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## **Presentation of Danish system of registration and use of health data (registration, database, data security, herd health contracts,...)**

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Knowledge Center for Agriculture in Denmark – owned by the farmer’s organizations – has a long tradition for developing and operating a central cattle database. The central cattle database has over the years been growing with more and more data in all different areas for breeding evaluation, for feeding management, for production management and for documentation of the production. In the nineties agreement was made with the authorities that the central cattle database should deliver the mandatory cattle data to the authorities database

The result is that today there is one central database with all cattle data. There is high degree of validation. Data are delivered from very many sources around the dairy production; farmer, veterinarians, advisory services, milk recording, AI technician, other services, Dairies, Slaughter houses etc.

Health data can be recorded by the farmer, by the Veterinarian and others with special obligations concerning health topics on the cattle farm. Due to the regulation about medicine usage there has to be clinical symptoms registered, to do the treatment. This gives a high rate of registration of diseases and health traits on dairy cows.

Claw health has over the last years got a high focus in Denmark, but there has been a leach of registrations in that area. To improve that a tool do registration during claw trimming has been developed. The tool is today used by 60% of the claw trimmers, and has increased the registration dramatically for the benefit of breeding evaluation and production management.

All in all it gives us a very solid basic of data within the health area with a high registration rate and high data security, and data that can be combined with other data for breeding and production management

Data recording in central data systems in Dairy Production in Denmark started almost 50 years back in connection with milk recording. It started with a lot of manually recording involving a lot of man power. Increasing requests for data for breeding evaluation and later management purposes increased the data that got recorded. Over the years the amount has increased dramatically to a very complete system.

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### **Abstract**

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### **Health data in the central Danish Cattle database**

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### **Introduction**

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With stronger focus on food safety and traceability “the public” introduced laws for the dairy farmer for mandatory registrations concerning the single animal. Since these data already were recording in the already existing central cattle databases the Dairy Business (the farmers union) suggested the Danish Ministry to do this in cooperation. After long negotiations and some changes along the road it has led to that today all mandatory registrations are done in the Central Danish Cattle Database

Disease recordings have for many years been of high interests for breeding evaluation and later also management tools. The big challenge has been to get it systematically registered. Back in the nineties the Dairy Business made an agreement with Veterinarians Union – veterinarians in Denmark are independent business – about registration. Systems were made to transferee disease registration to the Central Cattle Database in connection with the monthly invoice from the veterinarian to the farmer. In that way the data came in without extra work. In the beginning the 2000s agreement were made with the authorities so the farmer were allowed to make treatment with medicine him selves. In the agreement demands about registration of diseases in the Central Cattle Databases

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### **The data sources to day**

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Data are delivered to the Central Cattle Database from very many sources around the dairy production:

- Mandatory recordings due to EU regulations
- Voluntary recordings
  - Milk recording
  - Reproduction
  - Health management
  - Feeding
- Recordings from service suppliers
  - AI Technicians
  - Veterinarians
  - Hoof trimmers
- 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 types of data; Figure 1, Data on the single animal level and Figure 2, Data on herd level

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### **Some remarks on data completeness and data reliability**

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Some data are compulsory for the farmer to report to the DCDB/CHR, such as movements (including deaths and slaughters) and calvings. Since these data are under the control of the authorities and are regularly checked the data are considered to be close to 100% correct information regarding this data for cattle. The relationship between herds, farms and owners are registered by the Danish Veterinary and Food Administration using data from databases of other Danish authorities, e.g. Danish Commerce and Companies Agency. The agreement with the ministry about the registration in the Central Cattle Database also demands I high degree of validation rules on the registered data, which again gives a high reliability on the data

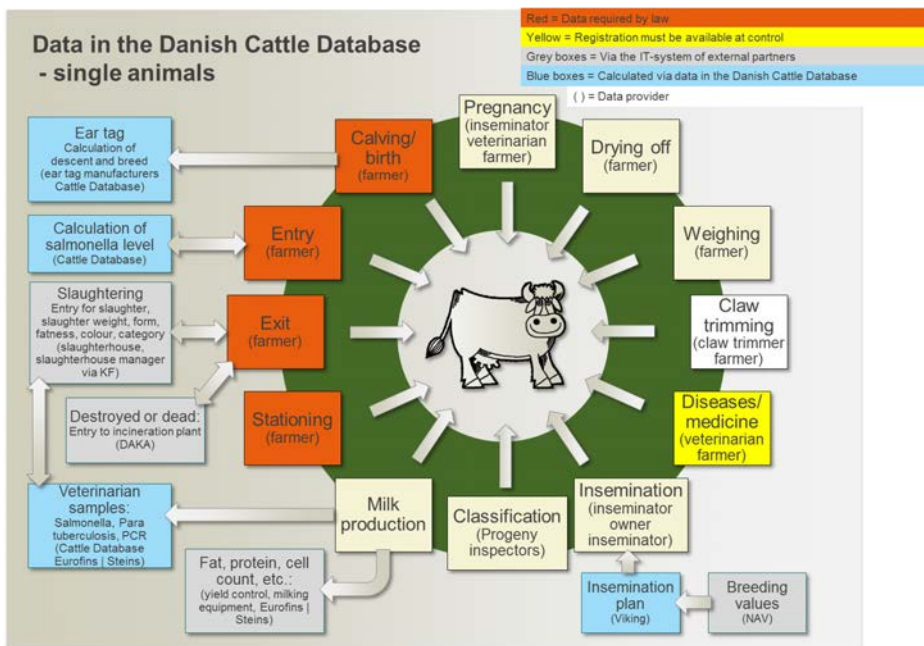


Figure 1. Data on the animal level.

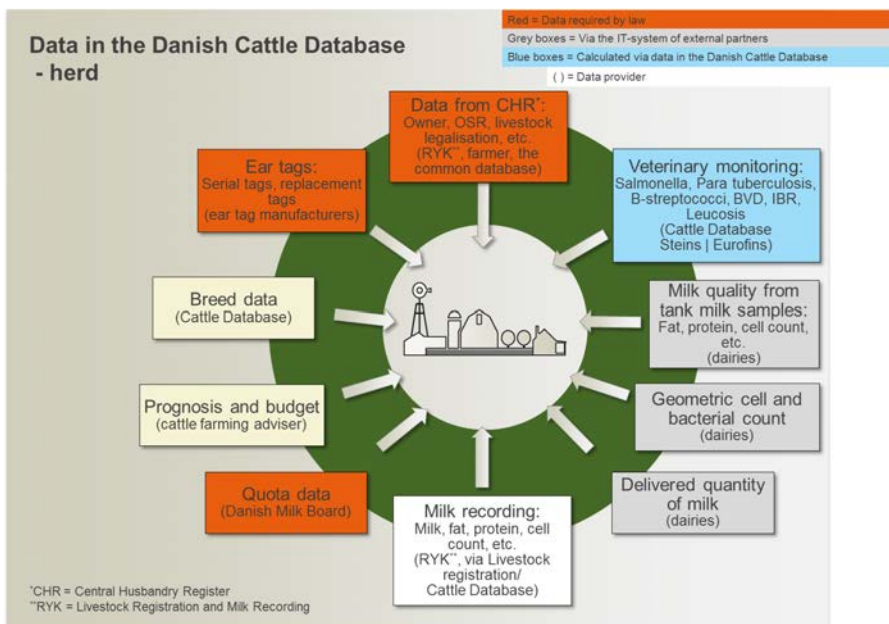


Figure 2. Data on the herd level.

Reporting of data concerning reproduction is on a voluntary basis. But a major part of the milk producers report this data. Since it is used for the daily management of the herd, and some validation rules on the Central Cattle Database these data are also close to 100%, and almost daily updated. Milk recording data are reported for all herds in the milk recording. These herds include approx. 95% of all milk producers. Most data concerning laboratory result are transferred from the laboratory, in most cases being Eurofins | Steins. From Eurofins | Steins we receive data concerning milk quality and disease surveillance results from blood and milk samples

All data registrations have an “owner”. The user always has to identify him selves to the system, and that username is always put on the registration, and is visible. This gives other user with access to the data and especially the farmer a good possibility to follow up on possible errors in the registration

**Health data  
Registration**

Health data can enter the Central Cattle database from different sources and for different purposes. The Veterinarian will automatically get his registration transferred to the Database when invoicing the farmer in the case where the farmer doesn't have to use the mandatory Health Advisory Agreement and in the case when other data is registered. The Farmer has to record if he wants to tread animal him selves with medicine.

The Danish Herd Health Advisory Agreement is agreed between the Ministry and the Danish Dairy Business. The motivation from the dairy farmer has been to be allowed to do treatment with medicine by him selves without calling the veterinarian. To control that it demands regularly advisory visits from the veterinarian, once a week or once every second week depending on the number of animals. The agreement is visualized in figure 3

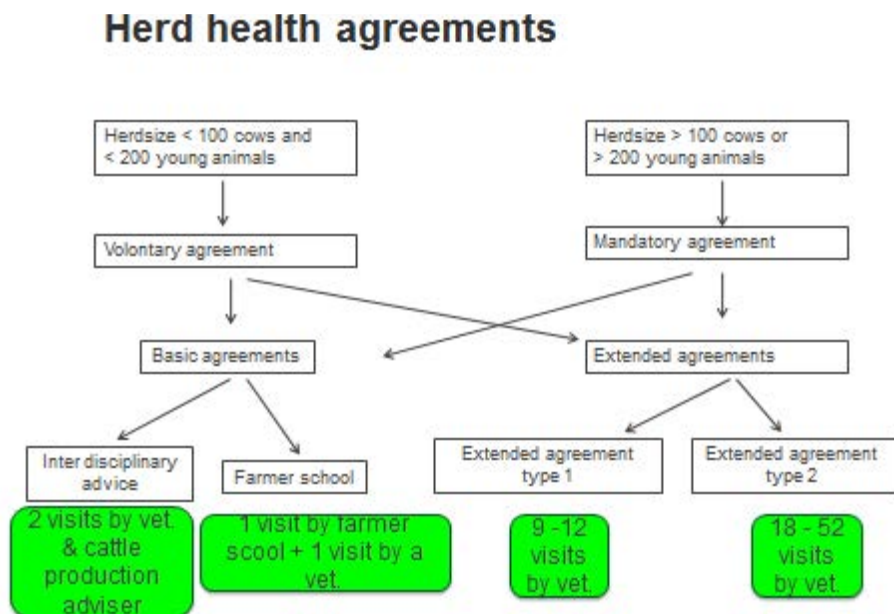


Figure 3. The Danish herd health agreement.

A special area in Health registration in Denmark is the claw health. Historically it has been very difficult to get farmer and the Hoof trimmer to do any registration. The veterinarian has to some extent done some registration on claw health. But due to the increasing development in claw diseases it some years ago got very high focus also in Denmark. One of the recognition was that we needed and easier registration way than paper. To solve that, a pc program was developed to be used on a touch screen. The program was released in 2010 and today the program is used by nearly 60% of the Hoof trimmers in their daily routines. This has generated registrations on claw diseases on more than 40% of the dairy herds with high benefits for breeding evaluation and a new advisory area; Claw Health Management.

Data in the Danish Central Cattle Database are owned by the farmer. This has been strongly emphasized by the board of the Cattle Department. This means that all access to the data demands a signed authorization from the farmer. The only exception from that is data for research projects approved by the board. The rules are:

1. It is not allowed to use data for other purposes than for this specific project. No patents can be applied for without involving Knowledge Centre for Agriculture, Cattle.
2. Knowledge Centre for Agriculture, Cattle, will receive a report or similar on the survey/ analyses, for which the data have been used.
3. Data are not to be published in such a way as to identity a single herd or farmer, e.g. *the* farm with highest number of cows.
4. Individual farmers or herd owners should not be contacted directly on the basis of the delivered data.

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## Ownership of data

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## Appendix 1. Examples of data on herd and animal in the Danish Central Cattle Database

Example: Data from one (or two) cow(s). Data from screen in *www.glr-chr.dk*

### Basic information from one animal

Animal no.	12345-67890
Male / female	Cow
Breed	DHF, Danish Holstein
Date of birth	31-03-2007
Mother's no.	DK-02 3521-00199
Nationality	DK, DANMARK
Herd no.	12345
Type of herd/code for usage	1202 Dairyherd
Bluetongue basic vaccination	1. vaccination 19-08-2008 2. vaccination 14-09-2008
Latest BT-vaccination	21-04-2009
Herd's level in Salmonella Dublin surveillance programme	04-11-2009 Niveau 1b,
Farm no. in CHR	67890
Herd owner:	
Name	Farmer Hansen
Address	Dairy Road

### Calving (related to animal)

Date of birth	Animal no.	Calving no.	Sex	Condition of calf	Present farm no.	Present herd
16-01-2010	12345-67890	1	Kvie (heifer)	Levende kalv Live calf	67890	67890

### Movement of one animal

Date	Farm no.	Herd no.	Reason (in, out, birth)	Farm no. to/from
05-05-2007	67890	67890	1, Indgang	45 678
05-05-2007	45678	45678	16, Afgang levebrug	45 678
31-03-2007	45678	45678	3, Fødsel	

**Further information from another cow: Animal no: XXXXX-12345**

(Internal DB\_id = 10073XX144)

Insemination, calving and other 'incidents' – data from 'Dyreregistrering'

Date	'Incident' (Danish: hændelse)	male/ female calf	Progress	Size	Animal no. of calf
15-09-2007	Insemination				
11-06-2008	Calving	female	easy	2	XXXXXX-02540
17-06-2008	'Sterile test' (Danish: steril prøve)				
02-09-2008	Insemination				
23-09-2008	Insemination				
07-11-2008	Bluetongue vaccination				
11-12-2008	Bluetongue vaccination				
03-07-2009	Calving	male	easy	-	XXXXXX-02672
16-09-2009	Insemination				
19-06-2010	Calving	male	easy	3	XXXXXX-02779
24-06-2010	'Sterile test'				
06-09-2010	Natural insemination start (Danish: løbning start)				
07-09-2010	Natural insemination end (Danish: løbning slut)				

**Milk yield of the selected animal**

Date	Milk (kg)	Fat (g)	Protein (g)	Somatic cell count (x 1000)
14-06-2008	18.0	545	713	226
31-07-2008	16.6	627	554	429