

# The added value of cashmere and kid meat production in the Norwegian dairy goat industry

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## Summary

In Norway milk is the major product of the goat industry, and goat kids not needed for replacement are usually disposed of at birth. Kidding normally takes place in February, and the goats are housed until the start of grazing in May or June. Grazing on the natural range pastures ends in September or October. The goats are then milked for a period of 1-3 months and dried off 2-3 months before parturition. The result of this system is peak deliveries of milk from April to September and shortage during mid winter. An even distribution of high quality milk is a prerequisite for the production of fresh goat cheese. The study shows that adding cashmere fibre and utilising the market for goat meat would improve both income of the goat farmers as well as the seasonal distribution pattern of goats' milk. The best outcome is achieved when kidding takes place in May and additional measures, such as suckled kids, are introduced.

## Introduction

Goat farming in Norway is facing an uncertain future due to a changing market. Milk has been the major product of the industry and most of it is delivered to dairies and used for production of brown Norwegian goat cheese. However, due to decreased sale of brown cheese, a milk quota system has been in effect since the mid-eighties. There is demand for Frozen Curd and the newly developed cheese "Snøfrisk" (i.e. Snow-fresh), has been successfully marketed locally as well as in Germany and in the US. "Snøfrisk" is a white spreadable cheese which can be stored for only three months. Producing the cheese requires even supplies of good-quality milk throughout the year.

The Norwegian dairy goat population amounts to 60,000 does. Today, only kids for replacement are saved and most of the other approximately 75,000 kids are disposed of shortly after birth, without any attempt being made to utilise them for meat production. Killing of surplus kids has been criticised by animal rights' advocates, and goat farmers dislike the practice themselves. Raising the goat kids may yield additional incomes and the farmers may avoid negative publicity.

Some Norwegian dairy goats, originating from local breeds, have been reported to produce high-quality cashmere fibre (Vegara *et al.*, 1996) and fibre might provide additional income to goat farming. Improvement of fibre production is possible both by selection in the native goat population and by crossbreeding with cashmere goats recently imported from New Zealand. Since there is currently no Norwegian cashmere production, grading and marketing of the fibre may take place in co-operation with the Scottish Cashmere Producers' Association.

The objective of the paper is to examine the farm economics of a comprehensive change of Norwegian goat farming, from specialised dairy to a combined system providing meat and fibre in addition to more even milk supplies. The paper is based on research on economics of fibre and kid meat on Norwegian dairy goats (Asheim & Eik, in press) as well as research in progress concerning the economics of suckled kids (Asheim & Eik, in press).

## Production systems

The economic calculations for a combined system were based on the farm accounts for six specialised dairy goat farms. The farms had on average 81 dairy goats and disposed of about 100 kids not needed for replacement. The basic alternatives that were compared with kidding in February were kidding in December and in May as goat farmers are encouraged to change the time of kidding in order to even out milk supplies throughout the year. However, raising the kids to higher carcass weight was unprofitable with kidding in December (Asheim & Eik, 1998 in press) and only the following alternatives will be discussed here:

- a) Kidding in February; adding the production of cashmere fibre from the breeding stock
- b) Kidding in February; adding cashmere fibre production and 11-months-old slaughter of kids
- c) Kidding in May; adding cashmere fibre production and 8-months-old slaughter of kids

Merely adding fibre production from the breeding stock, without including the slaughter of kids (a) involved the smallest change. The next alternative (b) was to slaughter kids at 11 months (20 kg carcass weight). This alternative yields meat and fibre from the kids as well. An alternative to kidding in May (c) was to slaughter kids at eight-months-old (16 kg carcass weight). In Scotland, harvesting of cashmere normally takes place from January to April. An assumption was made that the kids had to be slaughtered in January.

The alternative of kidding in May is based on more extensive use of pasture and a reduction in annual milk yield which might occur if special measures are not introduced. An alternative with 10 per cent lower milk yield was worked out for May kidding, assuming the same level of supplementary feeding as February kidding.

The present price to the producer for goat meat, 2.92 Euro (23.80 Norwegian kroner - 1 Euro = 8.15 NOK) per kg carcass, was used for the calculations. The estimated yield of cashmere was 200 g/year for does and 170 g/year for kids. An alternative with half the fibre yield was also worked out. The average world market prices for cashmere fibre for the period

1982-91 was used (Watkins & Buxton, 1992) and amounted to 81.85 Euro per kg.

When comparing the production systems, consideration must be given to extra labour input as well as extra cost of housing and feed for the kids. Cost of the feed will depend on age at slaughtering and length of the indoor feeding period. On the other hand, governmental subsidies linked to grazing animals for preservation of the rural landscape was added to income.

### Results and Discussion

The farm profit of conventional goat milk farming was 23,760 Euro or 7.11 Euro per hour (Table 1). The calculations refer to the price level in 1990. Changes in farm profit and in farm profit per extra hour of labour are relevant figures for comparing the different production systems and making a rational decision. The optimum system on a farm will also depend upon the alternative value of the family labour outside the farm.

The alternatives presented in Table 1 all provided possibilities for increasing farm profit in case of normal fibre yields. Adding cashmere fibre to the breeding stock involves the smallest change with annual fibre production estimated as 20 kg. Farm profit is high per hour, as only a few extra hours are required as long as surplus kids are disposed of.

Raising the kids is necessary to achieve a substantial increase in farm profit. Optimum age at slaughtering will depend upon the demand for meat and fibre. For February kidders, the alternative of slaughtering of kids at 11 months increased farm income by 16.5 percent and provided a considerably higher profit per extra hour of labour than the conventional alternative.

Kidding in May and raising the kids for eight months increased profits by 18.5 percent compared to disposal of surplus kids in February. Goat kids born in May will require less indoor feeding with hay and concentrates.

Due to more extensive use of pasture for the milking goats, one cannot exclude a reduction in the milk yield with May

kidding. The reduction, however, will depend upon the quality of the pasture and the level of supplementary feeding. The alternative with 10 percent less milk yield performed well with May kidding and eight months old kids. Goats may respond well to kidding in May. In fact, goats kidded during the spring in the traditional Norwegian system.

In the calculations in Table 1, the same monthly milk price was used for all alternatives. However, since 1996 goat farmers have been paid a substantial premium for milk delivered from November to February. Since May kidders will produce approximately 30 percent of the milk during this period, profit will be higher compared to February kidders which are dry in mid-winter.

It is also convenient to introduce suckler kids when kidding takes place in spring (Asheim & Eik, in press). While the kids are being suckled, the does are milked once a day and after weaning twice a day, thereby increasing milk supplies during autumn and winter when milk prices are higher. Only a minimum indoor feeding of the kids is needed with slaughtering in August. Once daily milking also reduces labour input considerably in this period. When suckling is practised, more goats are obviously needed to fill the quota. However, since first kidders start lactation in spring, they may be kept in a simple shed until kidding, thus saving space in the goat house for more dairy goats.

Due to good demand for kid meat, the Norwegian Meat Cooperatives pays farmers 4.79 Euro per kg for good quality carcasses delivered in August on a contract basis. From 1999 the offer will probably be extended to deliveries from November to January. Suckled kids delivered in August are profitable for the farmers (Asheim & Eik, in press), and would become even more profitable if slaughtered in winter when cashmere was added to income. In Scotland, a substantial amount of the cashmere has grown by the end of November (A.J.F. Russel, personal communication, 1997). Compared to the alternative with eight-month-old kids (Table 1), slaughtering in November might provide high fibre yield with reduced cost of feed as well as higher price for the meat.

**Table 1.** Farm profit and profit per hour on specialised Norwegian dairy goat farms and changes due to combining production of milk with cashmere fibre and meat.

Production alternatives	Farm profit (Euro)	
	Total	Per hour
<i>Kidding in February</i>		
Conventional goat milk farming	23,760	7.11
<i>Intervention with kidding in February</i>		
a) Conventional with cashmere fibre	+ 1,459	21.35
-50 per cent cashmere yield	+ 730	10.68
b) Cashmere fibre and 11 months old kids	+ 3,926	8.84
-50 per cent cashmere yield	+ 2,570	5.77
<i>Kidding in May</i>		
c) Cashmere fibre and 8 months old kids	+ 4,389	15.22
-50 per cent cashmere yield	+ 3,033	10.55
-10 per cent milk yield	+ 2,894	10.06

Off-flavour is a problem in the production of Norwegian goat cheeses. The problem may be due to negative energy balance in goats having exhausted their energy reserves. A strong seasonal effect has also been reported. Most problems with off-flavours occur when goats are in peak lactation, normally towards the end of the indoor-feeding period. Another critical period is August, probably because of deteriorating pastures and long walking distances of the goats. When goats go with suckling kids during summer, milk deliveries are reduced in the critical periods and more milk is produced by indoor fed goats in mid- and late lactation. Such goats are easier to feed to maintain a positive energy balance and milk quality is improved (Eik *et al.* unpublished data).

By adding fibre production to all Norwegian dairy goats it would be possible to produce about 15 tons of cashmere. However, the fibre production would increase by 86 percent by raising all the kids. It is possible to further increase fibre production substantially by feeding the kids for another year, but the extra feeding cost of such a system will make it unprofitable. Another option might be to adopt the Scottish system with mixed grazing of sheep and goats for improved grazing and harvest of meat and fibre. Research on such a system will be initiated.

Even with the assumption that only 50 per cent of the potential improvement in fibre yield is realised, adding cashmere production to the milking goats seems to be profitable. However, with only half of the potential fibre production, raising the kids for 11 months will not be profitable when kidding occurs in February. If kidding takes place in May, raising the kids until eight months will still be profitable even with a meat price of 3.43 Euro per kg.

This year about 100 imported cashmere goats will be released after three years of quarantine. The goats will be kept as a specialised line for fibre and meat. Negative correlations between important economic parameters such as fibre and milk might exist and such possibilities must be examined before cashmere fibre can be included in the Norwegian breeding programme.

A final argument is that goats with a double coat tolerate rain and wind better than goats which are poor cashmere producers. The cashmere fibre thus should have some value even

if it is not harvested. Many goat farmers support the work for a more robust goat because they are convinced that such a goat will be better adapted to the shifting weather of the Norwegian countryside.

### Conclusions

A combined production system for goat milk, meat and cashmere fibre would mean more even milk supplies throughout the year and would be an interesting alternative compared with today's specialised dairy goat system in Norway. A change in the time of kidding to May appears a most promising modification. Cashmere fibre, together with suckled kids and utilisation of market niches for goat meat, may contribute to maintaining goat farming as an element for rural employment in a period with reduced agricultural subsidies. The current practice of disposing of surplus kids at birth can be avoided, reducing negative publicity for goat farming.

So far, only a small number of goats produce cashmere fibre in Norway and in the EU. It might be possible for dairy goat and sheep farmers to produce cashmere fibre in addition to meat and milk thereby utilising market opportunities and increase income on farms in less favoured areas of Europe.

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