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**Local, small scale production and processing of milk from the
native Iceland goat and sheep breeds**

Presented by the Goat and Sheep Milk Community, Iceland: Ólafur R. Dýrmundsson,
Jóhanna B. Thorvaldsdóttir, and Thóra S. Kópsdóttir

Native breeds

Ever since the settlement of Iceland more than 1100 years ago sheep have been more important than goats in the rural economy (1). While sheep, now numbering 455.000 winterfed animals all of the short-tailed Iceland breed, were and still are found in large numbers in all parts of the country, goats have tended to be most numerous in certain localities. Goats, all of the Iceland breed, now number only 400 individuals and are thus an endangered population. Neither the sheep nor the goats have been influenced by other breeds. They are multipurpose producers, of small size compared to other goat and sheep breeds, are prolific, especially the sheep, and both are hardy and well adapted to the harsh climate of Iceland. Both these Nordic breeds are characterized by great genetic diversity, such as in colour as well as in their high quality products, and emphasis is placed on the conservation of these characteristics (2,3,4,5,6,7). Iceland is self-sufficient in both sheep and goat products (1) and sheep products, mainly lamb, are exported to several countries. The Iceland Goat was recorded by Slow Food on its Ark of Taste in 2005.

Sheep milk

Since the early 20th century meat, mainly lamb, has been the main sheep product in Iceland. Thus by 1920 sheep dairying had been abandoned except on a few farms (8). It was not until 1983 that ewes were milked again in farm trials initiated by the Farmers Union of Iceland. This pioneering work continued in 1984 and some experience was gained from cheese - making (9). However, it was not until 1996-1997 that further trials were carried out (10,11) mainly to gather information on milking characteristics of ewes, milking techniques and the chemical composition of the milk. Milking machines were used successfully and no problems were experienced in processing frozen milk. The fat % was approximately 6.2 and the mean values for protein, lactose and dry matter were 5.7, 4.7 and 17.5, respectively (11). A turning point was reached in 2004 when due to the pioneering spirit of Thóra Sif Kópsdóttir (a member of this community) ewes were milked on her farm and she has since encouraged a few other farmers to follow her example. This work has resulted in a sheep milk project since 2004 with emphasis on cheese making in the local Búdardalur Dairy in W-Iceland and is receiving official support from farmers organizations and both research and funding bodies (9). It is of interest to note that some owners of Icelandic sheep in Canada and the USA, namely of flocks originating from the first Icelandic sheep imported into North America 20 years

ago, are successfully milking Icelandic ewes and are making products such as cheese, yogurt and soap, mainly on a small scale, (12,13,14,15,16,17,18).

Goat milk

It is well known that goats were milked on several farms in Iceland, especially in certain localities, until the 20th century when overshadowed by milk from dairy cows (3). The small population size leading to a high level of inbreeding is a major obstacle to progress in most goat flocks (19). However, one means of conserving this endangered breed is to increase its numbers and to utilize its products such as meat, skins and cashmere fibre, and not least the milk (3,9). For several decades goats have only been milked on rare occasions but in recent years, a few farmers have expressed interest in producing and processing goat milk for a local niche-product market. A farm trial carried out in 1991 indicated that machine milking was feasible and that goat cheeses could become valuable consumer commodities (20), for example, on the lines of the experience of goat cheese makers in Denmark (21). Thanks to the grass-root leadership of Jóhanna B. Thorvaldsdóttir (a member of this community), who has been milking goats on her farm since 1999, good progress is now being made in cooperation with the above mentioned sheep milk project (9). Moreover, for the first time more accurate information is becoming available on the chemical composition of goat milk (22) than previously documented (23). Thus the mean % values for fat, protein, casein and lactose were 3.7, 3.2, 2.6 and 4.6, respectively. Special attention will now be given to the genetic variation of milk proteins by taking samples from most of the lactating females in the national population (22). Machine milking and processing frozen goat milk is practiced successfully.

On-farm experience

In addition to the scientific information gradually becoming available on sheep and goat dairying, as indicated above, much of the progress will continue to depend on the pioneers and those who follow in their paths. Both are small scale local enterprises, developed on family farms, the main aim being to strengthen rural employment and increase farm income. At the same time the farmers are contributing to efforts to conserve genetic diversity, especially of the endangered goat breed. This includes the breeding of polled goats which have become extremely rare in the Iceland breed. It should be kept in mind that milking ewes and goats are secondary enterprises on mixed livestock farms where lamb production is the primary enterprise in both cases. However, the goat flock at Háafell Farm is being increased in numbers so as to become the main farm activity in the future. Jóhanna has been milking a maximum of 42 goats this year, beginning in mid-summer and will continue well into the winter months, even until January. The kids, normally born during the period February to April, have been slaughtered at 2½ - 3 months of age before the milking season begins. Last year the total production was 1786 l, the individual goat yield being in the range of ½ to 2 l/day with a mean of 1 l/day. Most of the milk is sent to Búdardalur Dairy for processing but some is kept frozen in ½ l bottles for children who are allergic to milk from cows and even to soyamilk. The aim is to establish a goat milk processing unit at Háafell Farm and even start a direct farm sale business. Still meat generates most of the income from the goats but the balance is likely to change in the near future in favour of dairy products. Thóra Sif is milking her ewes at

Ystu-Gardar Farm, also in W-Iceland, during late lactation, i.e. starting in late August / early September when the first batch of lambs is sent to the abattoir. She has been milking 23 ewes this autumn. Most of them are yielding 170-200 ml/day and last year the total yield on the farm was 182 l. In that year four other farmers joined the project, the total annual production being 783 kg. Thóra Sif is using a mobile milking unit and has even milked ewes on neighbouring farms in order to boost the total supply to Búdardalur Dairy. Like Jóhanna, Thóra Sif is interested in developing on-farm processing of cheese and other sheep milk products for direct sale. Both want more goat and sheep farmers to join the community through the project referred to above.

Future prospects

Members of the Goat and Sheep Milk Community will continue to advocate the utilization of milk from both ewes and goats for the production of local niche - products. The pioneers are acquiring new skills and gaining valuable experience, some technical problems have already been solved and further research is adding to the present knowledge of milk composition and quality. Furthermore, the pioneers have generated interest amongst other farmers and several agricultural bodies which are already providing valuable support. However, much development work is still needed, for example, on the economics and marketing of goat and sheep milk products. In the early stages emphasis is being placed on processing the milk into prime quality cheeses but other products are likely to follow. Trial commodities have already been well received by local consumers and further promotion will follow in the near future. At present it is vitally important to generate the interest of a larger number of both sheep and goat farmers to embark on milking so that the total volume of milk can be increased beyond the trial stage. The support of Slow Food to these grass - root initiatives is indeed highly appreciated by the Goat and Sheep Milk Community of Iceland.

References

- 1) Dýrmundsson, Ó. R. (2006) Sustainability of sheep and goat production in North European countries – From the Arctic to the Alps. *Small Ruminant Research* 62, 151 – 157.
- 2) Íslensk búfjáarkyn – Icelandic Livestock Breeds – Islandske Husdyrraser (2004). Brochure, 20 pp. published by the Farmers Association of Iceland in cooperation with the Agricultural Genetic Resources Committee and the Nordic Gene Bank for Domestic Animals. Edited by Ó. R. Dýrmundsson (ISBN 9979-885-02).
- 3) H. E. Sveinsdóttir and Ó. R. Dýrmundsson (1994). The Iceland goat breed. *Icelandic Agricultural Sciences* 8, 93 – 97.
- 4) Ó. R. Dýrmundsson (2005). The Iceland goat: past and present. *Animal Genetic Resources Information (AGRI)* 36, 53 – 59.
- 5) Ó. R. Dýrmundsson and J. E. Pálmadóttir (2004). Icelandic sheep – a breed of great genetic diversity – providing high quality products of meat, wool, skins and milk. Mimeograph 1 p. presented at Terra Madre, Slow Food, Turin, Italy.

- 6) Ó. R. Dýrmundsson (2002), Leadersheep: the unique strain of Iceland sheep. *Animal Genetic Resources Information (AGRI)* 32, 45-48.
- 7) Ó. R. Dýrmundsson (2005). Four - hornedness; a rare peculiarity still found in Icelandic Sheep. *The Icelandic Sheep Breeders of North America Newsletter* 9 (4), 6-8.
- 8) H. Stefánsson (1955). Fráfærur. *Freyr* 50, 117-121. (In Icelandic).
- 9) S. Hallgrímsson, Á. Jónsson and H. Ó. Ólafsdóttir (2006). Nýting sauða- og geitamjólkur. *Fræðaping landbúnaðarins*, 144-146. (In Icelandic).
- 10) S. Hallgrímsson (1997). Tilraun með mjöltun áa og nýtingu sauðamjólkur til manneidis. *Ráðunautafundur*, 287-295. (In Icelandic).
- 11) S. Hallgrímsson and H. B. Ólafsson (2005). Experiments on sheep milking in Iceland. *Icelandic Sheep Breeders of North America Newsletter* 9 (3), 16-18.
- 12) Icelandic Sheep Facts. (2004). Information sheet from the Icelandic Sheep Breeders of North America, 2 pp.
- 13) J. Bailey (2004). Our farmstead dairy experiences at Skylonda. *Icelandic Sheep Breeders of North America Newsletter* 8 (4), 5-6.
- 14) K. Rich (2004). Ramblings on milking sheep. *Icelandic Sheep Breeders of North America Newsletter* 8 (4), 7.
- 15) M. Kelley (2004). Milking my Icelandic sheep. *Icelandic Sheep Breeders of North America Newsletter* 8 (4), 8-9.
- 16) C. Barkus (2004). The sheep dairy diaries. *Icelandic Sheep Breeders of North America Newsletter* 8 (4), 10-11.
- 17) C. Szymoniak (2004). Milking sheep. *Icelandic Sheep Breeders of North America Newsletter* 8 (4), 12.
- 18) L. Harker (2005). Curds 'n whey. *Icelandic Sheep Breeders of North America Newsletter* 9 (3), 10-11.
- 19) S. Adalsteinsson, Ó. R. Dýrmundsson, S. Bjarnadóttir and E. Eythórsdóttir (1994). Skyldleikarækt í íslenskum geitum. *Icelandic Agricultural Sciences* 8, 99-105. (Summary in English).
- 20) Ó. R. Dýrmundsson (1992). Geitfjarrækt. *Búnaðarrit* 105, 68 (Annual Report for 1991, in Icelandic).
- 21) I. Dam (1986). Ost, smør og surmælksprodukter til husbehov. Skarv, Holte, Danmark, 72 pp. (ISBN 87-7545-199-9).
- 22) B. L. Ólafsson, J. B. Thorvaldsdóttir and E. Blöndal (2006). Efnasamsetning geitamjólkur. *Fræðaping landbúnaðarins*, 301 (In Icelandic).
- 23) H. E. Sveinsdóttir (1993). Íslenska geitin. B.Sc. ritgerð, Búvísindadeild Bændaskólans á Hvanneyri, 67 bls. (In Icelandic).