
Development of milk recording services in Estonia

T. Murulo

Estonian Animal Recording Centre, Tartu, Estonia

As a result of the continuous improvements in ARC information services, farmers have had good tools for dairy herd improvement. The farm management services, as well as breeding and reproduction information, are vital for farmers, whose objective is high efficiency and quality with low cost. Besides, there is a good chance of improving the efficiency of the national breeding programmes. The Estonian experience shows that farmers are ready and willing to pay the major cost of the service, which is useful in one way or another. Estonia has been a member of ICAR/INTERBULL since 1995 and looks forward to receiving the ICAR Special Stamp as soon as possible.

Dairy cattle breeding is a traditional area of animal husbandry in Estonia. Milk recording (MR) has 89 years of history and Estonian farmers have fairly good knowledge and experience of farm management. Therefore, dairy farming has quite a good chance for developing quickly in Estonia.

Animal Breeding Inspection is a State authority by the Ministry of Agriculture, responsible for the regulation and supervision of animal breeding in Estonia. There are three regional animal breeding inspectors for cattle. They take care of the execution of the Animal Breeding Law.

The first Animal Breeding Law since liberation has been categorical since May 1995. Since then the regulations for animal breeding as well as the law itself, have been constantly upgraded according to the new requirements (EU, ICAR).

The Government of Estonia supports animal breeding, especially milk recording and genetic improvement of the breeding programmes (e.g. estimation of breeding values).

The herd book, AI and other breeding services are the responsibility of the private breeding organisations.

The Animal Recording Centre is an economically independent department of the State Animal Breeding Inspection and occupies a central place in Estonian animal breeding providing services for dairy and pig farmers, breeding organisations as well as veterinary services, dairy processing industry, advisers and research institutions.

Summary

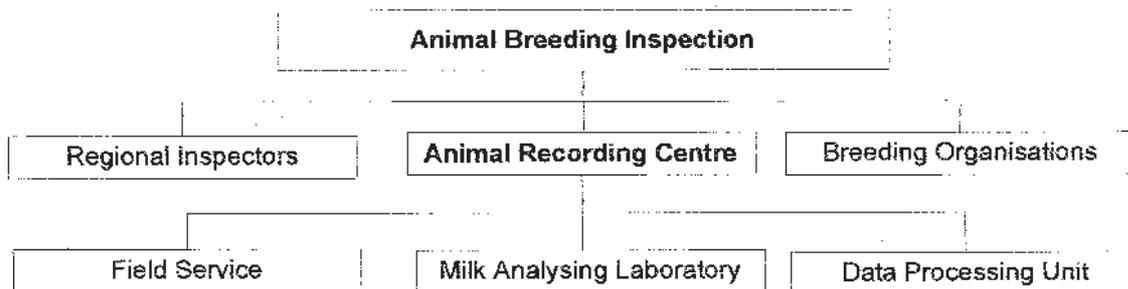
Introduction

Organisation of animal breeding in Estonia

Animal Breeding Inspection

Animal Recording Centre (ARC)

Figure 1. Organisation of animal breeding in Estonia.



ARC is fully responsible for the organisation and development of milk recording services, genetic evaluation of dairy cattle and data processing services for livestock farmers and breeding organisations in Estonia. In 1998 the Government subsidy was about 35% of the total budget. All the investments were covered by the State.

Farmers cover all the operational costs of the used services from ARC and the farmers fully employ milk recording assistants.

ARC has three departments:

The Field Service (FS)

The Field Service (FS) is responsible for the coordination of the work with the animal breeding inspectors, the control and training of the milk recording assistants and farmers, cattle identification, development of ARC services, advisory service and public relations (farmers, breeding organisations, etc.). For fifteen counties we have ten regional supervisors. They also operate as advisers for udder health, feeding and farm management.

About 20% of the advisory service is covered by the farmers, the rest is covered by a special State fund.

The Milk Analysing Laboratory

The Milk Analysing Laboratory is responsible for the milk analyses and the sample transportation. Most of the milk samples analysed are single cow samples from the farms in milk recording. Last year there was 1.06 million samples analysed for fat, protein, somatic cell count and urea. About 5% of the laboratory services were carried out for dairy factories: quality of bulk milk samples for payment. Since October 1994, there have been two lines of Combifoss 4300 installed in the laboratory. The analysing results are saved on the floppy disk and transmitted to the Data Processing

Unit (in the neighbouring building) for merging with barn information and further processing. The dairy factories receive their sample results via email and/or fax.

Since 1998, our laboratory has been participating in ICAR inter-laboratory tests. The national accreditation is completed and there is ongoing work to receive the international accreditation. The Ministry of Agriculture has chosen the ARC milk laboratory to be a neutral laboratory for milk analyses for payment. In August 1998, the Bactoscan 8 000 will be installed for the purpose of bacteria counting. As soon as the laboratory is equipped for all the necessary quantitative and qualitative analyses of milk quality, all the bulk milk for the payment will be analysed in the ARC central milk laboratory.

The milk samples collected for milk recording are also used for the disease monitoring and tested for virus diseases in the veterinary laboratory.

The Data Processing Unit (DPU) has two main tasks:

- development of computer systems and services for agriculture;
- data processing for milk recording and animal breeding for Estonia.

*The Data Processing
Unit (DPU)*

In 1993, it was decided to change the mainframe background with a client-server environment. The main reasons for this decision were too high costs of maintenance, development and exploitation of data processing and unsatisfactory service quality. The so-called "rightsizing" project was completed successfully in 1998.

A big effort was made to maintain and make use of all the old electronic data (production and pedigree information) collected during the past years and to improve the quality of the information services substantially.

The main objectives for the data processing services have changed: the quick information, possibly real time information, for the farmer, breeding organisation or adviser is possible to reach with the modern data processing technology. The duplicated data collection (AI, Central Cattle Register), etc., is to be avoided and new technology makes it possible.

The milk recording, herd book and artificial insemination are fully integrated into the same database and the output is made available for all the relevant parties. Since 1998, the Ministry of Agriculture, Animal Breeding Inspection, farmers and breeding organisations have had the possibility of ONLINE access to the database.

There are plans to develop and integrate all the farm-related registers to one agricultural information system in the future.

Milk recording

The total number of cattle was 325 600 and the total number of cows 162 300 in 1997. About 72% of cows are under milk control in Estonia. The number of cows in milk recording is diminishing in accordance with the continuously reducing cow population. The productivity of Estonian dairy cows is increasing fast (Table 2). The best milk performance years were 1988 and 1989, the worst year was 1993. The level reached was exceeded again only in 1997 (Table 2).

The number of cows subjected to milk recording has decreased 2.2 times. In 1993, 74.2%, in 1996, 68.5% and in 1997, 71.8% of cows were under milk recording. The average herd size was 48.1 in 1993 and 44.5 in 1997. Thanks to a new national cow subsidy for 1998 (102 DM per average milk recording cow), the interest in milk recording is growing.

The main method (99%) used for MR is B4. About 1% of the farms used A4 type of milk recording in Estonia.

The farms slowly start to use milk meters, approved by ICAR: Tru-Test HI and Milkoscope II.

Farm structure

There were about 40 000 holdings registered on the Estonian cattle register. On 1 August 1998, there were about 530 agricultural enterprises and about 2 400 private farms involved in milk recording (Tables 3 and 4).

From 1 January 1999, a new Farm Hygiene Law will be introduced in Estonia. In the scope of the new law, the farmers who have no milk-cooling equipment, will not be allowed to sell the milk. Most of these farmers have a herd of less than ten cows. It is doubtful that the number of small herds will drop.

Cattle identification

Until April 1994, the old within-herd identification system was the official system used in Estonia. In 1994, it was decided to adopt the system of a lifetime number in the scope of the EU regulations. The new regulation of cattle identification is valid for cattle born after August 1995. According to the regulation, all the calves are to be identified with a unique eartag (with a ten-figure lifetime register number) within six weeks after birth. In the milk recording herds the

Table 1. Estonian dairy breeds under milk recording, 1997.

Breed	Avg. no. of cows	Milk, kg	Fat, %	Protein %
Estonian Holstein	74 186	46 65	4.16	3.11
Estonian Red	40 118	3 904	4.30	3.22
Estonian Native	535	3 530	4.61	3.31
Total	114 838	4 394	4.21	3.15

Table 2. Dynamics of milk recording average milk performance in Estonia.

Year	Avg. No. of cows	Milk, kg	Fat, kg	Fat, %	Protein kg	Protein %	F + P, kg
1989	258 956	4 276	170	3.98	148	3.31	318
1993	181 139	3 428	137	4.00	107	3.11	244
1996	119 076	3 913	164	4.21	125	3.20	289
1997	114 838	4 394	184	4.21	138	3.15	322

Table 3. Herd size and farm structure, milk recording 1992-1998.

Cows/in herd	July 1998		1997		1995		1993		1992	
	No. of herds	%								
1 - 10	1 856	63.2	1 685	64.5	2 128	72.9	2 815	74.6		
11 - 50	636	21.6	484	18.5	291	10.0	291	7.7		
51 - 100	123	4.2	116	4.4	127	4.3	161	4.3		
<100	2 615	89.0	2 285	87.4	2 546	87.2	3 267	86.6	46	10.7
101 - 300	235	8.0	240	9.2	278	9.5	342	9.1	99	23.1
301 - 600	68	2.3	67	2.6	74	2.5	120	3.2	158	36.9
601 - 900	12	0.4	13	0.5	14	0.5	27	0.7	83	19.3
901 - 1200	5	0.2	4	0.2	5	0.2	6	0.2	27	6.3
1201 -	3	0.1	3	0.1	3	0.1	5	0.2	16	3.7

Table 4. Number of cows, number of herds and size of herds subjected to milk recording, August 1998.

Cows/in herd	No. of cows	%	No. of herds	%
1 - 10	9 368	7.8	1 856	63.2
11 - 50	12 107	10.1	636	21.6
51 - 100	9 165	7.6	123	4.2
<100	30 640	25.5	2 615	89.0
101 - 300	41 563	34.6	235	8.0
301 - 600	28 035	23.4	68	2.3
601 - 900	8 577	7.2	12	0.4
901 - 1200	5 224	4.4	5	0.2
1201 -	5 909	4.9	3	0.1
Total	119 948	100%	2 938	100%

animals are identified and registered by the milk recording assistant or/and farmer, whereas the rest of the herds (about 30% of the cattle), by the veterinarian.

In the central cattle register there are 275 008 animals registered (01.08.98), which is about 79% of the total number of cattle in Estonia. In milk recording herds, there are 120 119 cows and 100 282 of young cattle stock under control. From these, 51.6% and 73.3% are registered in the central cattle register.

Genetic evaluation

From May 1996 the Multiple-trait BLUP Animal Model has been used for genetic evaluation of milk production traits and Estimated Breeding Values (EBVs) for dairy type.

EBVs for milk production traits are estimated for 100 days and 101-305 of first lactation, second and third lactation. Estonian cattle breeders are effectively using the EBVs for cows for breeding for higher quality breeding replacement.

The Relative Breeding Values (RBV) for production index were expressed with a mean of 100 and standard deviation of twelve points, combining breeding values of milk, fat and protein quantity by relative economic weights of -0.1:1:6 for Estonian Red cattle and 1:1:4 for Estonian Holstein cattle. The national evaluation is published twice a year for both breeds.

In 1998, the first official INTERBULL proofs for Estonian Holstein bulls were obtained, which give fair ground for the decisions made for import and also for the national breeding programme.

From 1997 onwards, preparatory work has been taking place in order to implement a multi-lactation Test Day Model for genetic evaluation for Somatic Cell Count. The EBV for SCC was prepared with the help of colleagues from VIT, Verden. Work was also done on reproduction and fertility traits.

Reents R., Uba M., Pedastsaar K., Vares T. Implementation of animal model for production traits of dairy cattle in Estonia. INTERBULL meeting, June 23-24, 1996. Veldhoven, The Netherlands.

Saveli O., Murulo T., 1998. Milk performance of Estonian cattle breeds. IV Baltic Animal Breeding Conference, Tartu, Estonia.

Vares T., Dairy Herd Improvement Services in Estonia. Proceedings of the 30th Biennial Session of ICAR, Veldhoven, The Netherlands, June 23-28, 1996. EAAP Publication No.87

References
