22359116		175	Sildeben	<a href="mailto:soren.sve@">soren.sve@</a>	11 kontroller	hver 2 dag
51731	18-10-2010	Påvist	35,8	40	21,8	Gøgholm I/S	74571289	21250601	134	2 Lely	<a href="mailto:goegholm@">goegholm@</a>	11 kontroller	hver 2 dag
55835			40	40	26,6	Henning Holm Nielsen		42497572	127	Side By side	<a href="mailto:ih-holm@">ih-holm@</a>	11 kontroller	Hver 2 dag
56592	11-11-2010	Påvist	33,6	40	21,7	Per Futtrup	23717781		183	3 Lely	<a href="mailto:per-holtru@">per-holtru@</a>	11 kontroller	Hver 2 dag
56700	11-11-2010	Påvist	31,5	33,1	27,1	Lis Pedersen	97381785		188	Sildeben	<a href="mailto:lisleif@of">lisleif@of</a>	11 kontroller	hver 2 dag
58628	11-11-2010	Påvist	33,1	38,2	27,1	Jørgen Poulsen	97384267		73	Bindestald	nej	11 kontroller	hver 2 dag
58955	08-11-2010	Påvist	32,5	40	25,6	Økolog Torben Galsgaard	40111214		200	3 Lely	<a href="mailto:torben@">torben@</a>	11 kontroller	hver dag
21058	25-10-2010	Påvist	34	35,7	38,2	Økolog Jens Madsen	22128623		144	Sildeben			
<b>Beta Lactamase</b>			<b>Staf. aureus</b>										
			Beta	B-strep					1770	i alt			
31218	01-11-2010		21,6	20,4	40	Knud M Jensen	98656030		58	Bindestald	<a href="mailto:jensen.bi@">jensen.bi@</a>	11 kontroller	hver 2 dag
54690	25-10-2010		21	22,1	40	Jørgen Johannesen	20236246		67	Sildeben			
52429	18-10-2010		26	26,1	40	H og L Lange I/S Jægersbo	22558814		135	VMS			
31619	01-11-2010		22,9	26,3	40	Økolog Erik G Nielsen	21444505		176	Sildeben	<a href="mailto:bare@ofir@">bare@ofir@</a>	11 kontroller	hver dag
47675	18-10-2010		30,5	26,3	40	Britta og Hans B Nissen	74674596		56	Bindestald	<a href="mailto:hbplniss@">hbplniss@</a>	11 kontroller	hver 2. dag
57733	11-11-2010		27,2	27	40	Hendrikus J M Heutien	23393325		123	Sildeben	nej	6 kontroller	hver 2 dag
60393	19-10-2010	Ej påvist	26,7	27,2	40	Hans Nordvang Sylvest	61378997		83	Sildeben	E-mail	11 kontroller	hver 2 dag
41716	19-10-2010		27,5	27,3	40	Flemming Sørensen	21606512		156	Sildeben	<a href="mailto:mosegaard@">mosegaard@</a>	11 kontroller	hver 2 dag
34737	20-10-2010	Ej påvist	27,9	27,3	40	Martin Hougård Olesen	23234385		237	Futurline	<a href="mailto:billidt@ole@">billidt@ole@</a>	11 kontroller	4 gang uge
25166	19-10-2010		27,6	27,7	40	Vindingvej mælkeproduktion	20783011		132	Sildeben	<a href="mailto:sgo@mail@">sgo@mail@</a>	11 kontroller	hver 2 dag
23936			34,6	32,1	32,1	Vindingvej mælkeproduktion	20783012		356	Sildeben	<a href="mailto:sgo@mail@">sgo@mail@</a>	12 kontroller	hver 2 dag
17795	19-10-2010		27,8	27,9	40	Nygård Hansen Mølle	40835183	20411828	262	Lely		11 kontroller	hver 2 dag
16836	18-10-2010		40	28,5	40	Peter Banke Pedersen	24486845		131	Sildeben	nej	6 kontroller	hver 2 dag
<b>Stafylococcus aureus</b>			<b>Staf. aureus</b>										
			Beta	B-strep					1468	i alt	11 bes		
49802	18-10-2010		19,8	34,1	40	Peter B Jørgensen	20325236		128	2 Lely	<a href="mailto:jorgensen@">jorgensen@</a>	11 kontroller	hver 2 dag
48151	19-10-2010		20,1	30,9	40	Per Jørgensen	74688168		111	2 Lely	<a href="mailto:nederball@">nederball@</a>	11 kontroller	hver 2 dag
54690	25-10-2010		21	22,1	40	Jørgen Johannesen	20236246		67	Sildeben	nej	11 kontroller	hver 2 dag
31218	01-11-2010		21,6	20,4	40	Knud M Jensen	98656030		58	Bindestald			
39107	01-11-2010		22,3	40	40	Preben G Poulsen	29449112		136	Side by side	<a href="mailto:vivipoulse@">vivipoulse@</a>	11 kontroller	hver 2 dag
31619	01-11-2010		22,9	26,3	40	Erik G Nielsen	21444505		176	Sildeben			
37654	01-11-2010		22,9	36,6	40	Jacob G Torensma	51741232		142	3 lely	<a href="mailto:stenggaard@">stenggaard@</a>	6 kontroller	hver 2 dag
44523	19-10-2010		24,5	40	40	Reinder V D Way	75391218		100	AMS Fulw	<a href="mailto:lindrupga@">lindrupga@</a>	11 kontroller	hver 2 dag
30221	20-10-2010		26	33,8	40	Poul Erik Grøn	21490866		185	VMS	<a href="mailto:m-pe@24@">m-pe@24@</a>	6 kontroller	hver dag
52429	18-10-2010		26	26,1	40	H og L Lange I/S Jægersbo	22558814		135	VMS	<a href="mailto:jaegersbo@">jaegersbo@</a>	11 kontroller	hver 2 dag
52932	19-10-2010	Påvist	26,9	32	32	Lars Nielsen	20287448		284	Karrusel	OBS gaard	11 kontroller	hver 2 dag
48671	19-10-2010	Ej påvist	27	34,5	31,8	Jørgen B Kobbeltgaard	61349376		180	Side By side	<a href="mailto:kobbeltga@">kobbeltga@</a>	11 kontroller	hver 2 dag

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



# Total and milking herds in B-register 1989 - 2010



## Dynamic in free herds and herds in B-register

Year	(N) free	PCR positive	culture positive	B-register herds	PCR Negative
2009	4258	4013	163 (4,1%)	60	245 98 (40%)
2010	4093	3844	115 (3,0%)	22	250 97 (39%)

Year	New infected	Free
2008	99	39
2009	51	37
2010	28	40

## Dynamic Culture PCR in relation to Year

Culture and PCR negative 2009 – 3754 Herds

120 PCR positive 2010 – 3.2 %

Of these 29 is culture positive – 0.77%

Culture negative PCR positive 2009 - 124 Herds

33 PCR Positive 2010 – 26.6%

Of these 19 is culture positive – 15.3%

Culture Positive and PCR positive 2009 – 174 herds

109 PCR positive 2010

83 culture positive

Chr		dato opdelin	Animals	Culture	PCR	positiv	Prevalens	Date	Result
58955		19/1 2009	183			26dyrk/63 PCR	34	26/5 10	16,3
21058	jens madsen	10/2 1909	135			5 dyrk/12 PCR	8	25/10 10	påvist
35428		15/3 2009	126			18 dyrk/53 PCR	42	FRI 8/10 09	
30236	Trads	19/8 2009	303	281		95	34	2/11 10	23,4
58862		10/9 2009	166	27		7	4	FRI 7/4 2010	
46899		1/10 2009	175		159	29+13	26	27-jul	Pos cultu
33407		25/11 2009	125		107	8+3	10	08-nov	NoCt
40539	Kim	16/12 2009	181		149	79+12	61	16-aug	19,9
30226	Bjarne Jørgensen	23/12 2009	103		94	17+3	21	13-sep	Pos cultu
23872		26/1 2010	50		48	1	2	Fri 18/5 2010	
41458		1/2 2010	42		Pool	3 pool - 3 cows	7	25-okt	neg cultu
63343		8/2 2010	75		68	0+2	3	1/11 19	NoCt
32992		18/2 2010	78		75	16	21	13/4 10	NoCt
31256		9/3 2010	301		Pool	15	5	Fri 24/6 2	
30546	Martin Laursen	3/3 2010	105		102	9	9	2/11 2010	neg cultu
31220	Steen skov	8/3 2010	270		275	12+4	6	01-nov	31,42
36829		20/4 2010	105		Pool	4	4	FRI 26-08-2010	
30669	Poul M Christense	4/5 2010	158		Pool	13??		7/10 10	Pos cultu
45154	I/S Damgård	2/6 2010	178			13 og 48 neg		18-okt	neg cultu
15456	Peter Thorsen	13/8 2010	122		104	77+10	84	19/10 10	neg cultu
44154	Svend Otto Jense	05/8 2010	54				1	08-nov 2	Neg
44138		30/8 2010	86		76		4	11-okt 2	Neg
30585	Jens Bigum							Fri	
16907		30/9 2010	122		104	95	91	18/10 10	påvist
53002		27-09-2010			186	114	61		
104199									
49968								18/10 10	påvist
43883	Helge Lauridsen	12-09-2010	146		120	40+8	33	17/8 10	påvist
39257	I/S Højlund	19-10-2010	234		195	9+6	8		
39290	Poul E Christense		71		58	9+7	28	1/11 10	NoCt
Himmerland			B agar						
32865		19-08-2010	97				12	26/10 10	Neg
32864		18-08-2010	107				15	26/10 10	neg
Del test									
54882	Jørgen Sand							26/10 10	Neg
	Marius								

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

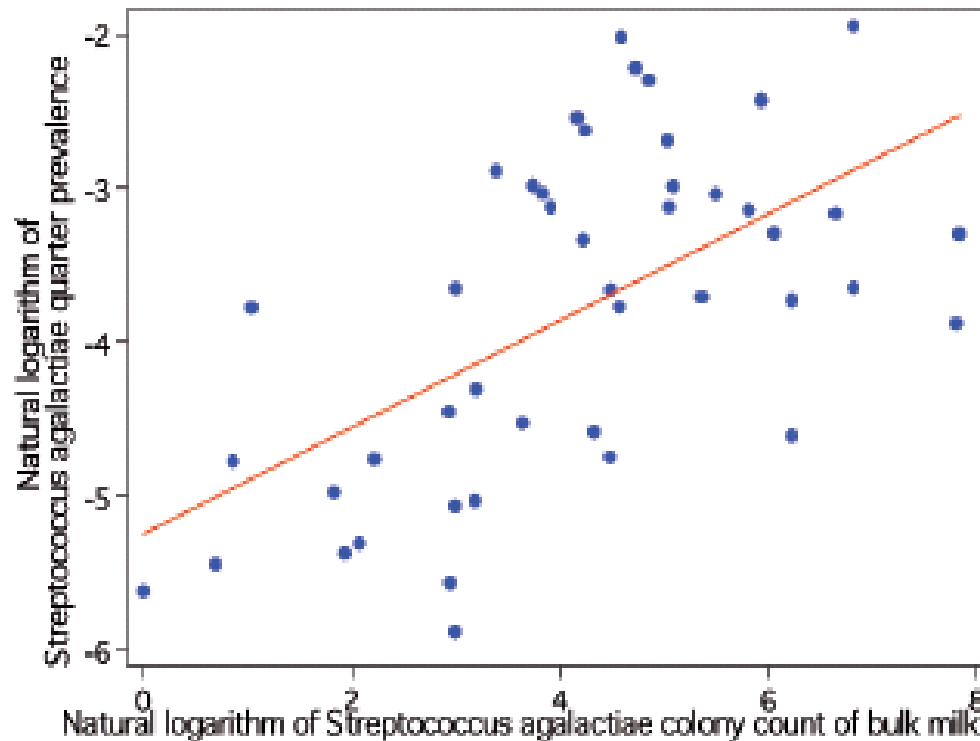


Figure 2. *Streptococcus agalactiae* quarter prevalence against colony count in bulk milk.

R.G.M. Oldé Riekerink<sup>1</sup>, O.C. Sampimon<sup>1</sup>, L. Holst Pederson<sup>2</sup>, J. Katholm<sup>2</sup>, and T.J.G.M. Lam<sup>1,4</sup>

# 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

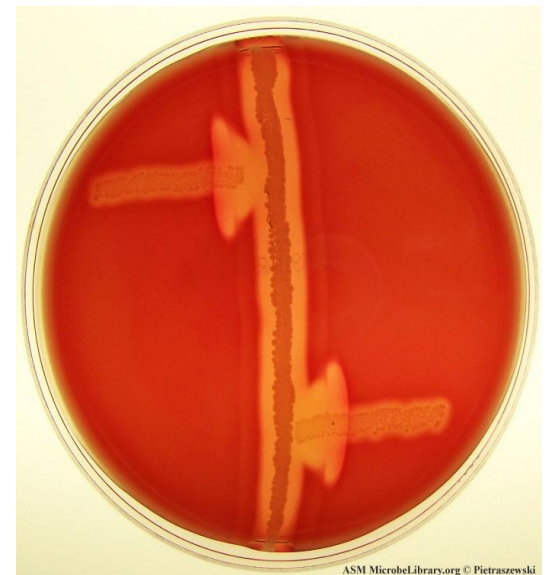
Label from farm with barcode

Stored on ice until testing



# Culture of bulk milk sample

- 120  $\mu$ l 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 (120 $\mu$ l + 500 $\mu$ l)

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



# Trade patterns among infected herds

## 2000 – 2 July 2008

Number of infected dairy herds	233
No introduction of cattle - 17 free since 1991	24
Only introduction of cattle from free herds	104
Introduction of cattle from B-register herds	105

# Questionnaire to farmers and vets

Replies from farmers 33%, vets 35%

## Farmers

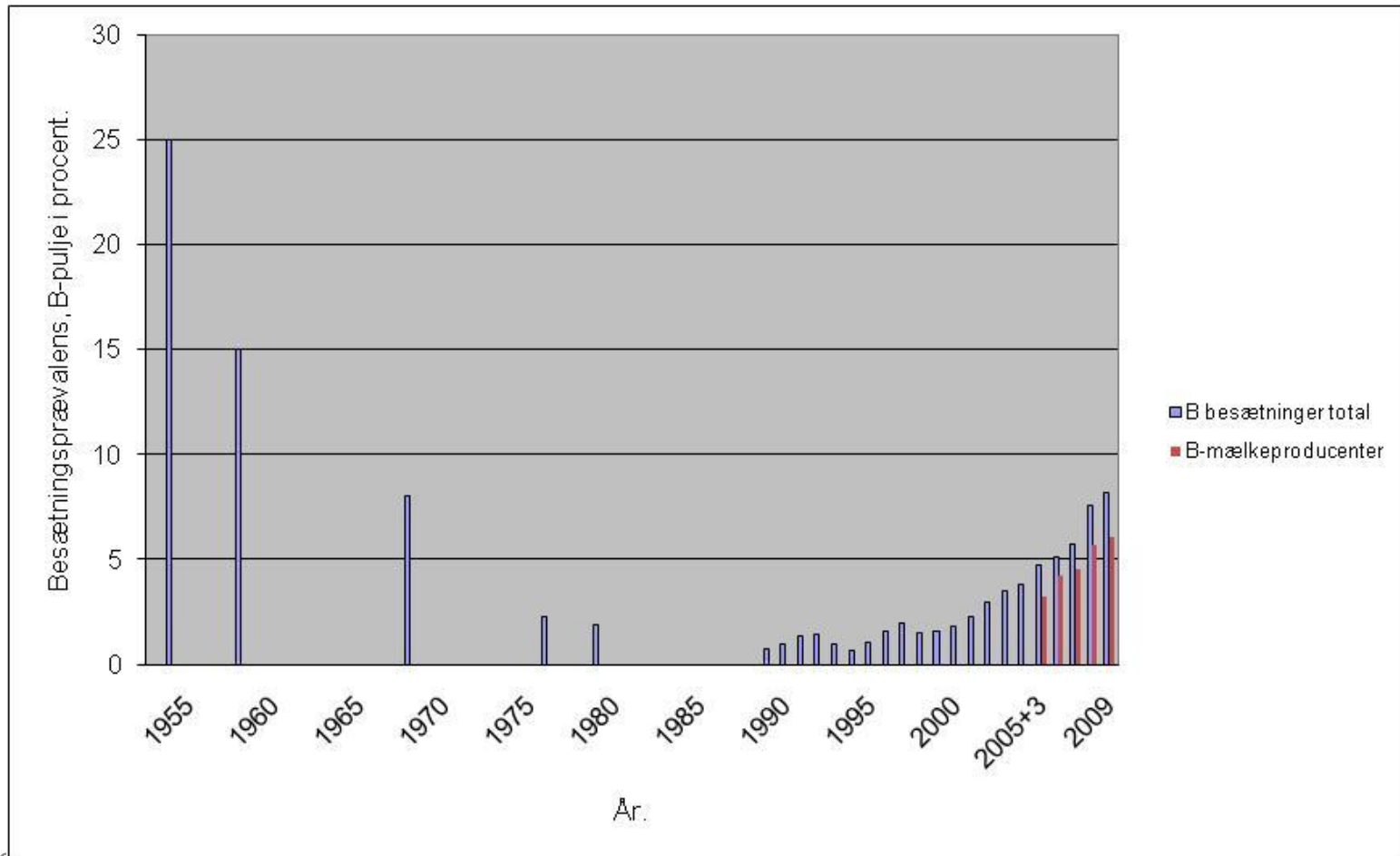
%

Clinical problems	21
Increase in BMSCC	29
No use of PMTP	25

## Veterinarians

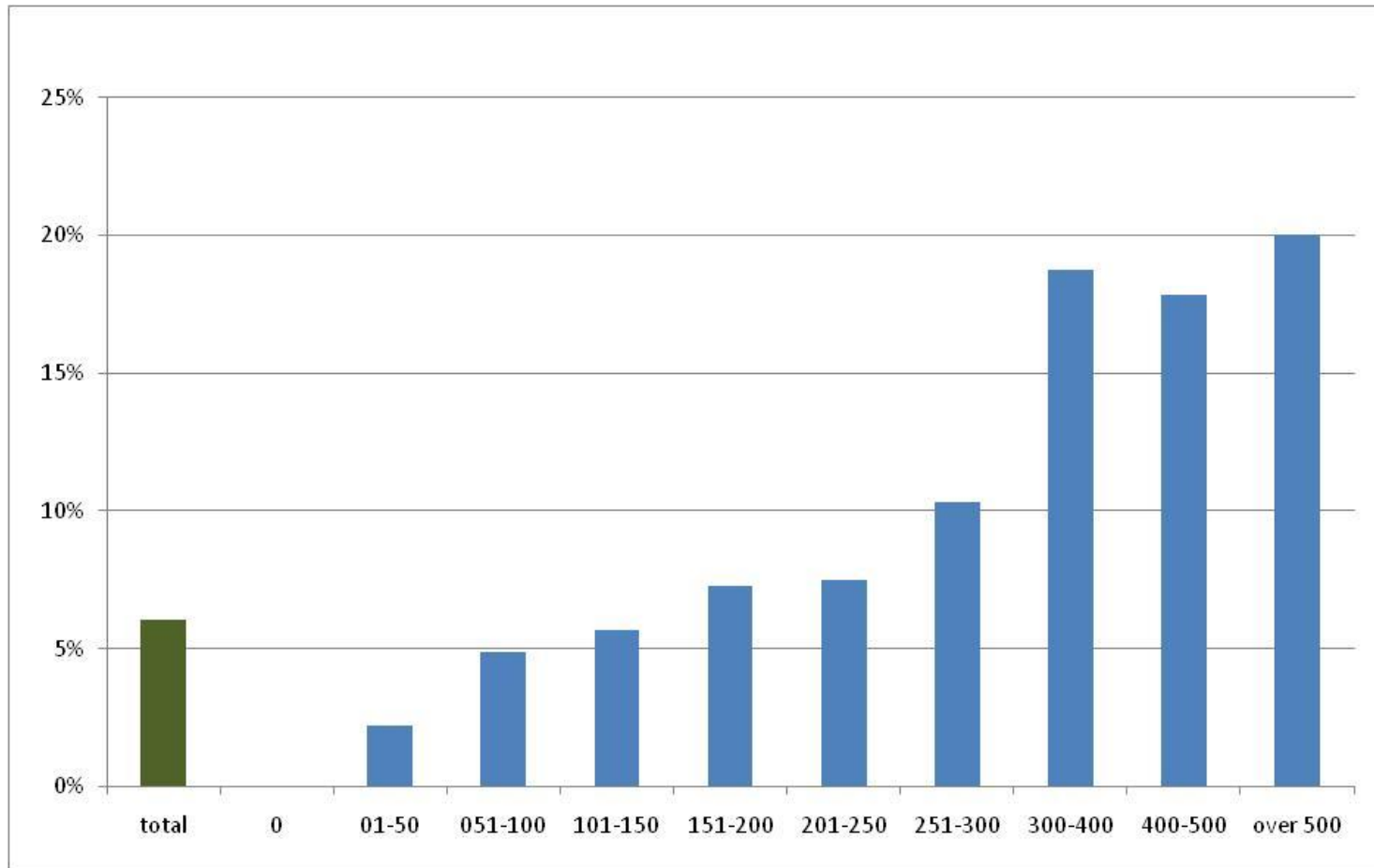
Culture of <i>Str.agalactiae</i> in the herd	22
No use of DCT	26
Eradication programme	12

**Figure 3: Herds in B-register, percentage Denmark 1955 - 2009**

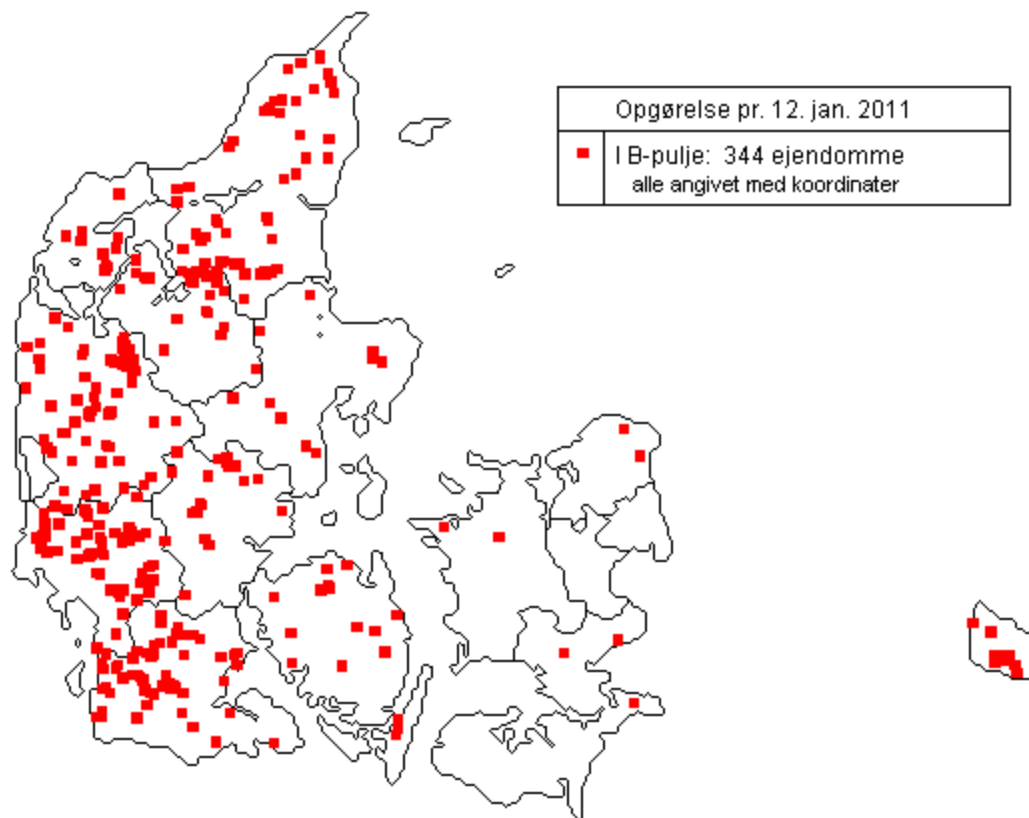


# Milking herds in B-register, percentage

## Relation to herd size DK 2009



## Ejendomme i B-pulje



## Table 3: Herds in B-register, percentage 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%
Conventional	3391	5.7%
Total	4251	6.1%

Data 21 December 2009

# Comparison of PCR and culture

## 4,258 bulk tank samples

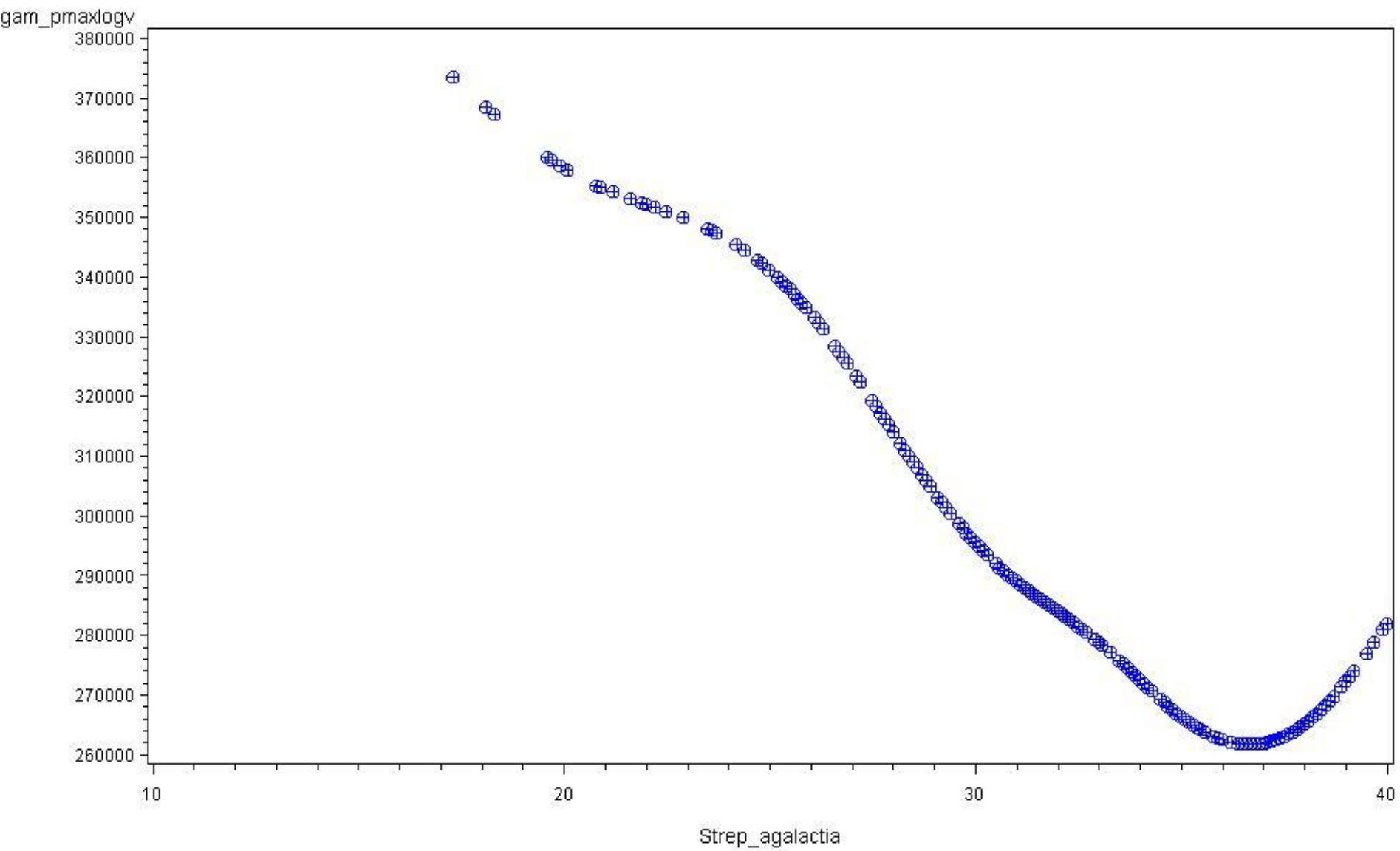
Test for B-strep	PCR	
	Positive	Negative
Culture		
Positive	177 (12)	20*
Negative	133 **(35)	3,928

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

# B-strep maxlogsc





## Table 2: Strep. agalactiae infections in the Nordic countries

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

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

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

Bakteria	% NoCt	Median	Mean rest	± sd
Staf aureus	9	32,4	32,5	2,91
Staf spp	0	29,8	29,8	2,07
Beta-lactam	22	34,8	34,8	2,65
Str. agalactia (B)	93	31,5	31,5	4,80
Str. dys	14	31,6	31,6	3,18
Str. uberis	5	30,3	30,3	3,44
C. bovis	10	33,5	33,7	1,67
Enterococcus	22	33,7	33,6	2,84
E. coli	39	35,8	35,2	3,54
Klebsiella	87	36,5	35,8	3,54
S. macescens	98	37,8	37,0	2,96
A.pyo/P. ind	37	35,7	35,2	2,95

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

lowest Ct value, median and fractil

Bakteria	Lowest	Median	Fraktil 10	Fraktil 25	Fraktil 75	Fraktil 90
Staf aureus	19,5	32,4	28,9	30,5	34,4	36,3
Staf spp	17,7	29,8	27,3	28,6	31,0	32,1
Beta-lactam	22,2	34,8	31,5	33,1	36,6	38,4
Str. agalactia (B)	17,3	31,5	25,7	28,5	35,1	37,9
Str. dys	15,9	31,6	27,7	29,6	33,6	35,6
Str. uberis	13,9	30,3	26,0	28,1	32,4	34,5
C. bovis	24,5	33,5	31,9	32,6	34,5	35,8
Enterococcus	20,8	33,7	30,0	31,9	35,6	37,3
E. coli	17,6	35,8	30,4	33,2	38,1	39,2
Klebsiella	18,9	36,5	31,3	33,7	38,6	39,6
S. macescens	25,4	37,8	33,8	36,4	38,9	39,4
A.pyo/P. ind	18,5	35,7	31,8	33,9	37,2	38,5

# Distribution of bacteria in 30 bulk tank samples from all Faroe Island dairy herds in 2009

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

Bakteria	% NoCt	Median	Mean rest	± sd
Staf aureus	7	33,61	33,61	2,92
Staf spp	0	31,51	31,4	2,56
Beta-lactam	40	36,71	36,35	2,49
Str. agalactia (B)	77	33,45	31,75	2,82
Str. dys	100			
Str. uberis	33	32,28	32,77	1,82
C. bovis	43	34,4	34,9	1,66
Enterococcus	43	36,93	36,59	1,97
E. coli	97	38,72	37,72	-
Klebsiella	97	39,7	39,7	-
S. macescens	100			
A.pyo/P. ind	57	37,31	36,54	2,20

# Culture on composite samples and PCR on yield control samples

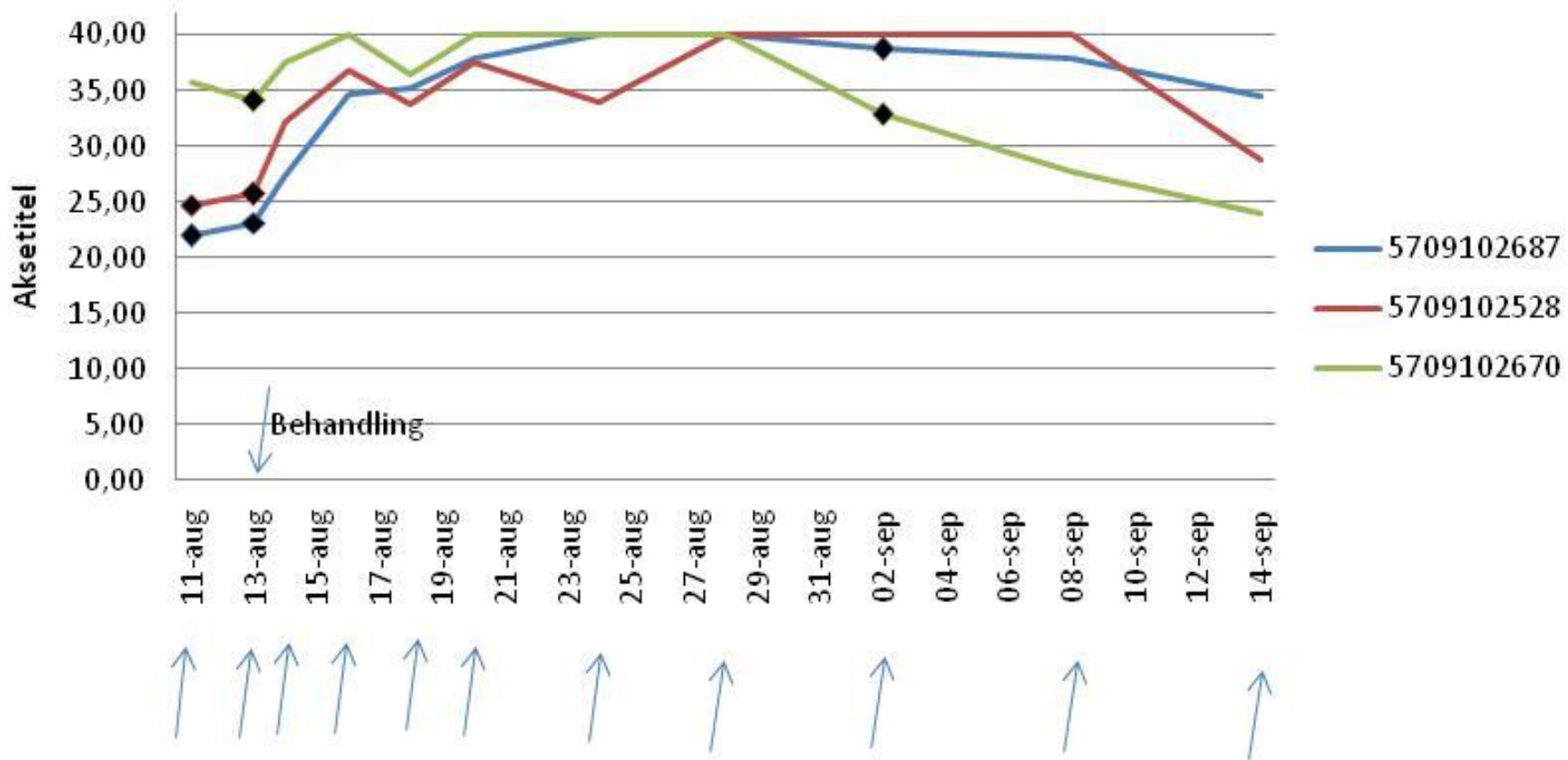
3 herds 442 samples

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

Herd (1) 2513 (3 –NoCt) and 2710 (8 – NoCt)

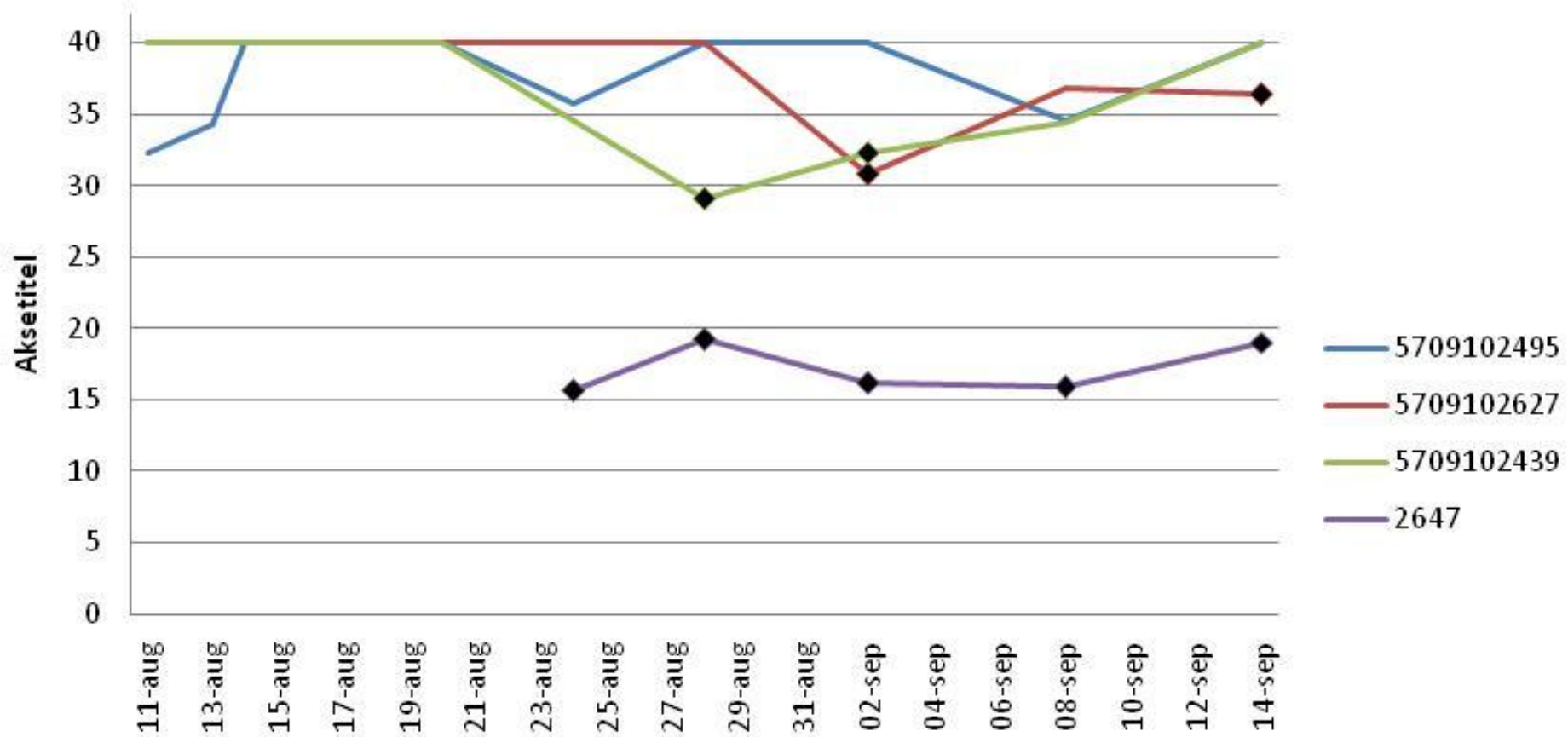
Herd (3) 2322 (2-NoCt), 2316 (20-39,67), 2341 (645-NoCt), 2249 (2-37,45), 2285 (5 – NoCt),  
2478 (32 – 37.11)

# *S. agalactiae* PCR and culture after treatment



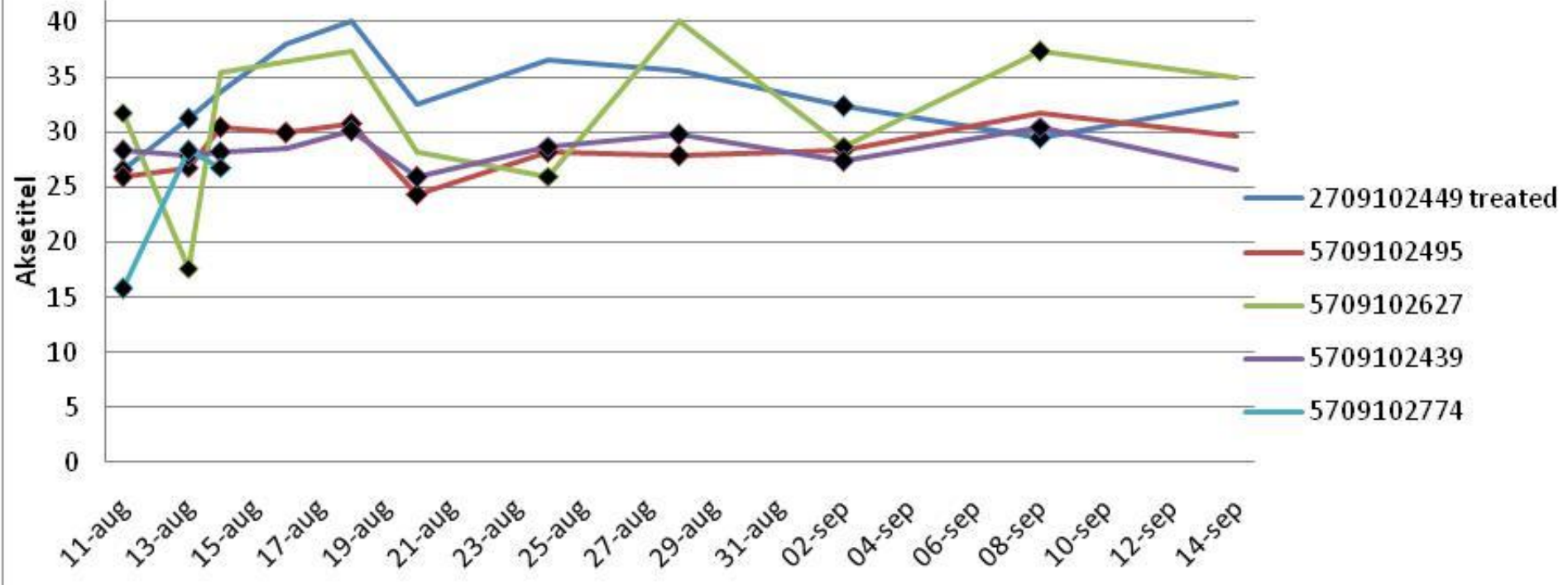
◆ indicates that the sample also were positive in culture

## *S. agalactiae* PCR and culture untreated cows



◆ indicates that the sample also were positive in culture

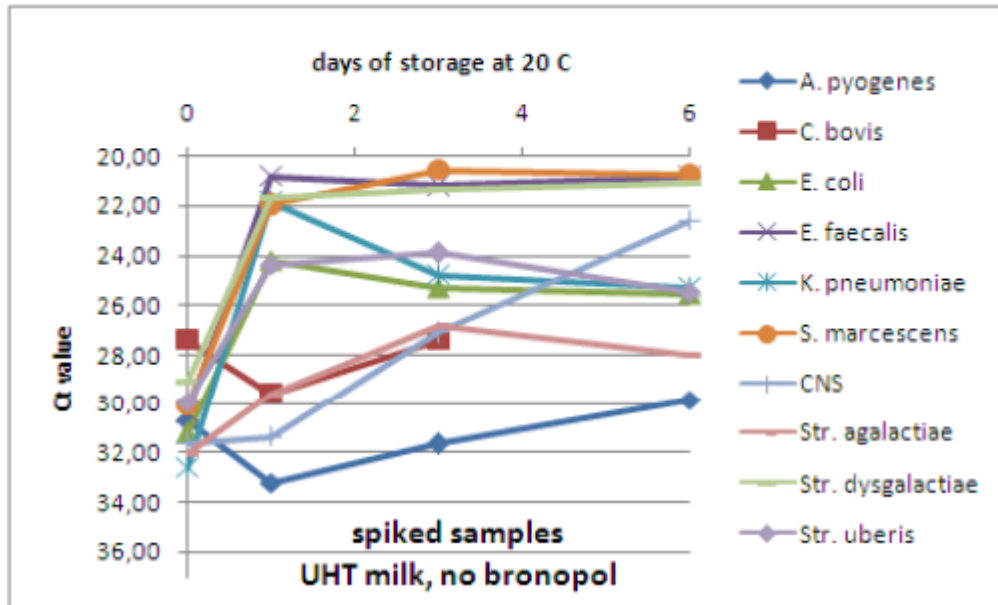
# Staf. aureus PCR and culture treated and untreat cows



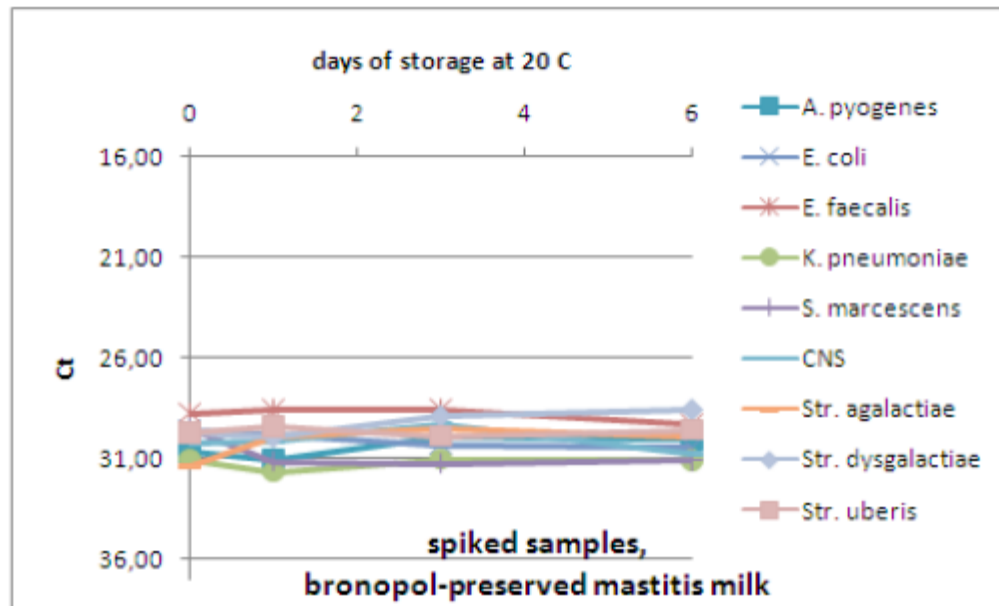
◆ indicates that the sample also were positive in culture



## Bronopol



## Bronopol



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***S. agalactiae***

Prevention of Perinatal Group B Streptococcal disease.

**Group B Streptococcal disease in neonates: A Major Concern**

Group B Streptococcus (GBS) remains a leading cause of infection in industrialized countries.

The early-onset of GBS disease typically occurs in the first 24 hours of life, with fulminant sepsis, pneumonia or meningitis.

Despite intensive supportive care & diagnostic/therapeutic progress, GBS infections are associated with high new born morbidity & mortality.



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**Why is it essential to provide active prevention of GBS for pregnant women?**

# 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)

## Predominant Danish types 25 herds 2008

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