Research on diversification in the Norwegian small 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 halal-meat, cashmere fiber and use of goats for landscaping purposes

4. References
### Background information about the Sheep Sector in Norway

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

Adapted from Vatn (2009)
### Background information about the Sheep Sector in Norway II

**Table 1. Some key figures in Norwegian Sheep husbandry**

<table>
<thead>
<tr>
<th>Key Information</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of lambs per ewe (including stillborn)</td>
<td>2.0</td>
</tr>
<tr>
<td>No of lambs per ewe in fall</td>
<td>1.66</td>
</tr>
<tr>
<td>Lamb mortality, %</td>
<td>17</td>
</tr>
<tr>
<td>Age at slaughter, d.</td>
<td>130</td>
</tr>
<tr>
<td>Slaughter weight, kg</td>
<td>19</td>
</tr>
<tr>
<td>Yield, Live body weight per ewe, kg</td>
<td>70.8</td>
</tr>
</tbody>
</table>

1 Adapted from Vatn (2009)
On Summer Mountain Pasture, Norwegian White Sheep
(Photo: NSG, 2009)
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.

<table>
<thead>
<tr>
<th>Season</th>
<th>Ram</th>
<th>Ewe</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td>2.4</td>
<td>2.3</td>
<td>NS</td>
</tr>
<tr>
<td>October - November</td>
<td>2.2</td>
<td>1.6</td>
<td>***</td>
</tr>
<tr>
<td>March - April</td>
<td>4.4</td>
<td>3.2</td>
<td>*</td>
</tr>
</tbody>
</table>

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.
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 up-market 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?
Background information; the Goat Sector in Norway I¹

- 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")
Cashmere goat: New production systems I.

- Meat
- Cashmere
- Landscaping
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
Norwegian short-tailed sheep (Spælsau)
Norwegian dairy goat
Cashmere goat
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
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
References for more detailed information I.


References for more detailed information

II.
