Situation in agriculture and animal breeding in Estonia

K. Reili

Agricultural Registers and Information Centre,
Kreutzwaldi 1, 50094 Tartu, Estonia

The year 1999 was quite difficult for Estonian farmers. The Data Statistical Office of Estonia shows that the production of meat, milk and eggs was lower than in 1998. Accordingly decrease of milk production was 12 percent, meat production 3 percent and egg production 11 percent.

The number of animals and poultry in agriculture is continuously decreasing. In 1999 the number of cattle decreased by 21 900, among them cows decreased by 14 200 (Table 1).

Since 1995 the number of cattle has continued to decrease by 6 percent per year and compared to 1995 the number of cattle has decreased by 22.9 percent.

Liquidation of cattle and cows are caused by bankruptcy or large numbers of producers.

The decrease in cows causes a decrease of milk production. According to milk recording data from 1998 the milk production was 4 766 kg milk per cow. In 1999 it was 4 530 kg milk per cow, this is 236 kg less. Lower production was caused by several circumstances.

Firstly, climatic conditions: a very long and cold spring and a very dry summer. Pastures were damaged by the drought and farmers had to start to feed winter feed from as early as August.

Secondly, the low milk price: compared to 1998 in 1999 the price was 22 percent lower.

Animal breeding in Estonia is regulated by the Farm Animal Breeding Act and ensuing animal breeding rules, approved by the Regulations of the Ministry of Agriculture.

The Farm Animal Breeding Act was passed on 24 May 1995. In connection with the harmonisation of legislation concerning animal breeding with the corresponding EU Directives, amendments were made to the Act on

9 December 1997, which entered into force on 3 January 1998. The Farm Animal Breeding Act regulates the breeding of bovines, pigs, sheep, goats, horses, fur animals and poultry. The Farm Animal Breeding Act provides for all general legal standards and is the basis for the State regulation of animal breeding. The Farm Animal Breeding Act specifies the tasks of private animal breeding associations and organizations providing animal breeding services, the rights and responsibilities of breeders, the procedure for issue and annulment of activity licences to animal breeding organizations, the procedure for keeping breeding records and registers, the assortment of animals used for breeding, the grounds for collecting performance data and assessing breeding value, the procedure for marketing, import and export of breeding material, the role of the State in animal breeding, the organization of State supervision and the responsibility of the breeder if he is found guilty of violation of legislation concerning animal breeding.

Pursuant to the Farm Animal Breeding Act, animal breeding rules were prepared and approved on 15 February 1996 following the Regulations of the Ministry of Agriculture.

Table 1. The number of animals and poultry in agriculture (thousands) at 31 December 1999.

			1999 / 1998	
	1998	1999	+ / -	%
Cattle	307.5	285.6	-21.9	92.9
Enterprises	199.3	159.6	-39.7	80.1
Family farms	108.2	126.0	+17.8	116.5
%	35.2	44.1		
Cows	158.6	144.4	-14.2	91.0
Enterprises	95.5	78.6	-16.9	82.3
Family farms	63.1	65.8	+2.7	104.3
%	39.7	45.6		
Pigs	326.4	281.2	-45.2	86.2
Enterprises	278.4	228.2	-50.2	82.0
Family farms	48.0	53.0	+5.0	110.4
%	14.7	18.8		
Sheep	30.8	29.4	-1.4	95.5
Enterprises	-	-	-	-
Family farms	30.8	29.4	1.4	95.5
%	100.0	100.0		
Poultry	2 635.7	2 433.1	-202.6	92.3
Enterprises	1 632.2	1 451.3	-180.9	88.9
Family farms	1 003.5	981.8	-21.7	97.8
%	38.0	40.4		

State animal breeding inspection

State Animal Breeding Inspection is a State authority of 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 breeding programmes.

Estonian animal breeding association

The private breeding organizations were recently recovered in Estonia, for 1992 the Estonian Black and White Cattle Breeding Association and Breeding Cooperative "Estonian Red Cattle" were formed. The Breed Society of Estonian Native Cattle has been working since 1989. All the organizations have democratically elected a board, which elects a managing director. The owners of breeding associations are farmers. The managing director is responsible for the functions of the organization, herd book registration, bull testing, marketing of semen and breeding stock, distribution of semen, insemination registration, advisory and extension. Together with the private breeding organization of other agricultural animals, they form the Estonian Animal Breeding Association.

Estonian native cattle

This breed has existed on Estonian territory from time immemorial and is the basis for other cattle breeds namely, the Estonian Black and White and Estonian Red Cattle. The Estonian native cattle have been crossed with other breeds, such as Jersey and West Finncattle. The future selection programme considers the use of Finncattle only. This breed is unique because there are only 500 cows left in Estonia.

The Estonian Red Cattle

The Estonian Red Cattle was developed as a breed in 1930-1950. The main immigrating breed was the Danish Red. During 1956-1965 about 60 bulls were imported from Denmark. The effect of Danish Red bulls to Estonian Red was extremely favourable. For two generations the milk yield and fat percentage increased and the exterior and udder conformation improved. In 1984 the import of bulls from Denmark was re-established. Mainly Danish Red bull improved with American Swiss but also Red Holstein bulls, were imported. These bulls stabilised the milk yield on a reasonable level. However, it became clear that high milk fat percentage and strong legs can be saved in Estonian red cattle only with limited use of Red Holsteins. The results were better with the use of Brown Swiss and especially Danish Red. Also, the semen of Swedish Red and Norwegian Red bulls has been used.

The Estonian Holstein (Estonian Black and White Cattle).

This breed was developed under the strong influence of the Holland Black and White cattle. The first Black and White bulls and cows were brought from Holland in 1838. The breed type was very close to the Dutch Friesian type, with good and bad characters. The first Holsteins from USA were imported in 1975. After that Holsteins were immigrated from Canada and then from Germany. Holstein bulls increased milk yield considerably and improved the udder shape and attachment, also the size of animals. The influence of US and Canadian bulls has been very effective. To increase milk protein and fat production the Dutch Holstein bulls have been used again.

Agricultural Registers and Information Centre (ARIC)

The Agricultural Registers and Information Centre is responsible for the organization and development of milk recording services, genetic evaluation of dairy cattle and data processing services for livestock farmers and breeding organizations in Estonia. ARIC occupies a central place in Estonian animal breeding providing services for dairy and pig farmers, breeding organizations as well as veterinary services, dairy processing

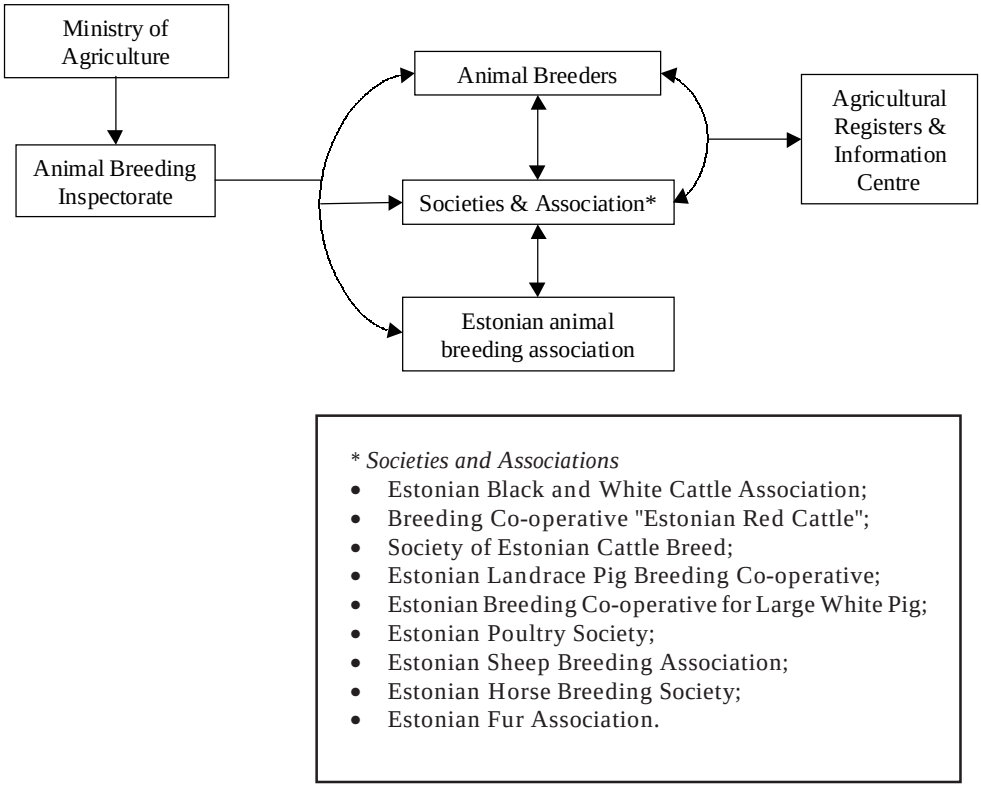

Figure 1. Structure of animal breeding in Estonia.

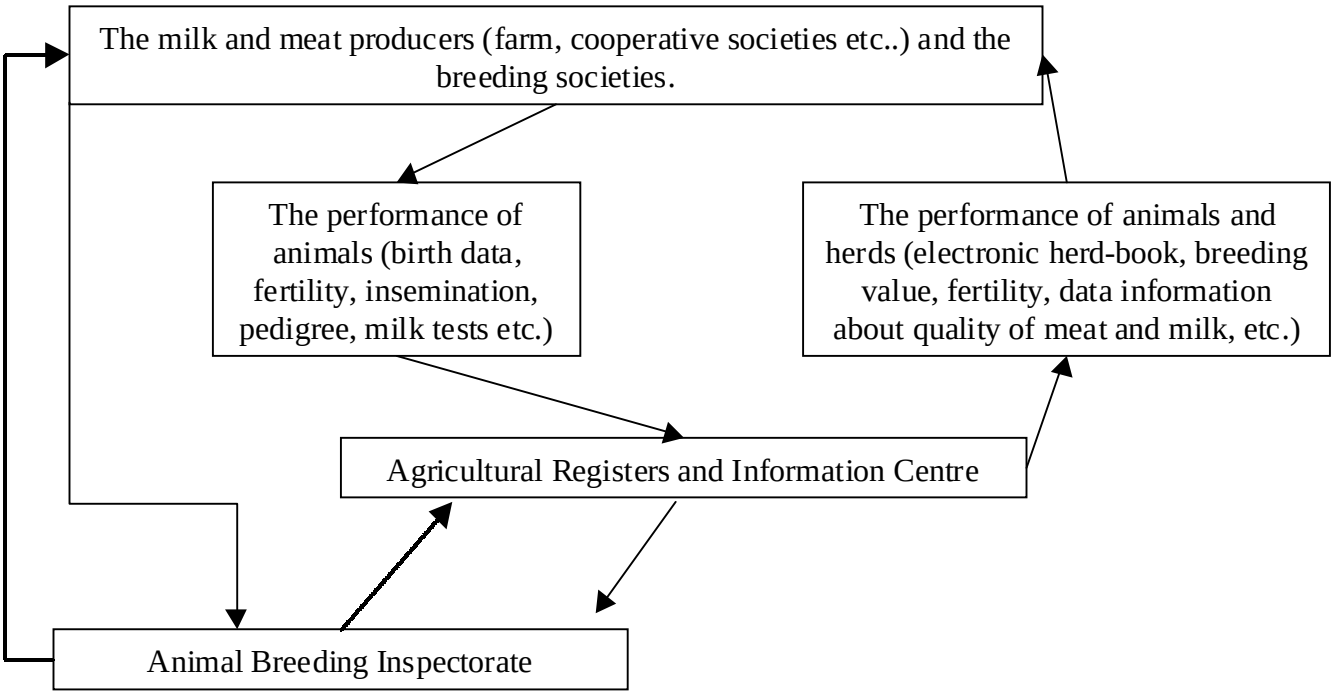

Figure 2. The movement of information.

industry, advisers and research institutions. From 2000 ARIC will be owned 100 percent by the State. Farmers pay all the operational costs of the used services from ARIC. ARIC has three departments:

- the field service is responsible for control and training of milk recording assistants and farmers, cattle identification, development of ARIC services and public relations. For fifteen counties we have eleven regional supervisors. They also operate as advisers for udder health, feeding and farm management;
- the Milk Analysing Laboratory is responsible for the milk analyses and the sample transportation. Last year 1.04 million samples were analysed for fat, protein, somatic cell count and urea. Since 1998 our laboratory has participated in ICAR inter-laboratory tests. The Ministry of Agriculture chose the ARIL milk laboratory to be a neutral laboratory for milk analyses for payment;
- the Data Processing Unit has two main tasks, the development of computer systems and services for agriculture and data processing for milk recording and animal breeding for Estonia. From 1998 all the data was processed in the ORACLE system. The main objective for the data processing services has changed, it is now the quick retrieval of information for the farmer, breeding organization or adviser. The duplicated data collection (AI, Central Cattle Register), 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 relevant parties. Since 1998 the Ministry of Agriculture, Animal Breeding Inspection, farmers and breeding organizations have had the possibility of ONLINE access to databases. From 1999 it has been possible to access the database via INTERNET (www.reg.agri.ee).

Table 2. Oracle main tables.

Table name	Content	Number of entries
Owner	Our clients	53 688
Animal	Animal pedigree	1.62 million
Owners animal	Location of animal	822 488
Milking	Milk recordings	5.2 million
Lact	Lactations	3.35 million
Insemination		1.1 million

Milk recording

The number of cows being milk recorded at 1 January 2000 was 106 616. About 73.8 percent of cows are being milk controlled in Estonia. The number of cows being milk recorded at 1 January 1999 was 117 120 (-10 502 cows left during one year). Problems occurred with the very low milk prices and bad weather conditions.

The method used for milk recording is B4 in Estonia. The farms use more and more milk meters approved by ICAR.

The number of herds being milk recorded as of 1 January 2000 was 2 921 (average herd-size 36.5). The number of herds being milk recorded as of 1 January 1999 was 2 732. (average herd-size 42.9)

System of funding

The Agricultural Registers and Information Centre is responsible for the distribution of direct governmental subsidies to farmers. Last year farmers received direct subsidies for milking cows, sows, ewes-goats, young stock and growing grain. These subsidies are paid in full by the State. In 2000 the SAPARD project for paying subsidies to farmers from the European Union will commence. The reorganization of the structure of the Agricultural Registers and Information Centre is now taking place. The structure will consist of:

- State Registers
  - Field register division
  - Animal register division
  - Grant register division, etc.
- Paying Agency will manage with support.
  - 1. Direct support (totally paid by Estonian State)
  - 2. SAPARD support.

Figure 3. Development of milk recording in Estonia.

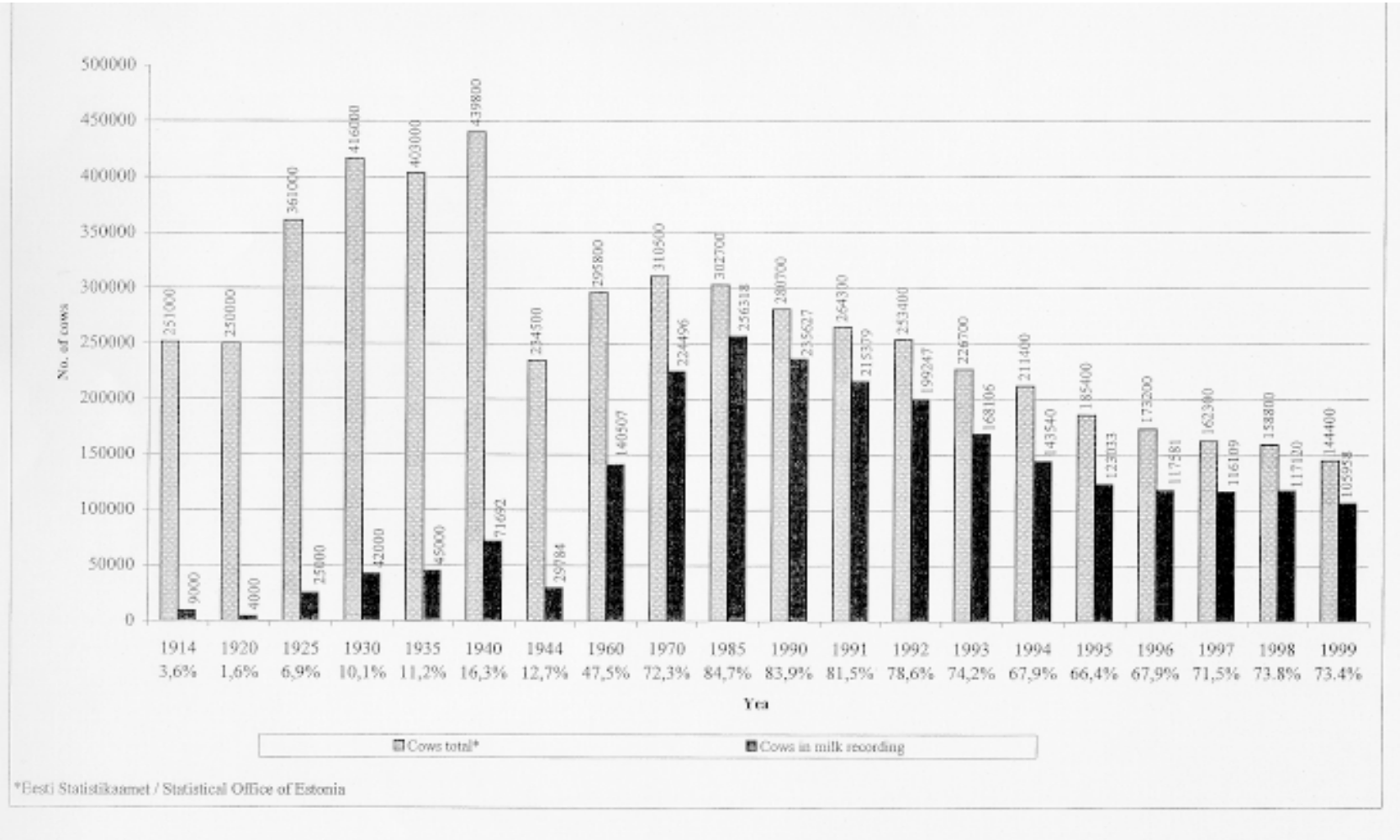

Table 3. Size and number of herds in milk recording 1990-1999.

	1999		1998		1997		1996		1995		1994		1993		1992		1990	
Herd size	No. of herds	%	No. of herds	%	No. of herds	%	No. of herds	%	No. of herds	%	No. of herds	%	No. of herds	%	No. of herds	%	No. of herds	%
1 2	425	14.7	310	11.3	447	17.1	639	24.4	871	29.8	1230	35.5	1248	33.1				
3 4	469	16.2	322	11.8	397	15.2	498	19.0	615	21.1	735	21.2	803	21.2				
5 6	411	14.2	452	16.5	390	14.9	303	11.5	301	10.3	326	9.4	398	10.6				
7 8	315	10.9	312	11.4	251	9.6	193	7.4	205	7.0	219	6.3	222	5.9				
9 10	212	7.3	223	8.2	200	7.7	158	6.0	136	4.7	126	3.6	144	3.8				
11 50	682	23.5	684	25.0	484	18.5	366	13.9	291	10.0	261	7.5	291	7.7				
51 100	116	4.0	124	4.5	116	4.4	119	4.5	127	4.3	151	4.4	161	4.3				
<=100	2 630	90.8	2 427	88.8	2 285	87.5	2 276	86.7	2 546	87.2	3 048	87.9	3 267	86.6	46	10.7	7	2.1
101 300	188	6.5	217	7.9	240	9.2	263	10.1	278	9.5	294	8.5	342	9.1	99	23.1	24	7.1
301 600	60	2.1	66	2.4	67	2.6	64	2.4	74	2.5	102	2.9	120	3.2	158	36.9	107	31.5
601 900	12	0.4	15	0.5	13	0.5	13	0.5	14	0.5	16	0.5	27	0.7	83	19.3	114	33.4
901 1200	4	0.1	4	0.1	4	0.2	5	0.2	5	0.2	5	0.1	6	0.2	27	6.3	54	15.9
1201 1500	0	0	0	0	0	0	0	0	0	0	1	0.0	2	0.1	10	2.3	23	6.8
>1500	3	0.1	3	0.1	3	0.1	3	0.1	3	0.1	3	0.1	3	0.1	6	1.4	11	3.2
Total	2 897	100	2 732	100	2 612	100	2 624	100	2 920	100	3 469	100	3 767	100	429	100	340	100

Animal identification and registration

The Agricultural Registers and Information Centre is creating new registers (fields, producers, pigs, goats, sheep, etc.) Beginning this year, the Register Department will be restructured.

Cattle identification

In 1994 it was decided to adopt the system of a lifetime number in the scope of the EU Regulations. According to the Regulation, all calves are to be identified with a unique eartag (with a ten-figure lifetime register number) within six weeks after birth. The yellow plastic eartag was put onto the calves' right ear. From January 2000 we began to use, according to EU Regulations, yellow plastic eartags on both ears. The eartag consists of Estonian ISO-code "EE", a ten-figured register number, barcode and ARIL logo. After birth, calves have to be identified with eartags within 20 days and registered in the animal register within seven days.

Since 1999 in Estonia, ten-figured lifetime register numbers for goats and sheep have been used.

Genetic evaluation

Estonia has been a member of INTERBULL since 1995. From May 1996 the Multiple-trait Blup Animal Model has been used for genetic evaluation of milk production traits and Estimated Breeding Values (EBV) 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. In 1998 the first official INTERBULL proofs for Estonian Holstein bulls were obtained, which gave fair ground for the decision made for import and also for the national breeding programmes. From 1999 we began to use Test Day Model for genetic evaluation.