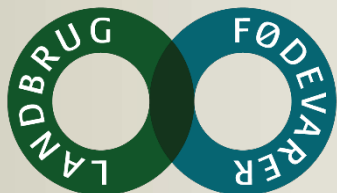




DENMARK – DHI TECHNICAL UPDATE

Uffe Lauritsen

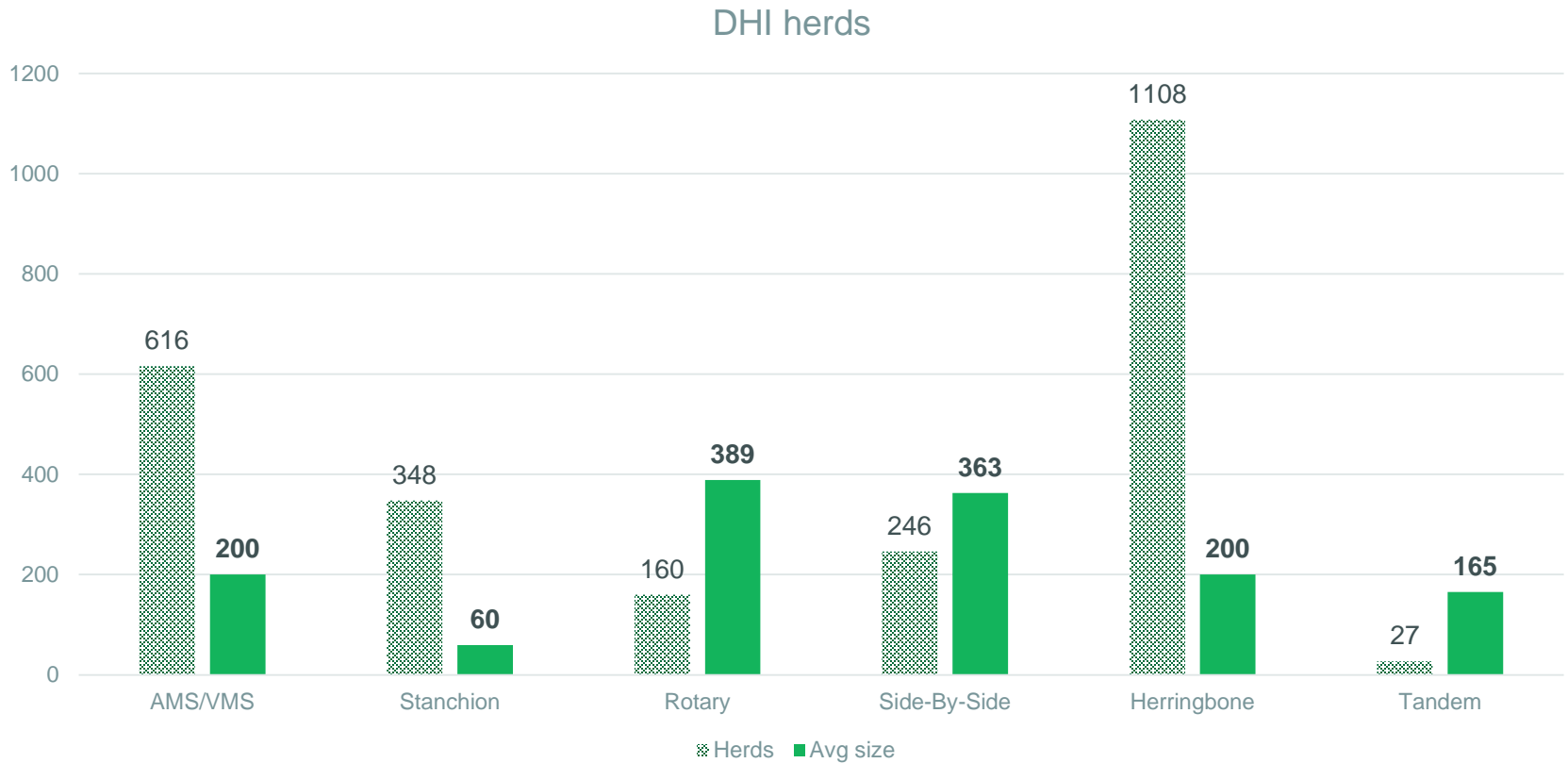
San Diego
March 2019



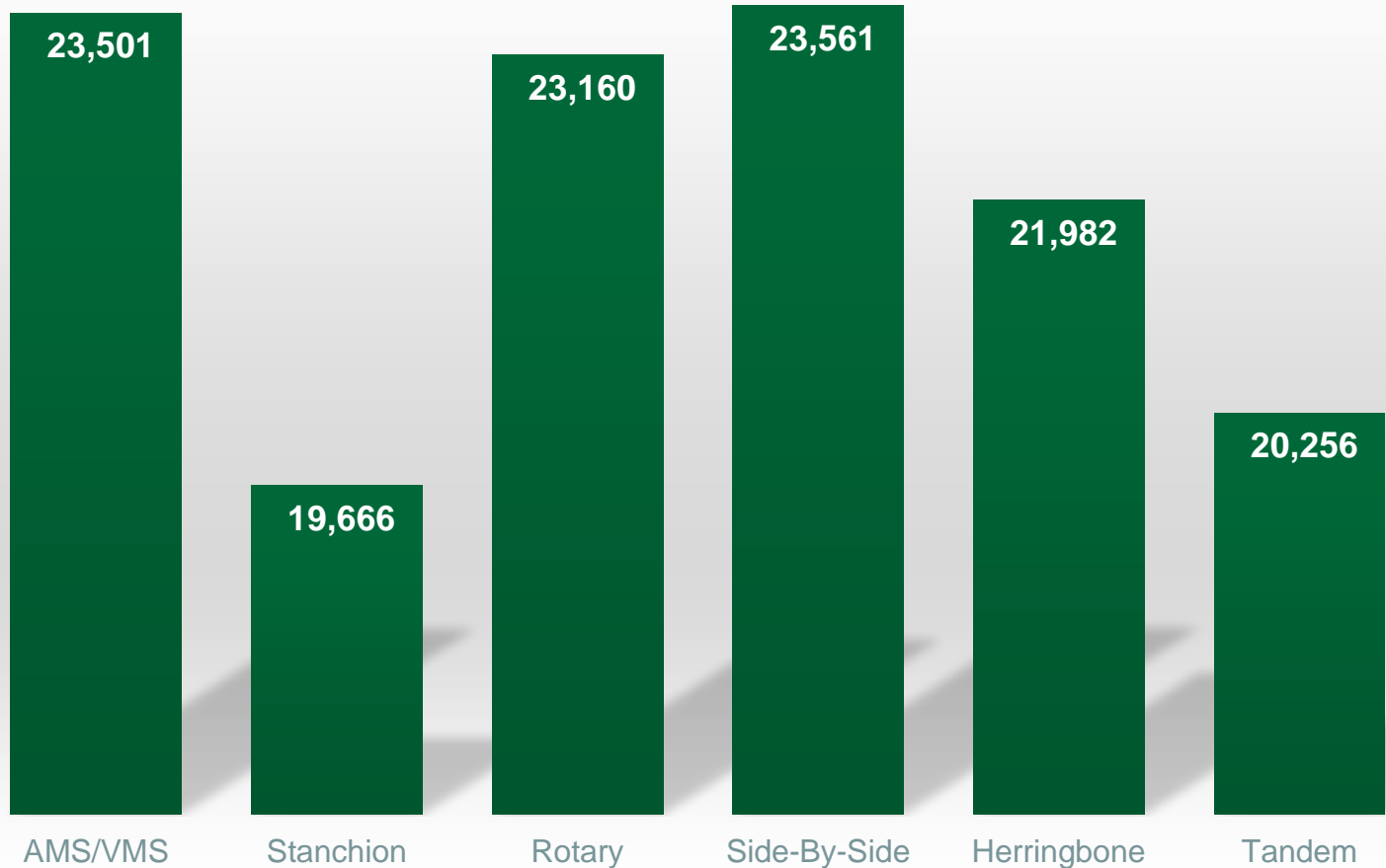
RYK provides milk recording for dairy cows. RYK are collecting annually about 5.5 million milk samples, serves 2,600 dairy farmers, and have a turnover of 15 million euro. We have 65 employees, and offices in Aarhus, Sorø, Holstebro, and Vojens.



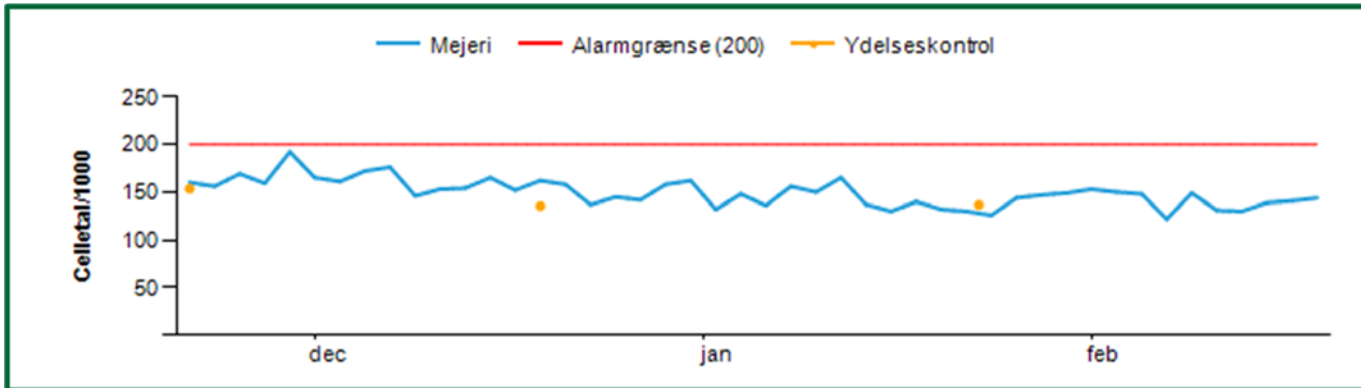
OUR FARMERS AND THEIR HERDS



Production per cow pounds

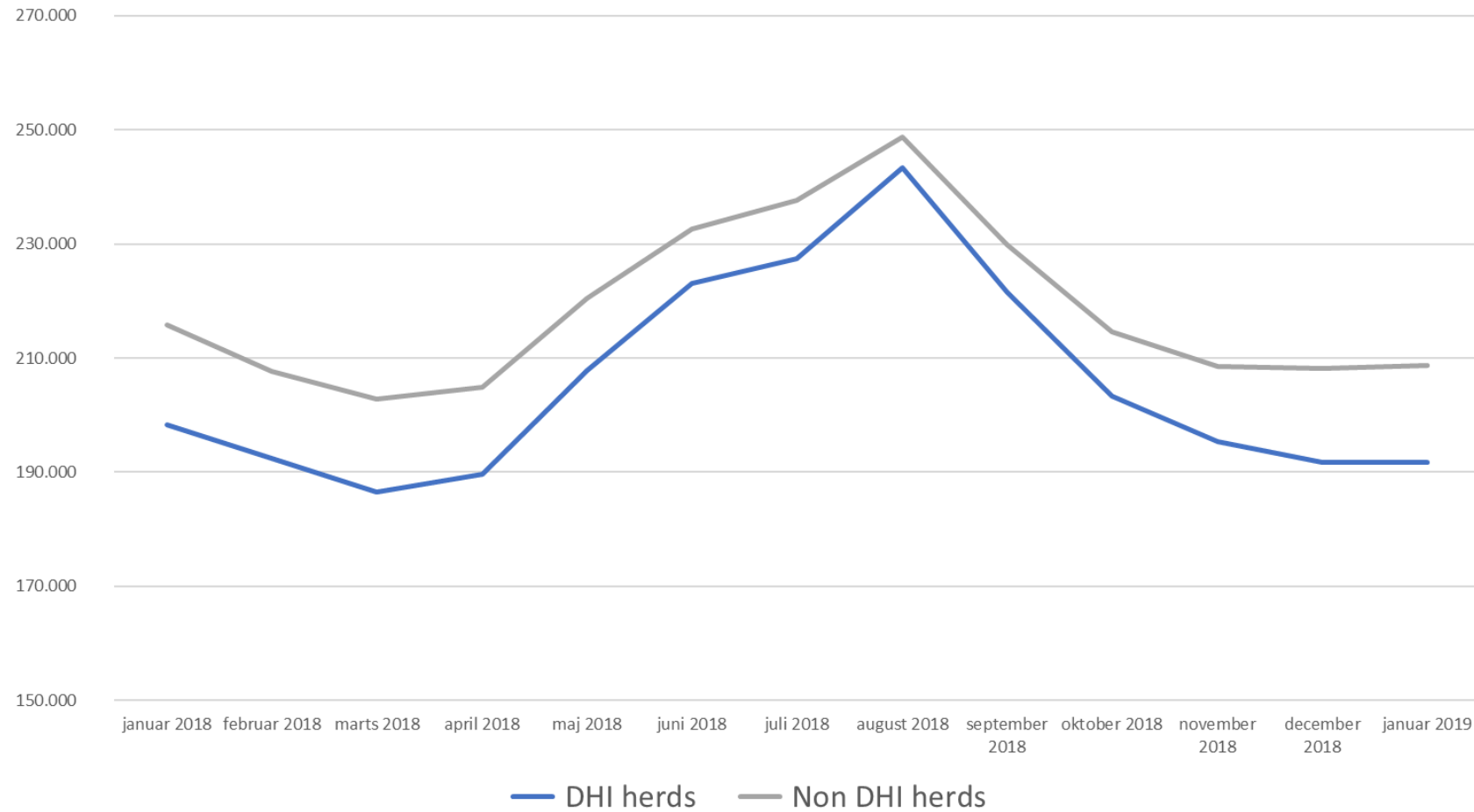


CELL COUNTS



Testday	11/20	12/18	1/22
All cows	153	136	137
-1st lactation	105	55	81
-2nd lactation	110	126	168
Later lactations	237	205	149
Dairy (testday or +/-1)	160	162	130

SCC in bulk milk Denmark, 2018



FOCUS AREAS – THE DAIRY FARM

- Documentation, documentation, documentation
- Increasing number of cows per time unit
- Increasing amount of data
- Larger distance between cows and crucial decisions
- Welldefined responsibilities
- Better precision in data catch

FOCUS AREAS TO FOLLOW - DHI

- Catch a representative milk sample
- Milkweights
- Data quality
- Cow ID
- Speed
- Data transfer
- Equipment for milk weights and sampling
- Maintenance and cleaning
- Staff, recruitment and education





CARRY OVER FIXED METERS – **PRELIMINARY RESULTS**



Double 8 parlor

DeLaval MM25 meters

Tracked per milking point

2 sets of samples

Sampled by 2 technicians, one per set of samples

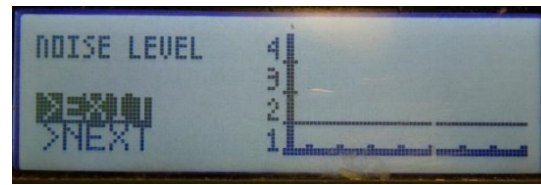
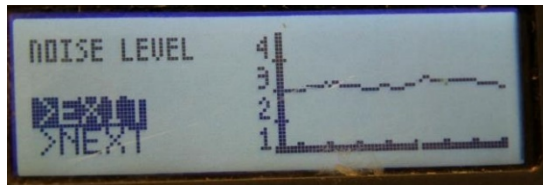
Carry over is calculated to 2,5 %



CARRY OVER – *PRELIMINARY RESULTS*

Point of sampling	Level
Shuttle-B sampling	2,14 %
Sampling after robot – 1	1,98 %
Sampling after robot – 2	2,16 %





ELECTRONIC NOISE

PROCESS FOR MILK RECORDING- RYK



Monday

Delivery of equipment
(Supervised or DIY test)

Tuesday

Pick up equipment and samples
Validate data
Correct data
Prepare samples for shipment
Push data

Wednesday

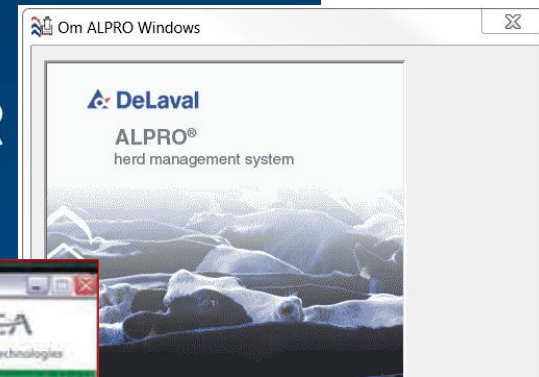
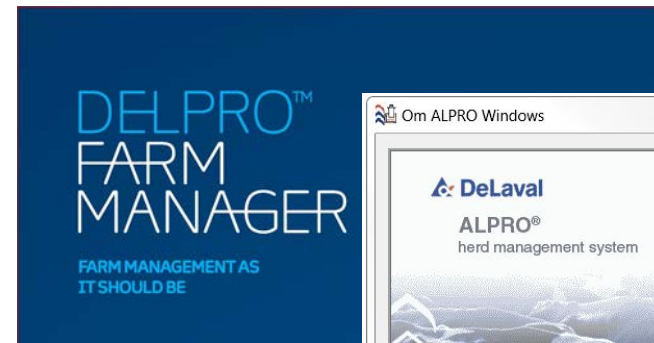
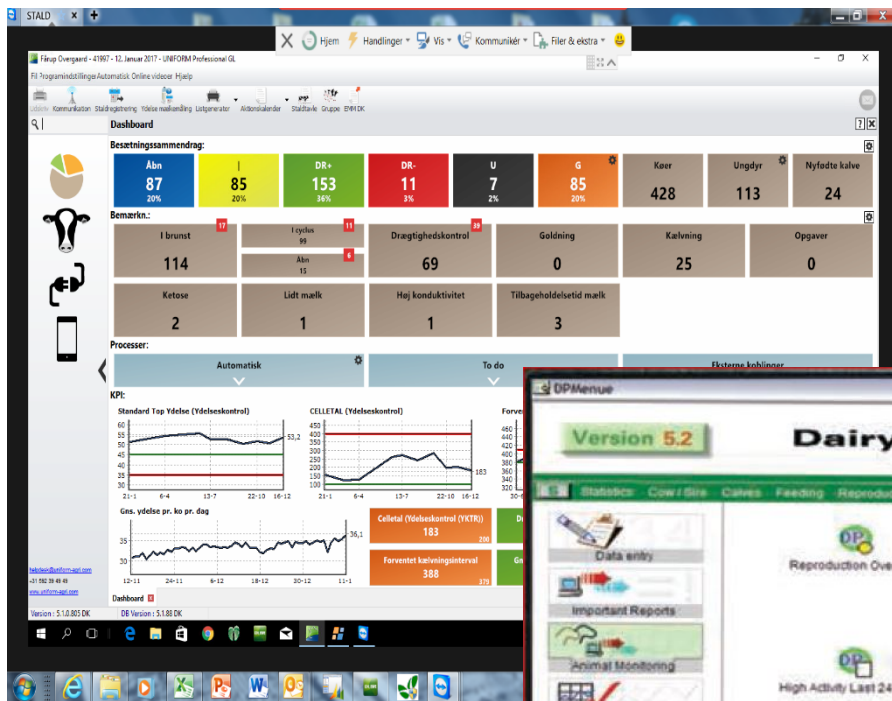
Samples arrive at lab
Analyze
Receive results

Thursday

Receive results
Check results
Reports to farm

DATA CAPTURE SOFTWARE

Many versions of Herd Management systems



ALPRO Windows 7.2
Database version: 7.2
Compiled Feb 6 2013 13:41:38
Copyright © 1998 - 2011 DeLaval
<http://www.delaval.com>

OK



IDENTIFICATION



- Correct ID is key to valuable data



TESTDAY – CHALLENGES ON COW ID

01523203852	9,95	1	AD;34;19;04320315940M;4632051;0;0080;0000;00;00;115247;115247;0;x
01523203852	15,62	2	AD;34;20;04320315482M;4632066;0;0080;0000;00;00;115249;115249;0;x
01523203852	14,03	3	AD;34;21;05213904286M;4632069;0;0080;0000;00;00;115253;115253;0;x
01523203892	11,49	1	
01523203892	12,29	2	
01523203892	15,70	3	
01523203911	14,09	1	----- Prøveudtagning: 14-12-2018 05:15:26 - 14-12-2018 12:03:53 Antal prøver: 1166 -----
01523203911	11,65	2	
01523203911	18,04	3	PC Malkninger: 13-12-2018 05:15:26 - 13-12-2018 11:54:43 Køer malket : 1143 13-12-2018 13:16:48 - 13-12-2018 18:50:57 Køer malket : 1146 M 13-12-2018 21:14:31 - 14-12-2018 02:58:17 Køer malket : 1150 M 14-12-2018 05:23:05 - 14-12-2018 12:03:53 Køer malket : 1160 MP
01523204074	8,93	1	
01523204074	12,46	2	
01523204074	11,46	3	
01523204091	8,32	1	
01523204091	15,28	2	
01523204091	15,09	3	
01523204102	16,28	1	

04106901238	21,92	1	AD;25;12;04730102678M;4141043;0;0080;0000;00;00;182742;182742;0;x
04106901238	20,45	2	AD;25;13;03929002084M;4141040;0;0080;0000;00;00;182743;182743;0;x
04106901248	21,00	1	
04106901248	21,55	2	
04106901261	20,27	1	
04106901261	14,36	2	----- Prøveudtagning: 05-12-2018 14:55:00 - 05-12-2018 19:47:00 Antal prøver: 373 -----
04106901273	13,22	1	
04106901273	14,70	2	PC Malkninger: 04-12-2018 02:43:25 - 04-12-2018 07:02:57 Køer malket : 356 04-12-2018 14:55:00 - 04-12-2018 19:47:00 Køer malket : 383 05-12-2018 02:40:00 - 05-12-2018 07:04:07 Køer malket : 335 05-12-2018 14:55:00 - 05-12-2018 19:46:00 Køer malket : 367 MP 06-12-2018 02:38:00 - 06-12-2018 07:04:06 Køer malket : 328 M
04106901280	14,52	1	
04106901280	17,05	2	
04106901281	12,23	1	
04106901281	19,06	2	
04106901283	21,40	1	
04106901283	21,07	2	
04683501686	21,47	1	
04683501686	19,09	2	

TESTDAY – MALFUNCTION OF ANTENNA

K02 information. <Ydelses fejl> <Stregkode fejl> <Malknings fejl> (57)

CKR	Ydelse	Prøveglas	Position	Start tid
05170	0,00	4777160	0	08:31:50
05411	0,00	4752901	0	08:08:25
05430	0,00	4754029	0	05:59:35
05625	0,00		0	00:00:00
05710	0,00	4777154	0	08:42:09
05712	0,00	4777178	0	08:33:45
05781	0,00	4753197	0	08:37:36
05965	0,00	4777145	0	08:28:59
06016	0,00	4754061	0	08:35:13
06036	0,00	4754052	0	08:24:57
06108	0,00	4754055	0	08:21:11
06271	0,00	4862684	0	06:53:10
06305	0,00	4874909	0	08:05:14
06325	0,00	4753176	0	08:19:08
06330	0,00	4753188	0	08:27:21
06360	0,00	4753185	0	08:26:41
06371	0,00	4754367	0	07:36:13
06375	0,00		0	00:00:00
06380	0,00		0	00:00:00
06380	0,00		0	00:00:00
06432	0,00		0	00:00:00
06432	0,00		0	00:00:00
06444	0,00	4792913	0	06:08:44
06446	0,00	4793765	0	08:34:36
06462	0,00		0	00:00:00
06462	0,00	4875044	0	05:54:04
06536	0,00		0	00:00:00
06554	0,00	4875047	0	05:55:23
06605	0,00	4753170	0	08:25:39
06626	0,00	4820656	0	06:51:21
06714	0,00		0	00:00:00



CKR	Prøveglass				Malkning-M3 (Prøveudtagning)				Malkning-M2				Malkning-M1	
	Stregkode	Dato	Tid	Position	Ydelse	Dato	Tid	Position	Ydelse	Dato	Tid	Position	Ydelse	Dato
5170	4777150	24-01-2019	08:31:50		23	23-01-2019	07:11:04	2	22	23-01-2019	23:28:35	2	14	23-01-20
J5411	4752901	24-01-2019	08:08:25		19	23-01-2019	05:49:12	20	22	23-01-2019	23:33:55	14	15	23-01-20
05430	4754029	30-12-1899	05:59:35		16	20-01-2019	07:07:26	3	16	19-01-2019	22:11:28	14	6	20-01-20
05625	4820641	24-01-2019	06:50:32		14	24-01-2019	06:39:47	22	13	22-01-2019	21:41:13	4	12	23-01-20
05710	4777154	30-12-1899	08:42:09		9	20-01-2019	08:23:19	14	8	20-01-2019	23:18:25	11	6	20-01-20
05712	4777170	24-01-2019	08:33:45		10	23-01-2019	07:31:59	1	10	23-01-2019	23:33:01	11	8	23-01-20
05781	4753197	24-01-2019	08:37:36		13	23-01-2019	07:35:31	9	13	23-01-2019	23:32:28	9	9	23-01-20
05965	4777145	24-01-2019	08:28:59		13	23-01-2019	05:54:48	5	10	23-01-2019	23:02:23	6	15	23-01-20
06016	4754061	24-01-2019	08:35:13		12	23-01-2019	07:36:05	11	10	23-01-2019	22:14:45	14	7	23-01-20
06036	4754052	24-01-2019	08:24:57		14	23-01-2019	07:17:17	11	14	23-01-2019	23:29:07	4	13	23-01-20
06108	4754055	30-12-1899	08:21:11		10	18-01-2019	07:22:55	4	10	17-01-2019	22:03:28	3	9	18-01-20
06271	4862684	30-12-1899	06:53:10		15	22-01-2019	05:36:26	18	16	21-01-2019	21:24:33	22	15	21-01-20
06305	4874909	24-01-2019	08:05:14		15	23-01-2019	07:23:31	15	11	23-01-2019	22:56:02	16	8	23-01-20
06325	4753176	24-01-2019	08:19:08		11	23-01-2019	06:52:34	16	14	23-01-2019	23:13:04	17	9	23-01-20
06330	4753188	24-01-2019	08:27:21		10	23-01-2019	07:32:50	4	12	23-01-2019	23:29:18	5	13	23-01-20
06360	4753185	24-01-2019	08:26:41		11	23-01-2019	07:16:19	8	14	23-01-2019	23:21:50	13	7	23-01-20
06375	4811306	24-01-2019	06:44:25		16	24-01-2019	06:33:06	15	12	22-01-2019	21:43:29	10	14	23-01-20
06380	4811349	24-01-2019	07:07:54		2	24-01-2019	06:57:26	9	4	19-01-2019	21:33:25	15	12	22-01-20
06432	4753513	24-01-2019	07:22:55		4	24-01-2019	07:07:47	6	8	19-01-2019	22:37:11	9	10	22-01-20
06444	4792913	30-12-1899	06:08:44		18	23-01-2019	05:13:11	18	13	21-01-2019	21:40:51	14	11	22-01-20
06446	4753185	24-01-2019	08:26:41		10	21-01-2019	07:20:37	10	10	23-01-2019	23:15:20	2	9	23-01-20
06536	4753145	24-01-2019	08:31:25		15	24-01-2019	06:19:11	19	13	23-01-2019	22:26:17	11	13	22-01-20
06605	4753170	24-01-2019	08:25:39		12	23-01-2019	07:04:10	14	13	23-01-2019	23:26:00	20	12	23-01-20
06626	4753185	24-01-2019	08:26:41		14	23-01-2019	05:40:08	20	13	23-01-2019	22:07:40	22	13	23-01-20
06714	4753185	24-01-2019	08:26:41		13	23-01-2019	06:08:34	7	14	23-01-2019	21:34:01	15	15	23-01-20
06729	4753203	24-01-2019	08:28:24		14	23-01-2019	06:21:27	1	17	23-01-2019	22:32:48	1	10	23-01-20
06740	4874444	24-01-2019	07:11:25		15	23-01-2019	06:10:11	13	10	23-01-2019	21:36:56	19	12	23-01-20
06758	4777166	24-01-2019	08:13:03		9	23-01-2019	07:15:59	7	9	23-01-2019	23:23:28	16	8	23-01-20
06761	4777172	24-01-2019	09:20:05		17	23-01-2019	07:15:28	5	18	23-01-2019	23:33:37	13	11	23-01-20
06809	4753182	24-01-2019	08:36:48		12	23-01-2019	06:49:36	10	13	23-01-2019	22:53:09	9	14	23-01-20
06811	4753185	24-01-2019	08:26:41		13	24-01-2019	05:43:51	8	10	22-01-2019	22:41:43	17	8	23-01-20
06847	4777163	24-01-2019	08:32:47		8	23-01-2019	06:59:27	4	7	23-01-2019	23:20:47	10	8	23-01-20
06873	4753185	24-01-2019	08:19:50		14	23-01-2019	07:11:15	3	14	23-01-2019	23:31:54	7	14	23-01-20
06917	4753200	24-01-2019	08:28:40		6	23-01-2019	06:05:10	19	10	23-01-2019	22:52:00	8	10	23-01-20
06921	4753176	24-01-2019	08:27:06		15	23-01-2019	08:20:31	14	13	22-01-2019	23:59:18	19	11	23-01-20
06936	4777151	24-01-2019	08:13:35		10	23-01-2019	07:32:12	2	10	23-01-2019	23:13:49	20	7	23-01-20
06942	4753185	24-01-2019	08:11:55		13	23-01-2019	06:56:59	2	10	23-01-2019	23:15:54	4	12	23-01-20
06971	4753185	24-01-2019	08:26:41		8	23-01-2019	08:00:23	12	8	23-01-2019	23:44:53	22	9	23-01-20
06982	4752898	24-01-2019	08:08:50		27	23-01-2019	07:23:47	16	13	23-01-2019	22:09:57	6	11	23-01-20
06992	4777169	24-01-2019	08:12:21		11	23-01-2019	06:06:04	20	16	23-01-2019	23:14:42	1	10	23-01-20
07015	5782946	24-01-2019	09:42:35		8	24-01-2019	09:28:24	18	8	24-01-2019	08:01:12	2	6	22-01-20
07105	4818886	24-01-2019	10:09:05		9	24-01-2019	09:58:08	19	7	22-01-2019	23:45:30	17	7	22-01-20
07198	4925	NDHIA ANNUAL MEETING 2019			10	23-01-2019	08:36:19	2	12	24-01-2019	08:38:00	1	11	23-01-20

NO ID - HOW TO RESTORE

- Milk yield is in the file from a previous day
- Yellow fields – restored data
- No loss of data to match samples

ANALYSIS OF UREA IN MILK

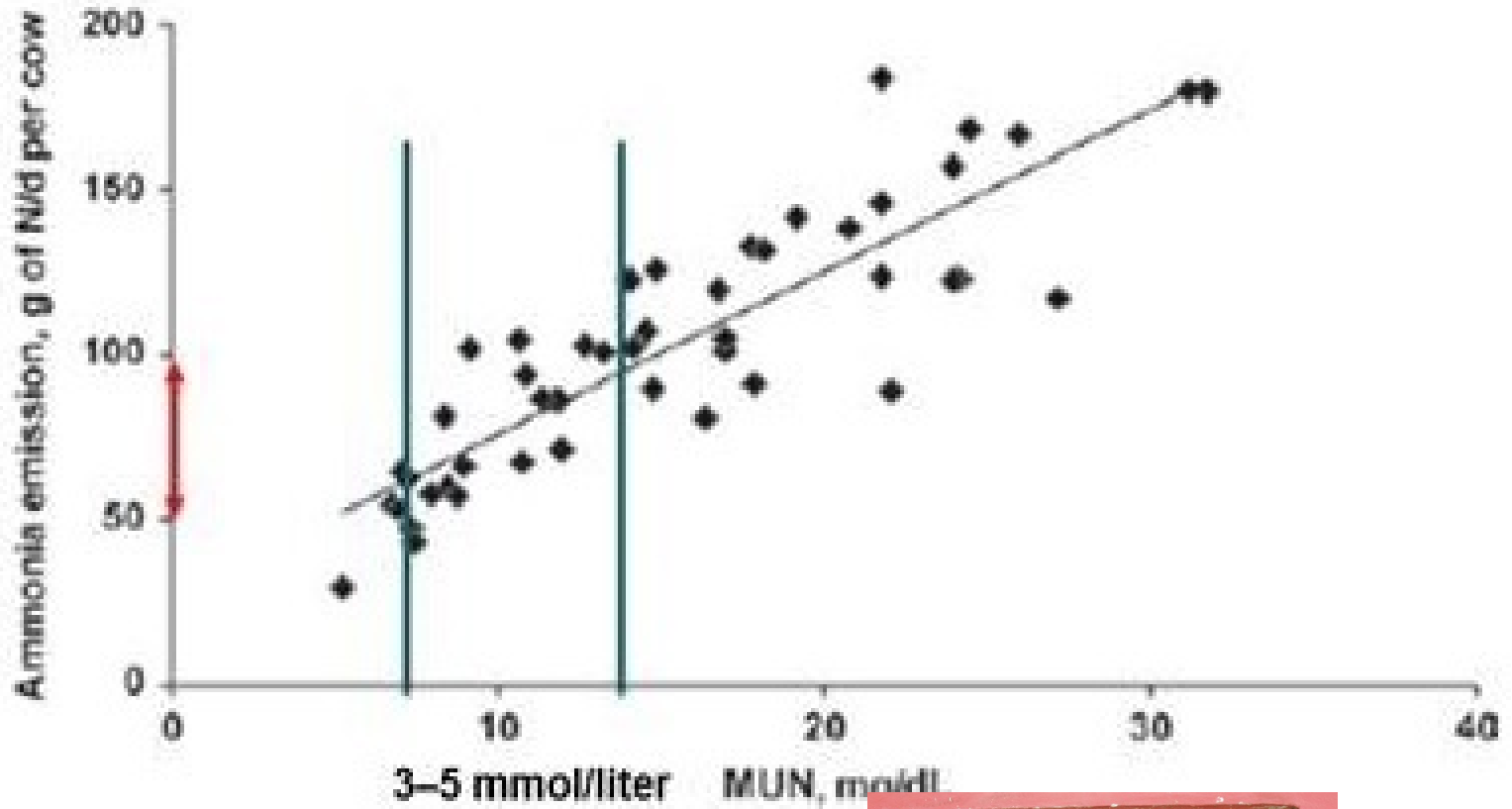
- The Danish Agriculture & Food Council encourage farmers to lower N emmision.
- Milk samples is an important tool to support this
- DHI is a natural way to collect valuable data



ANALYSIS OF UREA IN MILK

- Urea in milk is a way to measure the protein utilization
- If we can bring down the level of MUN then the N emission from the Danish farms can be lower
- Lower emission supports public acceptance of dairy farming





**HIGH LEVEL OF MUN
IN THE MILK GIVES
HIGH AMMONIA
EMISSION**





ANALYSIS OF FATTY ACID IN MILK

- Project FA data collection 2015-2016
- Report published 2016
- Full part of DHI samples from January 2019
- Fatty acid as a reference to feeding and cow welfare
- Rumen function is reflected in composition of fatty acids
- Fatty acids is a tool to monitor feeding

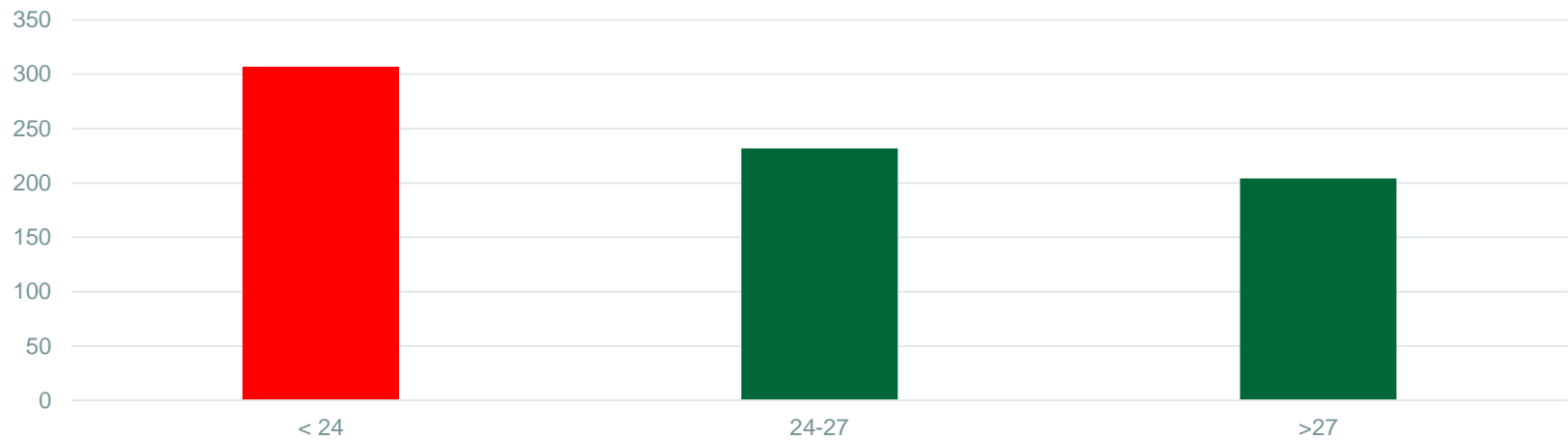
FATTY ACID

- Inspired by Dr. Barbanos work about fatty acid as a indicator for rumen health
- Danish data from SOB cow project find limit for level of de novo fatty acid in danish condition
- 24 g de novo fatty acid / 100 g fat for Holstein
- 28 g de novo fatty acid / 100 g fat for Jersey



THE LOWER LEVEL OF DE NOVO FATTY ACID, THE HIGHER SOMATIC CELL COUNT

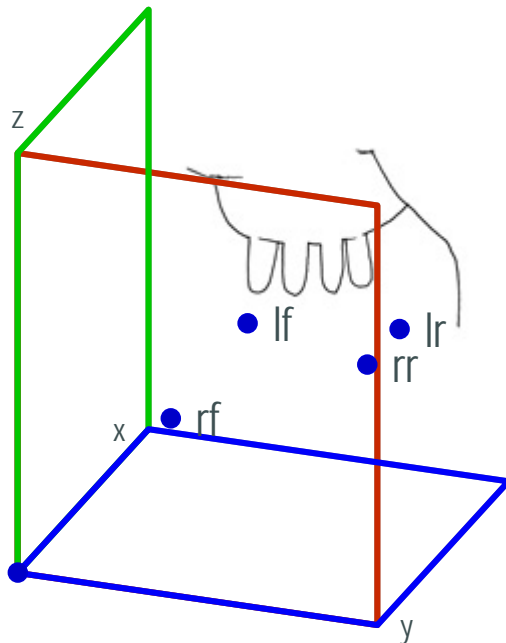
Holstein 2nd lactation, SCC



UDDER CONFORMATION

- **Udder conformation is already evaluated**
 - Classified by experienced classifiers
- **115,000 Danish cows are classified per year**
 - The majority of the cows are 1st parity cows
- **Information on teat co-ordinates in genetic evaluation is in place**

UDDER CONFORMATION BY TEAT COORDINATES



- Front teat placement
- Rear teat placement
- Distance, front - rear
- Udder balance
- Udder depth, tip of the teat - measuring point



SUMMARY

- Milk sampling is our nerve
- Milk sample is our key product
- Data is next to come
- Dealing with cow ID is a challenge
- Sensors are slowly moving in





**THANKS FOR
YOUR ATTENTION**
