Research on diversification in the Norwegian smalll ruminant sector

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Outline of Presentation

- 1. Background information about the Small Ruminant Sector in Norway
- 2. Meeting new challenges in the Sheep Husbandry Sector; i.e. of-season supply of fresh lamb's meat and diversification of products
- 3. New Production systems for goats; i.e. meat production on older animals, producing halalmeat, cashmere fiber and use of goats for landscaping purposes
- 4. References



Background information about the Sheep Sector in Norway I¹

Key Information	Numbers
Number of herds	15 000
Number of breeding	
ewes	1 000 000
Average herd size,	
ewes	67
Main lambing season	April – May
Barn-feeding period	November – May
Breeds	Norwegian White
	Sheep,
	Spæl, Dala, Steigar,
	Cheviot, Rygja,
	Pelt Sheep

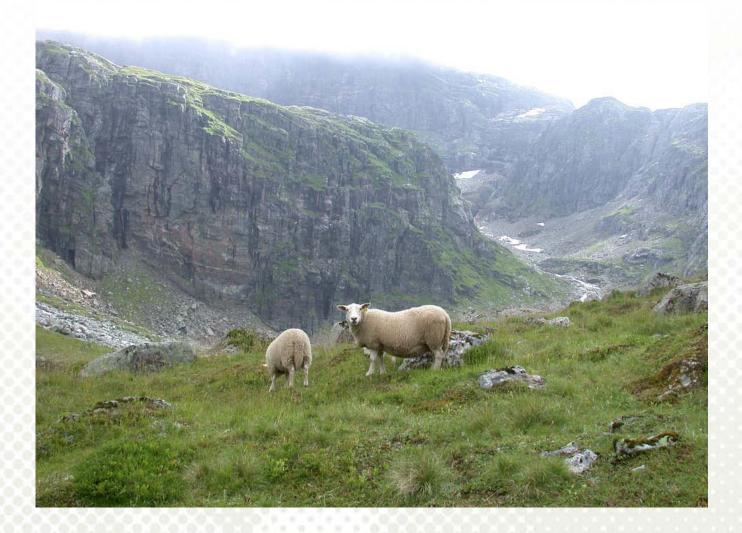
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Background information about the Sheep Sector in Norway II¹

Key Information	Numbers	эр
No of lambs per ewe (including stillborn) No of lambs per ewe	2.0	
in fall	1.66	
Lamb mortality, %	17	
Age at slaughter, d.	130	
Slaughter weight, kg	19	
Yield, Live body		
weight per ewe, kg	70.8	



On Summer Mountain Pasture, Norwegian White Sheep (Photo: NSG, 2009)





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Meeting new challenges in sheep sector; of-season supply of fresh lamb's meat

- Most lambs are slaughtered in September and October
- Castration of ram-lambs normally not permitted in Norway. Extended slaughtering season; does it result in increased male off-flavor in meat?
- Extended slaughtering season; does it alter the possible premium qualities of meat from lambs slaughtered directly from the mountain range?



Extended slaughtering season: Materials and Methods

• Involved use of 231 lambs distributed into:

- 40 lambs grazing on the mountain ranges or cultivated lowland pastures and slaughtered in September.
- 107 lambs fed indoors by farmers and slaughtered in March-April.
- 84 lambs subjected to either ad libitum or restricted concentrate supplementation and slaughtered in October – November.
- Sensory meat quality assessed with special emphasis on male flavor odor and taste



Extended slaught. season: Main findings I. Table 1: Variation of ram taste with animal sex and time of slaughter.

Season	Ram	Ewe	Sign.
September	2.4	2.3	NS
October - November	2.2	1.6	* * *
March - April	4.4	3.2	*

Except for the lambs slaughtered in September (4

 5 months old), meat from ram lambs
 slaughtered in October/November (6 to 7 months
 of age) and March/April (10 to 11 months old) had
 noticeable ram flavour.



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Extended slaught. season: Main findings II.

- Meat from individual ram-lambs scored so high on male-flavor that it was likely to affect consumer acceptability negatively.
- New studies Lind et al. (personal communication) indicate problems with ram flavor even in lambs slaughtered in September.
- At present, meat from ram-lambs are used for upmarket products due to higher EUROP-score.
 Probably, the wrong approach?

Diversification of products

• Examples of regional brands:

- ✓ Kvitsøy-lam
- ✓ Hallingskarvet-lam
- ✓ Lofot-lam
- ✓ Villsau-lam





Diversification of products: Material and methods

• Involved use of large number of lambs from different locations in Norway distributed into:

- Lambs grazing on the mountain range or cultivated lowland pastures in different parts of Norway
- Lambs fed indoors for 3 to 6 weeks pre-fattened before slaughter compared with directly slaughtering from mountain pastures.
- Sensory meat quality assessed with special emphasis on odor and taste.



Diversification of products: Main findings I.

- Compared with lambs from lowland cultivated pastures, lambs slaughtered directly from the mountains, were:
- Heavier and obtained better grading according to the EUROP - System
- Less DM in the meat
- ➤ Less fat
- ➢ More protein in % of DM
- Higher contents of poly-unsaturated fatty acids
- Small, but significant differences in flavor of meat



Diversification of products: Main findings II.

- Small, but significant differences in flavor of meat also observed between lambs from different regions
- Fattening after grazing unimproved pastures for 3-6 weeks did alter meat quality to a small extent with effect of year observed
- These differences in quality of meat may give fascinating market opportunities:
- Should producers in less-favored areas of mountainous Europe market for example mountain-lambs from their respective locations?



- 44 000 goats kept for specialized milk production with negligible output of meat
- Rapid decline in number of milking goats in recent years
- Increased interest in utilizing goats for other purposes than milk in alternative production systems, especially:
- Meat + Grazing for maintenance of open and diversified landscape ("landscaping")



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Department of Animal and Aquacultural Sciences

Cashmere goat: New production systems I.



MeatCashmereLandscaping



Cashmere goat: New production systems II.

- Importation of 30 cashmere goats from New Zealand in 1995 + semen from Scotland
- Fiber may be combed or shorn, combing is best
- Mature cashmere-goats may produce 100-200 gram per year
- Shearing of animals at the slaughter house after killing, is it possible?



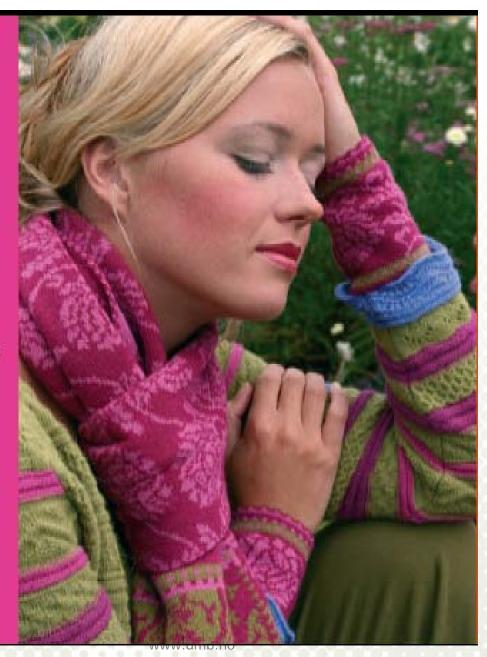


Product from Oleana I.; www.oleana.no

DESIGN 303 sjal/scarf K • cerise G • green W • dark blue

DESIGN 304 pulsvanter/ wristlets K • cerise G • green W • dark blue

100% norwegian/ scottish cashmere





Meat from goats

- Limited tradition for goat's meat in Norway
- Surplus goat kids culled after birth
- Goats' meat used for sausages
- Low price
- Changes are taking place
- Marketing in collaboration with acknowledged chefs
- Emphasis on meat from young animals, slaughtered after 1-2 grazing seasons

Alfathi-products

Alfathi AS pays good price for animals sold on contract-basis at Id-celebrations

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Norwegian short-tailed sheep (Spælsau)





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How different is lamb's and goat's meat? Main findings

- Goat meat has generally low fat higher protein contents than meat from the female Norwegian lambs
- The detection of differences in sensory characteristic between goat and lamb meats by the panellists implies that goat meat is not interchangeable with lamb meat

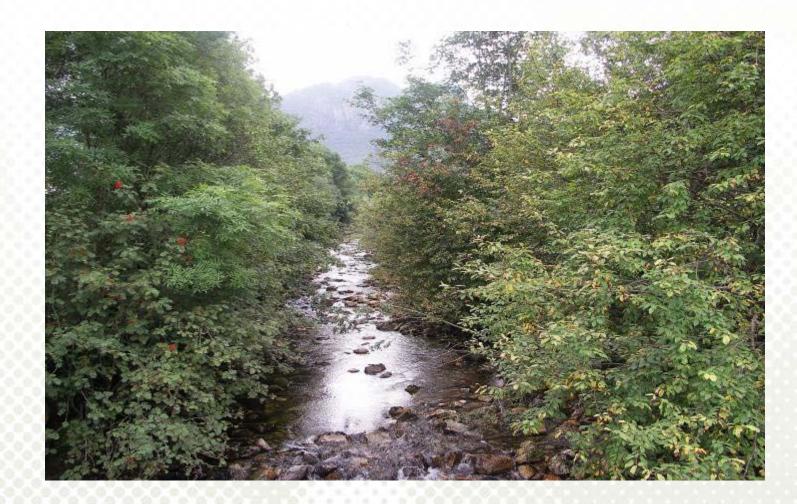


LANDSCAPING Cashmere goats for landscaping

- It may prove difficult to obtain good income from sale of only meat and cashmere fiber
- Providing attractive landscape is supported by the government
- Landscape can be an output alongside meat and fiber from cashmere-goats



Encroachment along river banks



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Cashmere goats for maintaining open and diversified landscape



Intensive browsing leads to opening of the vegetation, electric fencing is handy along cultivated paddocks



Open landscape is also important



After 2-year grazing with goats

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References for more detailed information I.

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