

Presentation of a unique and very flexible Benchmarking system; “Key Indicators Check”

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Introduction

The economic situation makes a lot of dairy farmer's dependent on close cooperation to lent money. The increased size of herds demands more decision support tools, since the manager lose overview because he has not the detailed information on the single animals. These conditions demands specific tools to benchmark if the production is on the right track.

Knowledge Center for Agriculture in Denmark – owned by the farmer's organizations – has a long tradition for developing decisions support tools for the farmer and his advisors. One of these systems is Key Indicator Check, which is a very flexible benchmarking system build as an application connected to the huge cattle database system in Denmark.

The tool

Key Point indicators Check is a system of key figures calculated from the Danish Cattle Database. In the database we have a very solid data background. Data are delivered from very many sources around the dairy production:

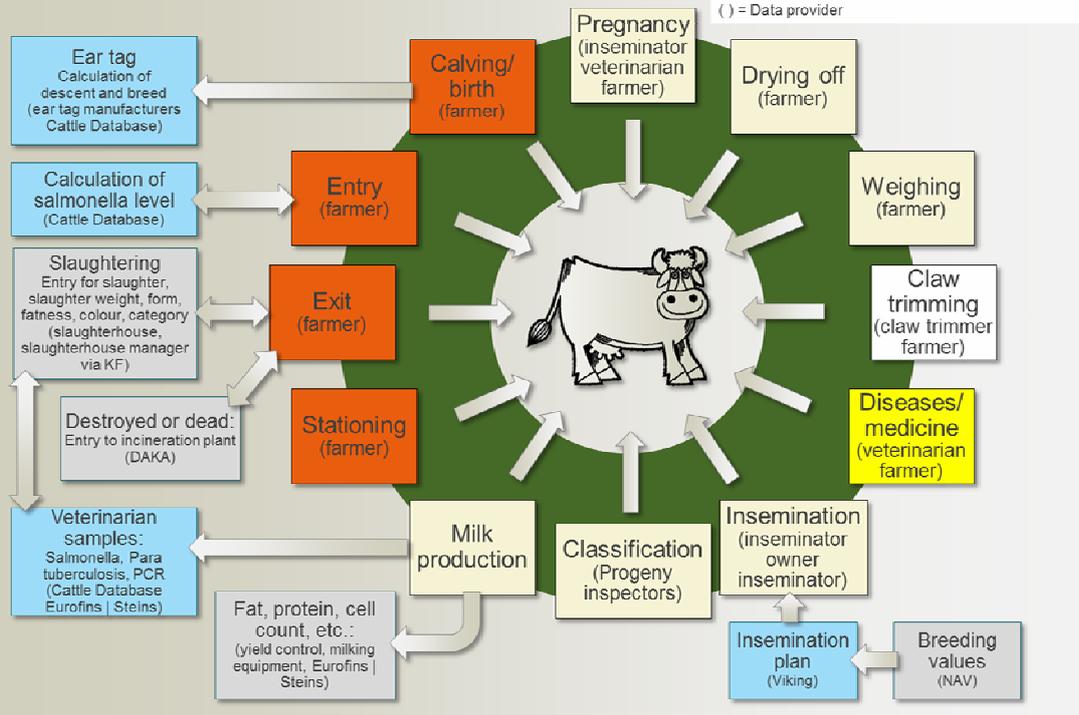
- Mandatory recordings
- Voluntary recordings
- Recordings from service suppliers (AI, vets etc.)
- Dairies
- Slaughter houses
- Etc.

In the following figures we have tried to illustrate data sources, and how the directly and indirectly deliver data to the Danish Cattle database. The illustrations are split into the two areas; single animal level and herd level:

Data in the Danish Cattle Database - single animals

Red = Data required by law
 Yellow = Registration must be available at control
 Grey boxes = Via the IT-system of external partners
 Blue boxes = Calculated via data in the Danish Cattle Database

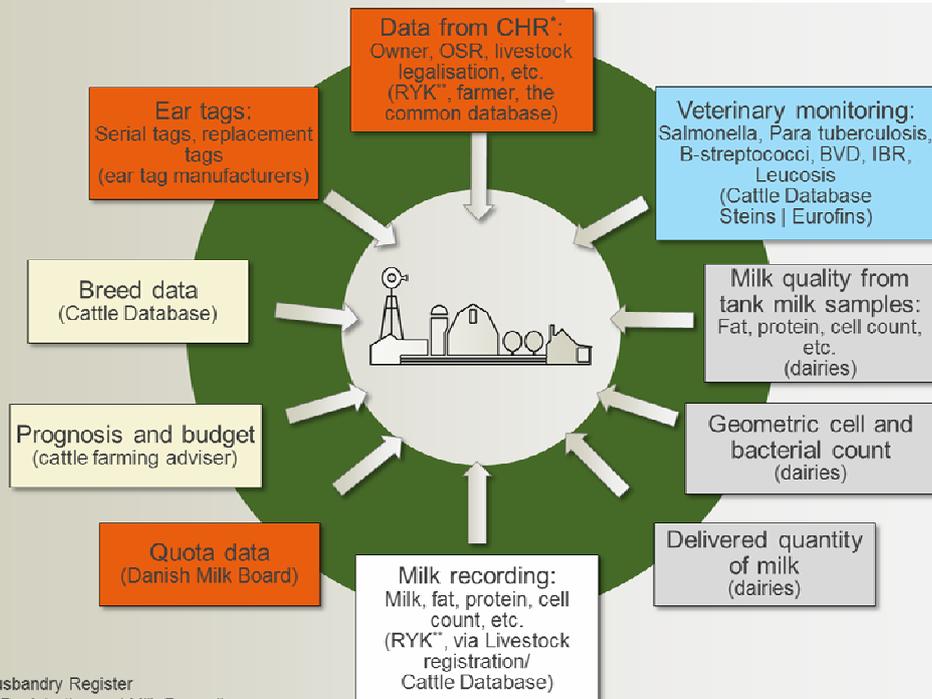
() = Data provider



Data in the Danish Cattle Database - herd

Red = Data required by law
 Grey boxes = Via the IT-system of external partners
 Blue boxes = Calculated via data in the Danish Cattle Database

() = Data provider



*CHR = Central Husbandry Register

**RYK = Livestock Registration and Milk Recording

These data are aggregated in simple and complex algorithms to a whole lot of different key figures for different kind of application and reports. One of the main applications is Key Indicator Check. The system was released in 2001 with 25 key figures and is developed over time and contains today more than 300 key figures. The farmer can benchmark the figures of the herd to a selected group of herds, the herds result from last year and goals for the figures. The selected group can be set up from total free flexibility; herd size, milk production, reproduction, Breed, Production system, yes in principle all key figures in the system.

The system has a set of default of benchmarking methods, and the user can set up the farmers own designed methods in addition. As a special part of the system the farmer or his advisor can upload economic figures and Benchmark to other farms joining this special part.

Key Indicators Check is used heavily by both famers and advisors.

The Benchmarking system

4 different types of check types

- Benchmarking
- Quantile or percentile analysis
- Focus herds
- Benchmarking within a group of farmers – experience groups

20 standard methods

- Yield
- Breeding
- Economy
- Health
- Welfare
- Feeding

Examples of Benchmarking

In the following different examples of Benchmarking are shown

To set up the Benchmarking the following has to be considered:

Criteria for comparison group

- Free choice of criteria on whatever key figure; which and how many
- Breed, Yield, Cell count - whatever

Choosing the Key figures

- Free choice whatever key figure; which and how many

Selection of the best of the comparison group

- Number or percentage
- Setting the figure (min. 5 herds)

Other setting

- Reference period
- Goals

This is already done in the standard methods, but can be changed.

Statement

Herd number: xxxxx
 Breed: HF
 Period: 01-05-2011 - 30-04-2012
 Reference: 01-05-2010 - 30-04-2011

Benchmarking
Herds in control group

Criteria
 Breed = HF
 Farm type = Dairy cattle farmer

*Best determined ECM per cow

Dairy cows
Herd
Control group (3.634)

Livestock turnover	Unit	Goal	Achieved	Changed ref.	Avg. 5% best*	Avg. All
Number of animals per year	Number		133,3	5,9	182,2	145,9
Milk production						
ECM per cw (milk recording)	Kg		10.500	256	11.497	9.210
Percentage of fat, dairy	Per cent		4,18	0,00	4,04	4,21
Percentage of proteine, dairy	Per cent		3,36	0,05	3,35	3,44
Urea count, dairy			4,0	-0,3	4,3	4,3
Udder health						
Cell count, dairy	*1000	200	143	-30	202	243
Cell count, milk recording	*1000		171	-71	235	284
Spores, dairy	Pcs		121	58	191	551
Meat production						
Classification cows			2,3	-0,3	2,5	2,5
Percentage of cows with obesity < 3	Per cent		68	17	49	50
Reproduction						
Percentage pregnant of commenced	Per cent		63	-1	58	54
Age 1st calving	Mdr.		26,9	-0,3	25,2	26,3
Spread, age 1st calving	Mdr.		1,6	-0,1	2,0	2,5
Health						
Total diseases per animal per year	Pcs		1,95	0,60	1,36	1,05
Mastitis per yearcow	Pcs		0,62	-0,01	0,37	0,34
Dead cows, percentage.	Per cent		5,3	-0,2	3,8	5,1
Stillborn calves, percentage	Per cent		6,3	-0,7	6,4	6,3
Dead calves, 1-180 days	Pcs		7	-6	7	9
Dead calves, 1-14 days	Pcs		2	-5	3	4
Fodder production						
Silage, kg ts. per FU (digestibility)	Index		103	2	106	101
Silage samples, kg ts. per FU	Pcs		1	0	6	5
Silage, NH3-count	Index		99	10	101	100
Silage samples, NH3-count	Pcs		1	0	6	5

Bulls
Herd
Control group (3.634)

Meat production						
Daily growth per produced calf	Gram		750		1.085	Cns. alle 1.024

Benchmarking
Opgørelse
Statement

Herd number: XXXX
 Breed: HF
 Period: 01-05-2011 - 30-04-2012
 Reference: 01-05-2010 - 30-04-2011

Herd in comparison group
Criteria:

Breed = HF

ECM per cow Achieved > 10000

SCC Dairy Achieved < 150

Herd
Control group (91)

Livestock turnover	Unit	Goal	Achieved	Changed ref.	Avg. 10 best	Avg all
Number of animals per year	Number		133,3	5,9	202,9	161,4
Milk production						
ECM per cw (milk recording)	Kg		10.500	256	12.001	10.684
Percentage of fat, dairy	Pct		4,18	0,00	4,04	4,10
Percentage of proteine, dairy	Pct		3,36	0,05	3,36	3,39
Urea count, dairy			4,0	-0,3	4,5	4,2
Udder health						
Cell count, dairy	*1000	200	143	-30	128	129
Cell count, milk recording	*1000		171	-71	145	152
Spores, dairy	Stk		121	58	135	198
Total qual.supplemet, possible extra	Øre		0,1	-0,6	0,2	0,2
Total qual.supplemet per kg ECM	Øre		9,5	1,4	9,5	9,4
Meat production						
Classification cows			2,3	-0,3	2,4	2,5
Percentage of cows with obesity < 3	Pct		68	17	46	51
Reproduction						
Percentage pregnant of commenced	Pct		63	-1	60	59
Age 1st calving	Mdr.		26,9	-0,3	25,7	25,5
Spread, age 1st calving	Mdr.		1,6	-0,1	2,1	1,8
Health						
Total diseases per animal per year	Stk		1,95	0,60	2,10	1,37
Mastitis per yearcow	Stk		0,62	-0,01	0,44	0,38
Dead cows, percentage.	Pct		5,3	-0,2	2,9	3,4
Stillborn calves, percentage	Pct		6,2	-0,8	5,6	6,1
Dead calves, 1-180 days	Stk		7	-6	7	6
Dead calves, 1-14 days	Stk		2	-5	2	2
Fodder production						
Silage, kg ts. per FU (digestibilty)	Indeks		103	2	107	104
Silage samples, kg ts. per FU	Stk		1	0	8	6
Silage, NH3-count	Indeks		99	10	95	102
Silage samples, NH3-count	Stk		1	0	8	6
Bulls						
Meat production						
Daily growth per produced calf	Gram		750	-	-	1.125



Quantile Analysis

Statement

Herd number: XXXXX
Breed: HF
Period: 01-05-2011 - 30-04-2012

Herds in control group

Criteria = HF
Breed = HF
Farm type = Dairy cattle farmer

Dairy cows

	Unit	Goal	Herd Achieved	Control group (3.634) 25% quantile	75% quantile
Livestock turnover					
Number of animals per year	Pcs		133,30	71,7	185,4
Milk production					
ECM per cow, milk recording	Kg		10.500,00	8.524	9.974
Average ECM in 1st lact. in % of 3+ lact.	Per cent		82,50	78	86
Average ECM in 2nd lact. i % of 3+ lact.	Per cent		100,10	93	99
Udder health					
Cell count, dairy	* 1000	200	142,81	193	286
Cell count, performance control (ykr)	* 1000		170,81	221	333
% cows with low cell count	Per cent		61,70	44	64
% new cows with elevated cell count	Per cent		2,30	3	4
% cows with chronic elevated cell count	Per cent		5,90	9	18
Reproduction					
Conception rate, all	Per cent		41,00	30	44
Percentage pregnant of commenced	Per cent		63,00	48	67
Age 1st calving	Months		26,90	25,1	27,3
Spread, age 1st calving	Months		1,60	1,8	2,9
Insemination percentage, all	Per cent		47,00	32	53
Health					
Total diseases per animal per year	Pcs		1,95	0,57	1,38
Mastitis per yearcow	Pcs		0,62	0,17	0,46
Dead cows, percentage	Per cent		5,30	2,5	6,6
Stillborn calves, percentage	Per cent		6,30	4,0	8,2
Dead calves, 1-180 days	Per cent		7,00	2	12
Dead calves, 1-14 days, pct.	Per cent		1,60	0,4	3,7
Dead calves, 14-60 days, pct.	Per cent				
Dead calves, 60-180 days, pct.	Per cent		1,67	0,0	2,9



Statement

Herd number: xxxxx
Breed: HF
Period: 01-05-2011 - 30-04-2012

Herds in control group

Criteria
Breed = HF

*Best determined ECM per cow

Control group (2.586)

Dairy cows

	Unit	Achieved	Avg. 5% best*	Avg. all
Livestock turnover				
Number of animals per year	Pcs	133,3	181,9	85,0
Milk production				
				Avg. All
ECM per cow (milkreord.)	Kg	10.500	11.494	9.197
Percentage of fat, dairy	Per cent	4,18	4,04	4,21
Percentage of proteine, dairy	Per cent	3,36	3,35	3,44
Urea count, dairy		4,0	4,3	4,3
Udder health				
				Avg. All
Cell count, dairy	*1000	143	202	243
Cell count,milk recording	*1000	171	234	284
Spores, dairy	Pcs	121	191	551
Meat production				
				Avg. all
Classification cows		2,3	2,5	2,5
Percentage of cows with obesity < 3	Per cent	68	49	50
Reproduction				
				Avg. All
Percentage pregnant of commenced	Per cent	63	58	54
Age 1st calving	Months	26,9	25,2	26,3
Spread, age 1st calving	Months	1,6	2,0	2,5
Health				
				Avg. All
Total diseases per animal per year	Pcs	1,95	1,36	1,05
Mastitis per yearcow	Pcs	0,62	0,37	0,34
Dead cows, percentage	Per cent	5,3	3,8	4,9
Stillborn calves, percentage	Per cent	6,3	6,4	5,7
Dead calves,1-180 days	Pcs	7	7	9
Dead calves, 1-14 days	Pcs	2	3	4
Fodder production				
				Avg. All
Silage, kg ts. per FU (digestibility)	Index	103	106	100
Silage samples, kg ts. per FU	Pcs	1	6	5
Silage, NH3-count	Index	99	101	99
Silage samples, NH3-count	Pcs	1	6	5

Bulls

Control group (6.586)

	Unit	Achieved	Avg. 5% best*	Avg. All
Meat production				
				Avg. All
Daily growth per produced calf	Gram	750	1.085	1.023