Animal Data From Sampo-Farms – A Basis For Knowledge And Information

K-R. Johannessen[*], E.Børsting[**], H. Kristiansen[*], K. Smeds[***]

Introduction

Visual Sampo is a PC-operated breeding programme owned and marketed in Finland by the Finnish Fur Breeders' Association (FPF), and made in cooperation with MTT (Agrifood Research Finland)1) and ADB Lillhonga Ab. The program is based on a Fox-Pro database, and the model for calculation of the breeding values is developed by MTT Agrifood Research.

In 2004 the Norwegian Fur Breeders' Association (NPA) laid down the work with the centralized system "Pelsdyrkontrollen" described by Fimland and Einarsson (1988) and started cooperation with the Finnish Fur Breeders' Association in the marketing of Visual Sampo (Sampo) as a choice for breeding program in the Norwegian fur farms. The first breeding season for Norwegian farmers with Sampo was 2005.

Material and methods

Local database. Since the Sampo program is in fact a local database, and operates in principle within the farm, the advisors do not normally have access to the data that are stored in the computer. At the same time the breeders do not have access to data that is similar to, and could be of interest as a comparison to, the results in their own breeding stock.

One of the normal yearly routines for Sampo users is to send a file to NPA/FPF-administration, containing data to be used in the calculation of the yearly fee for the program. This file also contains all animal data from the farm, and thus can be a source of information as to what is in fact happening in the breeding work in the farm.

Creating a new central database. In 2005 NPA and FPF decided that we would develop a database for the animal data from all the farms using Sampo. Together with Mr. Ejner Børsting in Denmark the two organisations have now developed an online database for all Finnish and Norwegian Sampo data. At present the database now contains Norwegian data from the breeding season 2005 up till 2008. In general we can say that there are data from approx. 80 Norwegian fox farms and 30 mink farms, containing data on all together 628.566 animals, and approx. 300 Finnish fox farms, and 110 mink farms, containing information on 9.330.010 Finnish animals, for the years 2006 to 2008.

[*] Norwegian Fur Breeders' Association, P.O.Box 175, Oekern, 0509 Oslo, Norway

[**] Læskovvej 235, 4632 Bjæverskov, Denmark

[***] Finnish Fur Breeders' Association, 01601 Vanda, Finland

Results

What is the purpose of the database? Three main reasons may be listed, monitoring breeding programs, analyses for advisory help and statistical data for genetic research.

Breeding values in Sampo. In Sampo the breeding values is created as single trait BLUP-AM indexes, developed and adjusted to foxes and minks by MTT (Agrifood Research Finland) as a software pack called MiX99. This software is an integrated part of the Sampo-software and the breeder may choose which indexes shall be printed out on cage-cards and listings. This means that the breeder must decide which of the trait that are to go into the breeding goal. He also gets to choose how much each single breeding value should count in the final ranking of the animals.

Monitoring the breeding programme. The breeding organisations have a need to assure that the general direction of the breeding is according to the plan and the market signals. The level of details on the reproductive performance of the breeding stock in the database is an advantage in itself. A simple example of vital reproduction data is shown in tabel 1, which shows that there is a negative development in the reproductive performance in the Norwegian fox farms. It will be important to find ways to investigate the reasons for this negative development, thus finding way to improve the production. Finding farms with good reproduction and farms with poorer reproduction, might lead us to some of the things that is different in these farms. This can help us to find out more about how to handle this in the work to improve the results both in single farms and on the overall production.

Table 1 Development of reproduction in Norwegian fox farms using Sampo 2005 – 2008:

Fox types	Breeding year	Mated females		Females w/whelps		Whelps at 2.count. per mated female	Females w/whelps at 2.counting		% loss	% empty
		Number	Whelps at 1.counting	Numb.	1.counting		Numb.	Whelps at 2.counting		
silverfoxes	2005	4341	4,17	3901	4,64	3,63	3473	4,54	14,02	10,23
	2006	6790	3,99	6094	4,45	3,42	5230	4,44	15,73	10,65
	2007	8417	3,84	7555	4,28	3,35	6351	4,44	14,63	10,26
	2008	7463	3,64	6832	3,98	3,32	5696	4,35	17,09	8,64
bluefoxes	2005	4331	8,34	3869	9,33	6,49	3524	7,98	22,37	10,67
	2006	4897	8,18	4352	9,21	6,18	3975	7,61	22,92	11,17
	2007	3183	7,86	2769	9,03	5,50	2451	7,15	28,16	13,01
	2008	3087	7,90	2751	8,87	5,86	2460	7,36	24,07	10,88

Figure 1 is an example from Finnish mink data on the connection between breeding value for litter size and the actual average litter size on the same animals following year. It clearly shows a nice correlation between the indexes and the following reproduction performance, and gives a general impression that the breeding values are working as predicted, as stated by

Lagerkvist (1993) and Einarsson and Elofson (1988). It is also a simple way to convince the farmers to have faith in the breeding values.

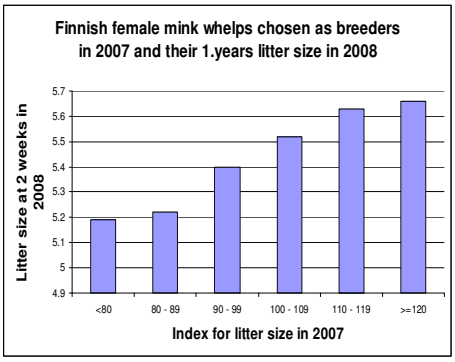

Figure 1: Connection between litter size index and reproductive performance in 1.litter minks

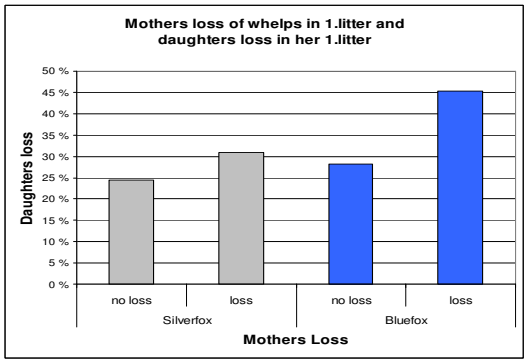

Figure 2: Genetic link in foxes between mother and daughter in loss of whelps in 1.litter

By analysing some data from Norwegian foxes from the databank we can see in figure 2 evidence of the genetic basis for loss of whelps by comparing loss of whelps in the mothers first litter and their daughters loss of whelps in their first litter. We see a clear tendency that mothers that have no loss of whelps in their first litter tend to get daughters who repeat their mothers good performances.

The databank used in the advisory work. The results that have been shown above are of course very useful as a background for internal discussions about strategies in the breeding work as stated in the National Breeding Plan (Avlplan for Pelsdyr) (1993) and monitoring the breeding performances. On the other hand it is also very useful to show the farmers actual data that they can easily relate to. Combining the general data with results from analyses on their own individual data as a comparison, will be a useful set of information on the breeding work in the farm. Data identical to table 1 can be made for each single farm and combining the two tables makes it easy for the advisor and the farmer to relate to the situation in the farm.

Table 2 shows the average breeding values for litter size of the new breeding animals and the selection differences measured in standard deviations on silverfoxes in a Norwegian farm. It shows very variable selection differences and this will be an important issue to attend to for the farmer in order to stabilize the genetic platform for litter size in this farm.

Table 2: Selection differences for silverfoxes in a Norwegian farm

Fox type	Year	No. of whelps			Mean litter size index				Diff. in SD	
		total	Males for breeding	Females for breeding	All	Stand. Dev.	Males for breeding	Females for breeding	Males	Females
silver	2005	317	3	37	99,9	7,158	96,7	99,3	-0,45	-0,086
	2006	518	14	71	102,7	8,428	103,4	104,5	0,073	0,204
	2007	666	13	76	103,2	7,544	101,7	103,8	-0,2	0,088

Identical tables as table 2 are created for all farms individually and keeping track of the selection differences in this way gives the farmer a good control of the breeding work. Most probably it can help stabilizing the development in the breeding performances.

Data available for statistical and genetic research. As the databank will increase in size and may contain data for several consecutive years for a number of farms, this might give valuable sources for more investigating statistical and genetic analyses. There will be data available also for skin traits on foxes and this will give yet another angel to look at different aspects of connections between reproduction performances and skin traits.

Discussion

There are obviously some aspects to be aware of before and in the process of using these data. In general it should be remembered that it is “on farm” data, meaning that in the end the accuracy level on the data is to a certain degree depending on the registration routines of the farmer. If the farmer chooses to register only the number of whelps at 2-3 weeks this may differ from another farmer that register the whelping results at two different stages. On the other hand by analysing the data, and by knowing many farmers by their routines we believe that there are many possibilities to get valuable information from these data.

The databank is still in development and we hope to continue filling it up with “real life” data both on reproduction trait and skin traits. Sampo farmers have the possibility to ID their animals in connection to the pelting, and the barcode on the skintag connects the grading results from the auction house directly to the animal ID in the database. The possibility of genetically connecting the breeding results and the skin traits is an important and interesting advantage by this database. And this will be a natural way of expanding in the development of the system. In the future there will be even more data registered in the Sampo program, such as confidence/temperament of the animals. It will be of increasing importance for the industry to be able to declare the level of confidence of the fur animals and the development in this trait in the future.

Remarks

This review is only meant to be a short report about the work that has been done to save and use the data that are available from the Sampo dataprogram and give some examples of what can be done to use these data to the best of the fur breeding industry. The results we have given here are not scientifically accounted for and should not be taken as scientific results as

such. Hopefully we will have the opportunity to keep on developing this idée and make it a valuable source of information both for the breeders and the advisors as well as the researchers that are connected to the fur industry.

References

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