

- unique and respected germ plasm
- products gained gourmet reputation
- development of milk production needs attention

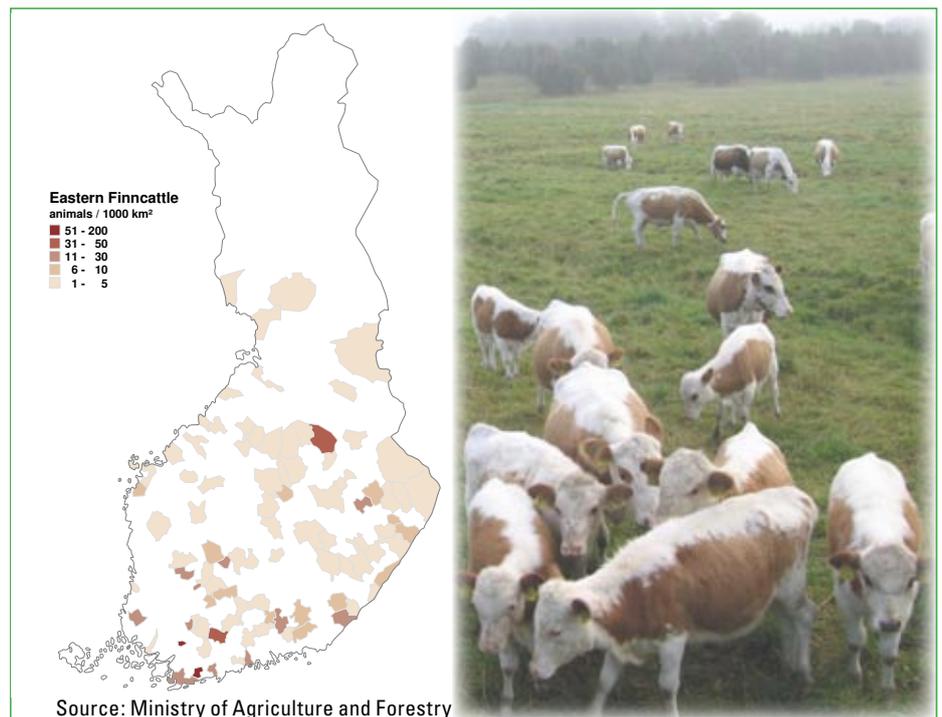
Eastern Finncattle

The Eastern Finncattle cows were recognized as a separate breed in the 1890's. There was a need to improve milk production and the recognition of breeds was part of the development work. The general interest in well-characterized breeds coincided with strong nationalistic feelings at the time.

The keepers of the Eastern Finncattle (EFC) founded a breed society in 1898 at the cattle fair in Kuopio (Savo). This initiated cattle breeding organisation in Finland. The Northern Finncattle society was started in 1905 and that for the Western Finncattle in 1906. The herdbook for EFC began in 1914 and by 1927 there were 4620 bulls and 14650 cows registered by 4233 society members. First attention in selection was given to breed characteristics. The cows in remote villages were considered as the most pure ones and breed description used words like handsome and gentle. From the 1920's onwards the emphasis on exterior traits made way to selection on recorded production.

Animals are typically red colour-sided with broad winding band on the back. The zigzag band has made people to call animals with a name kyyttö, a local nickname to adder living also in Eastern Finland. The word may, however, stem from other kind of association.

When the first animals were registered in the 1910's, majority had horns. This feature changed quickly and by the 1920's most of the animals were polled. EFC animals are considerably smaller than the Ayrshire and Holstein cattle.



Source: Ministry of Agriculture and Forestry
Distribution of Eastern Finncattle by municipality. Earlier, until the 1950's the breed was most common in the eastern part of the country. Now it is found in many other parts, as well.

The wartime hit dramatically the Eastern and Northern Finncattle. People from the lost eastern part moved with their Eastern Finncattle cows to different parts of the country.

Along the declining cow numbers the three Finncattle societies resorted to collaboration and were amalgamated in 1946. At that time there were some 5000 EFC animals in the herd book.

The Ayrshire cattle spread to eastern and northern parts of the country in the 1950's. Another blow to local breeds was the crossing of Finncattle cows with imported Holstein-Friesian semen in the 1960's. Consequently the less productive indigenous cows were abandoned as out-dated and unfashionable.

The Eastern Finncattle sank to the bottom lowest numbers in the 1980's having



**Number of cows and herds (the proportion of those in milk recording scheme is in brackets),
average yields in Finland in 1998 and 2008.**

	2008					1998				
	cows	herds	milk kg	fat %	protein %	cows	herds	milk kg	fat %	protein %
Eastern FC	787 (32 %)	289 (48 %)	3706	4.28	3.51	3918 (67 %)	1713 (62 %)	5789	4.51	3.39
Northern FC	970 (44 %)	453 (55 %)	5210	4.37	3.47					
Western FC	2954 (65 %)	1149 (63 %)	6776	4.39	3.50					
Ayrshire	181364 (84 %)	11394 (73 %)	8561	4.33	3.48	233061 (89%)	22848 (72 %)	7202	4.42	3.33
Holstein	91132 (80 %)	9187 (72 %)	9248	3.99	3.40	76516 (82 %)	15117 (71 %)	7496	4.09	3.25

The 1998 data refers to all Finncattle (FC) breeds jointly. (Source: FABA Service).

only some 50 cows and less than 10 bulls left. Prof Kalle Majjala at MTT Agrifood Research Finland paid as early as in the late 1960's attention to the erosion of the breed spectrum. He was one of the initiators for the EAAP working group on animal genetic resources started in 1980, for the Nordic Gene Bank which started as a working group in 1980, and for the respective national committee in Finland which has been functioning in different forms since 1983.

A very unique feature of the Finnish programme for local breeds is the collaboration with the prison farms, which at one time housed cows of all the three Finncattle breeds. There is now a society for indigenous breeds and the breeding organisation Faba Service is carrying out registration and advisory work also for the rare Finncattle breeds. Since joining the EU, Finland entered a new culture for indigenous breeds and started actively supporting farmers raising rare local breeds. Persons from different parts of the society have taken part in rescuing herds threatened to die out. The systematic work by enthusiastic and stubborn persons has proved fruitful. The EFC breed is currently enjoying healthy popularity. There are few restaurants in major cities offering products made of EFC milk and meat. Animals of the breed are also used in landscape management and even in modern therapy practices. Also the media is eager to report news on Finnish rare breeds and the general public knows all the indigenous breeds.

The cow register recognizes now the indigenous breeds. In 1997 the number of purebred cows exceeded a hundred both in the Eastern and Northern Finncattle. At the moment the

number of EFC purebred cows is almost 800. The number is slowly growing. The AI cooperatives have semen from several bulls stored. In choosing the breeding cows and bulls, a special attention is given to the development of coancestries in the population. As an ex situ scheme, embryos and semen doses are annually deposited in the cryo-bank.

The widely available molecular genetic tools have been used to give a general picture on the relationships between the cattle breeds and the state of the genetic variation within the breeds. The Eastern Finncattle breed has a high conservation value with a considerable deviation from the pool of cattle breeds and with a substantial amount of within breed variability.

Breeding goal and development of genetic variation

Finncattle breeding aims at improving the milk production traits to meet the expectations of milk processors and consumers and to strengthen the production profitability. The focus in selection is on protein yield, dry matter content, fertility, health, conformation and longevity. At the same time the genetic diversity within the breed and the special features of Finncattle sub-breeds are maintained.

Efficient dairy cattle breeding is based on getting information for bulls from a large number of progeny produced via artificial insemination. In the EFC population, the progeny groups are small and therefore selection is now more on cows' performance. Instead of proven bulls, there is more emphasis on ranking young bulls and cows. The use

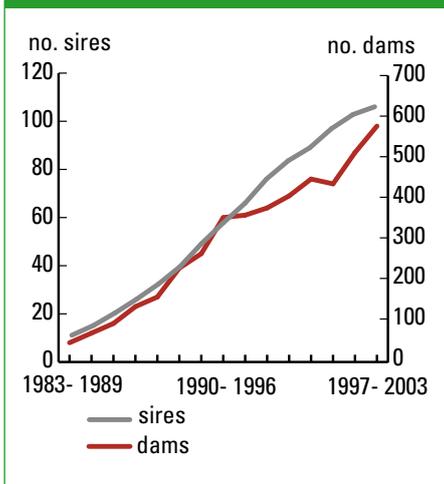
of bulls with diverse ancestral background guarantees that the genetic basis in selection is wide enough. If there were only few family lineages in a population, the genetic variation within population would start fading. Therefore it is important to use systematically lots of bull sires which are unrelated and prevent some popular bulls from becoming too heavily used.

The state of genetic variation in a population is best described by the effective population size. The higher the effective size will be, the more parents there have been and the more evenly they have been used. If the effective size is in the range 50 – 100 or higher, the changes in genetic variation are sound and under control. The effective population size of the Eastern Finncattle is now of the order 40-60.

Increased coancestry within population is linked with the effective population size. The inbreeding coefficient for an individual is half of the parents' coancestry measure. The figure presents the profile of the average coancestry and inbreeding coefficient among EFC females and males over the last two decades. The average coancestries in the 1980's were low, because the pedigree information was scarce. There was an addition of similar kind of animals in the 1990's. Planned use of breeding animals has kept the changes in coancestry under control (0.18 % per year). Furthermore, the risk for inbreeding is relatively low.

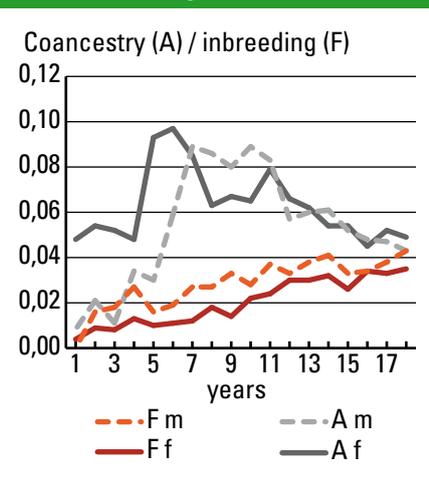


The number of EFC dams and sires over the period 1983-2003 (rolling means with seven-year window).



Source: FABAs Service

Eastern Finncattle: average coancestry and inbreeding in females (f) and males (m) during the last 20 years.



Source: Theo Meuwissen

Opinions on EFC

The Eastern and Western Finncattle and Ayrshire are all dual purpose breeds producing both milk and meat. The Eastern and Western Finncattle have better longevity, health and fertility than the main stream breeds. The keepers thought that Eastern and Western Finncattle are less demanding than the high producing Ayrshire and Holstein cows. In general (37%), EFC cows were favoured in the herd due to protection and conservation of the breed. 'EFC is part of Finnish heritage; highly valued and respected; old germ plasm which shouldn't get lost'. Almost third (30%) regarded the breed features as the second most important reason, such as milk traits, small size, calving easiness, good calving and grazing properties. A third reason was most often (20%) the potential for special products; 'Processed cheese to restaurants; added value from meadow based beef.' The Ayrshire farmers had the similar aforementioned views about the reasons why the Eastern Finncattle keepers favoured their breed.

When the Eastern Finncattle were compared to the Ayrshires or Holsteins, the interviewed EFC keepers stated that the milk yield is low while in fertility, health and longevity they are superior to the latter ones. Half of the EFC keepers regarded their cows less profitable than the Ayrshires and Holsteins and their own EFC cows less demanding with respect to production conditions.

Views on the breed's future

The future prospects were positive and some 20% of EFC farmers would like to have more EFC animals. They believe especially in the use of EFC animals in landscape management and in 'green care' on farms opening their doors for visitors and tourists. "They eat heavy reeds in wet areas, even their roots; we can do



Interviews

An important goal in the EURECA project is to find out why some local cattle breeds are still popular while the number of cows in other breeds has abruptly collapsed. Why some cattle keepers have chosen Eastern Finncattle while the others are happier with another breed – e.g. the Ayrshire. What are the strengths and weaknesses of EFC? In the EURECA project, there were 30 Eastern Finncattle, 31 Western Finncattle and 19 Ayrshire farmers interviewed.

The interviewees were chosen to cover different types of farms. The EFC keepers had on average 18 cows (of which 4 were EFC) on 63 ha of arable land. Those farmers who had Western Finncattle and Ayrshire cattle, had on average 30 (15 Western Finncattle) and 52 (32 Ayrshire) cows on 63 and 69 ha, respectively. Typically to Finnish dairy farms,

the herds were mixed with breeds: the Eastern Finncattle was in minority at a farm, Western Finncattle made half of the herd and the Ayrshires formed the majority. For all the breeds, the rented field makes usually one third of the total arable land at a farm. In 2007, the farms had on average 34.4 ha of arable land and the average herd size in dairy farms was 21.5 cows.

Majority (83%) of the interviewed EFC keepers received almost all (over three quarters) the income from the farm. This was the same among the Ayrshire and Eastern Finncattle farmers.

The interviews were performed at the beginning of 2008, the interviewed EFC keepers were on average 48 years old, with the oldest one being 64 and the youngest one 30. Most of the EFC keepers had a college degree, with one having also a university degree. The interviewed Ayrshire and Western Finncattle keepers had the same average age with the youngest ones being, however, 26 years old. The Ayrshire farmers had somewhat higher education than WFC and EFC ones.



without ostriches or Highland Cattle.'

The farmers raising EFC cows thought that during the last ten years the attitude towards their breed has become favourable. 'Regional administration is encouraging and giving advice.' Today the breeding organisation technicians are familiar with indigenous breeds and ready to advice in bull selection. 'The vet brings school children to see the cattle; milk lorry driver is struck by nostalgic thoughts.' The main stream breed farmers have also forgotten their off-putting views on the breed. Locals passing by are stopping to admire pasturing Finncattle animals and media reporters are thinking highly about landrace breeds. 'Tourists are cuddling and taking photos; neighbours don't mind our cows running into their garden yard.' The slaughter house workers belittle the calves' growth.

The EFC farmers are expecting that breeding and AI organisations keep improving cows' performance and maintain a good choice of bulls. 'I don't want to live like Robinson Crusoe; these are production, not pet animals.' The local and national authorities are expected to look after the subsidy schemes and to alleviate paper work. The research and national programme for genetic resources are receiving unanimous thanks.

The Ayrshire farmers regarded the EFC milk yield as too low and thought that they would jeopardise the farm profitability if they switched to Finncattle breed. According to them the selection in landrace breeds has been neglected and the number of family lines in these breeds has declined. Some regarded the Finncattle as unsuitable for free stall or robot systems. Out of curiosity, many farmers were interested in purchasing one or two Finncattle cows. Keeping Finncattle is regarded as a respecting gesture to the work of previous generations.

The interview was extended to cover also those operating in breeding organisations, food processing industry, research and consumer organisations and cultural institutions. It was performed via a web tool and altogether 60 replies were obtained. Out of the answered ones, 70 % had been in touch with landrace breeds. Most of the repliers could not tell apart Eastern and Western Finncattle. They were able to attach special features to the breeds, such as different kind of temperament and clear identity, on the other hand the landrace cows were considered as less productive and poorly profitable. The landrace keepers were thought to be a heterogenous group of farmers who are very attached to their own cattle breed and are carrying out versatile (including organic) production and are following the tradition at a farm.



SWOT analysis

The collected information was summarised also as a SWOT analysis to point out the strengths, weaknesses, opportunities and threats.

Strengths vs weaknesses

The cattle owners regarded their own Eastern Finncattle as unique germ plasm rather than as a profitable production animal. Many believed in the idea of processing new products from milk and meat. EFC animals were thought to be suitable for therapy farms (green care). 'Contact to cows is very rewarding and EFC animals are easier to handle than sheep.'

The weakness the Eastern Finncattle farmers mention first was low yield and poor growth compared to those of the Ayrshires and Holsteins. 'When herds are getting bigger and more mechanised, small cows are disappearing.' Some thought that there are unexperienced and hobby farmers among the EFC keepers.

Opportunities vs threats

Eastern Finncattle have special features which could be exploited in product development and thereby bring variation in food product choice. 'We should have own visions and not follow the bulk production lines.' Interviewed EFC keepers did not have own enterprises, even starting one was not appealing after being totally occupied by animal husbandry itself. Personal landrace animals would fit into management of heritage landscape, farm tourism and companion animals.

One of threats is the poor profitability of EFC production. 'The common thinking in administration is expressing productivity only as volumes.' There is a risk that small herds and their holders are disappearing. Another danger is the confrontation between subsidies and market prices as the main source of income. When the population is very small, the keepers worry about the narrowing genetic variation.

Conclusions and recommendations

- Keeping Eastern Finncattle is motivated by protection and conservation.
- EFC food products have gourmet reputation.
- EFC animals are full of personality and fit into new roles of landscape management and animal therapy.
- Genetic variation is in a sound state.
- Eastern Finncattle has a unique position as a symbol of the Finnish germ plasm.
- Securing the future of the breed would require efforts to develop milk production, e.g. a quarter of the interviewed farmers were no longer milk producers.



The 3-year EURECA project (Towards self-sustainability of EUropean Regional Cattle breeds) started in March 2007. The project is funded from the EU AGRI GEN RES programme and is coordinated by Sipke-Joost

Hiemstra of the Netherlands. It has partners from ten European countries. The purpose of the project is to learn from each other in Europe to develop better strategies to preserve the regional cattle breeds. In total, 15 cattle breeds from ten countries are being analysed in detail. For Finland, we have chosen the Eastern and Western Finncattle. We also interviewed the Ayrshire cattle farmers, experts in breeding organisations, food industry, research, consumer and cultural organisations.