



## Nature Conservation 3

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## The shepherd's tasks doing nature conservation

### Water supply

Water is crucial for whether an offer of grazing is interesting. If there is no water you have to carry it to your animals. On Hammerknuden (Bornholm) there is not enough water in periods of drought, and the shepherd carries 400 litres of water from his home to 200 sheep with lambs 2-3 times a week during the summer season. This costs materials and time. Therefore you always have to demand a higher pay for grazing areas without water.



*2000 litres of water on the wagon linked to a vessel with a ball float. Sheep needs about 6 litres of water each day. However the content of water in the grass covers a big part of the sheep's needs.*

### Moving

Sheep can be moved in many ways. Some people call the sheep together with a bucket of grain. Professional shepherds move their sheep on foot and with a dog. Shepherds have worked this way, and still do it, in countries where the hourly fee is low and where the areas are large and unsuited for fencing. In the Netherlands there is a good payment for nature conservation. There are examples of 400 sheep grazing 5 km unfenced dike each day with shepherd and dogs. Sheep can walk a distance of 5-10 km depending on race and the age of the lambs. It is not easy to move sheep with middle-sized lambs (2-3 months), which get lost from their mothers. They ought to be trained in walking small distances before they get out on a big journey. Old sheep know that moving means new delicious grass and they are easier to move. A good dog can keep trained sheep together behind the shepherd, who walks in front. Training and care of sheep dogs requires great interest and knowledge. Horses are also suited for gathering sheep on inaccessible areas where the sheep can hide in scrubs or behind rocks. Dogs and horses are good



combinations. The shepherd can command his dogs on horseback, so that horses and dogs can drive the sheep forward. The sheep are not afraid of horses but they respect them.

*Demonstration of herding - night atmosphere in Thy Nature Reserve. Photo Berit Kiilerich*

**Moving with truck** or trailer is often the solution when it is necessary to transport the sheep distances longer than 7 km. It is required to have a non-skid foundation in the truck and 0.3 m<sup>2</sup> per animal. (The space conforms to a cut and not heavily pregnant sheep over 55 kg - see EU-regulations about transport). A truck with large capacity is best. If for example a flock with 400 sheep is gathered to be transported in truck, which only have space for 80 sheep per load, it might stress the animals to be gathered, wait and be driven towards the loading platform 5 times before the last group is loaded. The lambs and sheep can be divided and driven separately, so that no one gets squeezed.



*The deck is put up in the trailer and is covered with sawdust as the law prescribes*



*The shepherd and dogs has to drive the right number of lambs onto the deck.*



*Now the upper deck is being shut and the loading platform is moved down for the lower deck to be loaded*

*A two-deck trailer can contain about 45 sheep.*

A two-deck trailer can move about 45 sheep. It requires a powerful car, preferably a four-wheel drive because the trailer weighs 3.5 ton with load (and can carry 2.5 ton). A trailer is an economical solution in case of frequent moving of animals to smaller grassland, grazed effectively for a short period. The standard is to have lambs on the upper deck and

sheep on the lower. After being moved a few times, sheep and lambs are completely familiar with entering the trailer. A good dog is indispensable at a loading, though. An assistant to lower the loading platform and shut the gates can also make the job easier.

## Expenses of nature conservation

It is expensive to carry animals to natural areas and it requires time and transport to inspect the animals regularly. The hourly fee is usually 200 kr. when holidays, sickness benefit and pension are included. Therefore it would be wise to estimate how many hours you are going to spend on transports and inspections before volunteering to cultivate an area.

The example below shows the consumption of time on Hammerknuden in the grazing-season 2005 and shows an example of what the "shepherd-hours" are spent on in a natural area.

The distribution of 123 Shepherd-hours all in all used in 2005 to manage the grazing of a 100 ha nature area Hammerknuden grazed by app. 200 sheep and lambs was calculated:

53% inspection

47% shepherd's driving

19% moving sheep to or from other nature areas

3% other work

## Expenses for inspections

Sheep in fields must be inspected regularly according to "animal welfare justice", that is 3 inspections pr. week, whereas animals in stables must be inspected daily. It takes about 20 minutes to check out a flock if you have a good dog to help you. Then inspections cost at least 1 hour at **200kr. per week**. If the area is far away it is important that people who normally spend their time in the area can call the shepherd, if they discover an accident. It is therefore of most importance that local people can monitor the sheep. The shepherd always has to be prepared for situations as limping sheep, outbreaks of diseases, dog attacks, sheep that run out and so on.



*The owners of the nature area are saving time and calls because this sign is put on all gates. The signs advertise for lamb meat too.*

### Cost at distances

If the field is located more than 10 km from the farm the starting point is 3 times monitoring a week of 20 km. A total of 60 km.

Hourly wages, driving 1 hour per week of 200kr	200 kr.
<u>Driving by car 60 km of 3.10 kr.</u>	<u>186 kr.</u>
<b>Total per week for driving 10 km and monitoring.</b>	<b>386 kr.</b>

This counts almost regardless of the size of the flock. That is why it is most rentable to have big coherent areas with a large flock.

### Cost of moving

Using (two-deck) trailer and car, the price is 5 kr. km for 45 sheep, ie. about 11 øre. per sheep per km. If moving 90 sheep 10 km it costs 150 kr. (2 loads). If the fields are more than 10km from home the trip out and home costs further 100kr. Moving 90 sheep 10km then costs about 250kr. excluding hourly wage for the shepherd and sheep dogs.

If a moving with 90 sheep with private trailer takes 2 hours, the moving costs in total:

Driving 50 km of 5 kr.	250 kr.
<u>Shepherd hours twice of 200 kr.</u>	<u>400 kr.</u>
<u>In total</u>	<u>650 kr.</u>

**As a rule of thumb a moving of 10 km costs around 700 kr. per 100 sheep.**

### Cost of watering

Transport of water in a 400-liter tank costs about 5 kr. per km incl. wear on the car.

Normally you water while monitoring, but watering increases the use of transport with 2 kr. per km 3 times a week. At a distance of 10 km it will be 60 km, where the price has increased by 2 kr., which means 120 kr. per week. Then comes time (1/3 hour) to fill up the tank, empty the drinking bowls of old water clean them of algae.

Price of watering an area 3 times a week:

driving 3 * 20 km of 2 kr. per km.	120 kr.
<u>Time 3 * 1/3 hour of 200 kr. per hour</u>	<u>200 kr.</u>
<b><u>Price of watering (excluding water) per week</u></b>	<b><u>320 kr.</u></b>

There are great economical advantages from grazing that takes place on areas with access to clean drinking water.

## Cost of fencing

In general, the shepherd ought to demand, that the landowner pays and maintain the fence. The shepherd monitors the fence and repair small damages. Even though a stationary four-wire electric fence is expensive, it ensures that the animals stay inside. It might be interesting to several landowners to join together and have their areas grazed. The price on fencing depends on the circumstances in the area that are grazed. For example it is difficult to knock down the poles, where there is a swampy meadow. It will be expensive to get a suitable machine out to do the task. Therefore plot-owners of meadow around a lake or in marshes along the sea must join together to form a large area for grazing. Sheep avoid to step into water, which means that you can just fence the dry areas.

Podahegn has given examples of fencing 7 acres, 4 hectares or just 200 x 200meters:

Commodity	price kr.(excl. VAT)
800 meter 4 wire fence of 6.50 kr.	5200 kr.
5 cornerpoles of 200 kr.	1000 kr.
4 handles	500 kr.
electric power	5000 kr.
<u>Wages</u>	<u>7000 kr.</u>
In total 800 meters and 5 corners (including parts.)	18,700 kr.



The shepherd can in some cases offer to put up a mobile fence. This type of fence is designed for areas where it is possible to drive. The vehicle is made for pulling out the wire, when putting up the fence, and rolling it together when taking it down. A three-wire fence will normally cost about 10 kr. per meter, when time for putting up and taking down is included.

*Mobile fences are easy to roll out in areas where it is possible to drive but are not suited for marshes and on rocks.*



*Corner posts, wire and middle posts ready for putting up.*

## Price and agreements concerning a grazing contract

The grazing expenses can be very difficult to estimate when you are making an offer about grazing in an area. This is an attempt to divide up the areas into different categories. The aim is to put a prize on grazing during the negotiations, by finding the category that fits the description of the area. The classification in the outline goes from 0 to 5, with 0 as the poorest land, which gives the shepherd a lot of expenses, and 5 is fat land, which can be grazed almost for free. Prices are net-prices and subsidies are not included.

Grazing category	Description	Shepherds charge
0	Small moors and rocky areas without water. Fenced by the landowner.	3500 per hectare
1	Big moorlands or rocky areas far away from home, no water supply. Fenced by the landowner.	2500 per hectare
2	Wet meadows. Can be attractive if there is connection to dry areas and local monitoring. (Max 10 km from the farm). Fenced by the landowner.	1000 per Hectare
3	Arable land or grass seed areas, big and connected areas (max 10 km from the farm). Fencing and water supply might be required.	Price about 300 kr. per hectare
4	Productive big and connected areas (not poor moor, max 5-10 km from the farm.) Water and shelter is available on the area.	Free grazing if fenced
5	Attractive big and connected areas close to the farm. Natural water supply and shelter.	No charge. It is rentable to fence yourself if you have an agreement of long duration.

**In general the landowner ought to be responsible for these following things in case of stationary grazing**

- Fencing
- Maintenance of fence – if it requires more than one hour's work
- Replacement of "tourist proof" gates
- Cleaning and maintenance of "drive-over cattle gates"
- Establishment of watering

In case of mobile grazing the hourly wage for putting up and taking down and also payment of interest for the fence must be covered in the grazing agreement.

*The landowner ought to be responsible for fencing the areas that are going to be grazed. In some places fencing requires special solutions.*



*A drive-over cattle gate makes it possible for vehicles to enter, but it needs to be cleared in order to keep the sheep inside. On the picture the sheep has run out and the landowner ought to clean the grating when the sheep are caught.*



*You have to agree with the landowner on how to put up signs. It is easier if the shepherd's cell phone number is displayed. The landowner has put up the signs on the photo.*

## **Other circumstances that need to be considered making a grazing agreement**

### **Complementing areas for feeding and treatment with anthelmintics**

When you have driven your sheep to fields far away it is tempting to feed them there, in case of for example drought. That is not a good idea if the purpose with grazing is to remove nutrients. Sheep usually eats high-protein feed and excrete the surplus of nitrogen in the urine. If the sheep get the feed in a trough or a feed rack and drop the manure and urine in the field, the sheep will supply more manure than they remove. Therefore it is better to move the sheep to a less valuable reserve-field close by. The shepherds have to consider if they can find fields that can be used as reserve-fields, and include them in the agreement.

In case of repeated grazing of the same fields with sheep, anthelmintics are necessary to avoid worm diseases. Most of the anthelmintics do not only kill the worms inside the sheep but also the dung beetles and other organisms that are supposed to break down the manure. It is therefore best to give anthelmintics while the sheep are grazing on arable land, which is under crop rotation, in order to avoid spreading the anthelmintics to the sensitive natural areas.

### **Co-grazing**



*Sheep can graze after cattle with advantage. Sheep and cattle do not suffer from the same parasites. Co-grazing with sheep and cattle break the parasite's cycle. Goats remove scrub better than sheep but do not graze to the ground, while sheep can make lawn-like grazing. Sheep and goats are attacked by the same parasites.*

Every grazing area accumulates parasites, especially if they are not cut at least each year. If you lead sheep with lambs out on the same areas many years in a row, the troubles with parasites after 2-4 years (depending on the weather) will be huge. The lambs probably suffer from worms and have reduced growth. If a natural area needs to be exposed to grazing of high intensity, in order to keep the scrub down, it is best to graze with at least two types of animals per season.

In case of alternating grazing you exploit that cattle, sheep and horses do not suffer from the same parasites. The order of animals grazing could be cattle first, after that sheep and

in the end horses. The animals don't graze at the same time, but succeed each other in periods of for example 3-4 weeks.

Co-grazing requires a fencing that conforms to every animal species. Sheep, horses and cattle can all be kept in by a 4-wire electric fence.

It happens that horses get their legs entangled in the many wires of sheep fences, especially when the horses roll. This problem can be prevented with an inside single wire and a sandy place, where they prefer to roll, far away from the fence.

In places without electricity or, where the terrain is too hilly to suspend an electric wire, there are more problems. Cattle can destroy the sheep's net fence by rubbing themselves against it. Sheep cannot be kept in by barbed wire, which is sometimes used to keep beef cattle in, if there is no possibility for electric fencing

(Warning!! If cattle are going to graze with or after sheep, it is recommended that your vet tests if the sheep carry bovine malignant catarrhal fever. This disease is harmless to sheep but they can, especially when lambing or casting, transfer the infection to cattle. The cattle might get abscesses and inflammation in the entire body resulting in death.)

Until now there are only a few grazing agreements with more types of animals in Denmark. But foreign experiences have shown that the yield of fields, grazed with both sheep and cattle, increases with up to 30%. In Denmark grazing with sheep and heifers in wetland have turned out to give more paths for the cattle, which then are able to walk further out between the reeds and graze there.

### **Advantages of alternating grazing with more animal species**

- ✓ The parasites cycle is broken
- ✓ Dung beetles and other organisms, which break down the manure, are not inhibited by anthelmintics
- ✓ Regrowth is kept down
- ✓ Plain lawn-like areas without dead tufts
- ✓ Bigger feed production
- ✓ More grazing animal species remove more unwanted growth
- ✓ More healthy animals – better growth

# Managing the grazing pressure

In general the shepherd always has to make sure, that the sheep are moved before the start to loose weight, and before the plants are eaten, so the sheep are forced to eat poisonous plants.

A good ecological grass field yields 6000 feed units (FU) per Ha per year and a good unfertilized natural grass field gives about 2500 FU per Ha per year. Good natural areas can yield feed for about 10 ewes with lambs (1,5 on average) per Ha in the summer period, and about 10 weaned sheep per ha in the autumn period. During the winter semester the sheep can find stored grass and bushes in areas, which have not been grazed in the season.

In a heath you can only count on about 500-1000 FU per ha per year, and because a sheep with lamb needs about 700 FU per year, there is not feed for more than one sheep per Ha.

The table below shows the daily and yearly feed production in the different natural areas, and how many sheep an area can support per year.

Table1 Feed production and use intensity on different grass fields for sheep

Area	FU/ha/year	FU/Ha/day May	FU/Ha/day September	Sheep with 1,5 lamb/ year
Good unfertilized persistent grass fields	2500	25	12	3,5
Tidal meadows	1500	15	7	2
Heather/heath	750	7	3	1

The grazing pressure can be managed by always having new areas prepared and move the animals when an area is eaten down. Here you have to check if the animals are losing weight. The animals must off course not starve. Sheep can take spending their fat reserves to some extent, though. In general you must not press sheep that are pregnant, suckling or growing, to graze an area completely down. They have to be moved before they loose weight markedly.

# Systems of lamb production in nature conservation

You can choose between very different types of systems of lamb production, when using sheep as nature conservators.

**When choosing your system of lamb production, there are many things to consider:**

**Stable conditions:** if you plan to have lambings before the 1<sup>st</sup> of March you have to have space in the stable for all sheep and two months old lambs. Minima 2 m<sup>2</sup> per sheep + feeding aisle and space for lambing looseboxes.

## Handling manure and roughage

Finding a smart way of handling manure and roughage makes it manageable to have lambing before the 1<sup>st</sup> of March depends.

**Access to feed.** Grazed grass is usually cheap feed. If it is relatively expensive to buy concentrate and roughage it is better to postpone lambing until the grazing season. It is often expensive for ecologists to buy good protein feed and roughage. Therefore most ecologists prefer to postpone lambings until after the 15<sup>th</sup> of April. If you have large quantities of good spring grass provided it is also most rentable to have lambings around the 15<sup>th</sup> of April.

**Lamb sale all the year around:** If the stock is big enough for it, it is a good idea to have lambings the 15<sup>th</sup> of April and sell the lambs as they grow. Some lambs will grow about 150 grams per day in average and will reach the carcass weight when they are one year old. Other lambs grow more than 250 grams in average and they are ready to be slaughtered in September. By controlling the lambs' growth, you can plan to slaughter the lambs when the demand is high, for example at Easter.

**Production of Easter lambs.** Easter lambs have to be ready for slaughtering in April, which means that only races such as Suffolk and Oxforddown and maybe Shropshire, which up to 400 grams a day, that are able to reach the deadweight of 40-50 kg during 4 months of life. The lambings are in December-January and mating the 1<sup>st</sup> of July already. The young lambs are popular and the price is high, but the expenses for the ewes and feeding are also high. Lambs that are served for Easter can also be one year old.

## Breeds.

**Nordic Short-tailed sheep breeds,** such as Lüneburgers, Spælsau, Gute sheep, and also Icelandic and Faroese sheep have a natural mating season in November-January. It means that the lambings are from the 1<sup>st</sup> of April to 1<sup>st</sup> of June for these breeds, which often lamb outdoor. They have easy lambings, which means that you hardly ever have to help the lambings with these breeds.

The lambs are rarely big enough for slaughtering until a year after their birth, but they can live of grazing nature all the year around.

**Gotland sheep** are a bit more improved and even though they have easy lambings it is recommended to monitor the sheep while lambing. The lambs can grow if the ewes eat good grass in order to improve the milk-yield.

**Oxforddown, Dorset, Suffolk, and Shropshire** have a very long mating season and are able to mate from July. A lot of the animals have 3 lambings during 2 years. These breeds are chosen to produce Easter lambs and the sheep are grazing without lambs.

## **Cycle of different lambing systems - conditions and production**

### **1. The sheep lamb in January and the lambs grow fast and are weaned before put out 1<sup>st</sup> of May.**

#### **Preconditions for choosing this production:**

- Cheap winter feed – silage, grain and straw
- Breeds such as Suffolk, Shropshire Oxforddown and/or other breeds, that lamb early
- Good prices of early lambs – also after Easter
- Well organized stable, where the sheep are inside from the 15<sup>th</sup> of November to the 1<sup>st</sup> of May
- Good possibility of fattening lambs, which stay inside their hole life, for slaughter
- Making feeding and strewing easy, good employers
- Using a machine clear away the dung
- Natural grazing that are well paid, such as grazing between Christmas trees and overgrown areas

Production: lambs from 1<sup>st</sup> of April to 1<sup>st</sup> of June, when the price is good

Sheep that lamb early get lambs, which are ready for slaughtering before turn out. Therefore the sheep are weaned before they are let out on grass. The ewes can take being forced to clear out rough plants in nature conservation, but ewe-lambs have to graze better grass fields.

This production requires much work, because it requires fast growing meat breeds, which often have bigger problems with lambing and which need to be monitored.

The lambs have to be feed well, to make it possible that they can reach the right dead weight for Easter and get the good price. The lambs growth need to be 400 gr. Per day.

### **2. The sheep lamb 15<sup>th</sup> of March to 15<sup>th</sup> of April and graze with their lambs (The most natural and common lamb production)**

Preconditions.

- Good spring grass on clean fields without parasites
- Stable capacity for ewes, small lambs and one year old lambs.
- Breeds: all breeds, cross-production with short-tailed sheep as mothers and beef-rams as fathers can give a large lamb production.

Production: lambs from September to July next year, the lambs that are fattened needs daily monitoring.

Weaning is 1-15<sup>th</sup> of July. The lambs are led out on good grass fields, while the sheep graze natural areas. Sheep are in good conditions to mate in October-November. The condition is optimized with good grazing on for example grass seed fields. The sheep are taken indoors at the end of December, when they are cut and prepared for the next lambing in March-April. As soon as the grazing conditions are good the sheep and lambs are led out on grass together.

### **3. Sheep in natural areas all the year around, where they lamb in April-June**

Preconditions:

- Breeds such as Nordic Short-tailed sheep breeds perhaps Danish Landrace
- Plenty of feed and water, that do not freeze during winter (such as a small river or spring)
- Nutritious grazing throughout the year and especially from May to September, when the sheep are pregnant or lactating.
- Monitoring throughout the year. The shepherd ought to monitor the animals when lambing.
- 1Ha is required per ewe.

**I**t is allowed to have sheep outdoor all the year around, if there is access to shelter and dry lair. There are examples of forest districts, that have build stables out on the natural areas in order to have the areas grazed. Feed and frost proof water need to be accessible and the area have to be big enough to have less than one sheep per Ha, if the sheep need to graze the same place all the year around. The sheep often have to be moved indoors during lambing instead of keeping them on the natural area. A good example of sheep that graze outside all the year around is Norwegian Spaelsau on Hjelm in Kattegat. The sheep lamb outside without monitoring, but they have almost 2 living lambs per sheep in average.



*On the island Hjelm in Kattegat the shepherd Kjeld Malthe Bruun have a unique flock of around 60 sheep of the breed Norwegian Spaelsau. The sheep can handle manage alone and they lamb 2 lambs in average. The animals are often monitored with visits by a private plane. The lambs are sailed home in good whether and sold as a delicacy the ferry Molslinien. See also [www.sheep-isle.dk](http://www.sheep-isle.dk)*

#### **4. "Contractor sheep" do not lamb and graze most of the year.**

Preconditions:

- Sheep with good teeth, that do not lamb, which means that they have not been with a ram/ram lambs at least five months before
- Perhaps wether (neutered males) specialized for grazing
- Good prices on nature conservation on areas that are not attractive for animal production (for example dunes), because of a high burden of worms or the nutrient is low for instance.

Some shepherds call sheep that do not produce anything but nature conservation "contractor sheep". They are resistant to parasites, because they do not experience big changes in their metabolism, which happens during lambing and lactating. It is often difficult to earn money on lamb production, if the work with lambings, lambs and feed during winter has to be paid. Many areas are too nutrient-poor to provide sheep with lambs. "Contractor sheep" can be a solution to nature conservation of all the areas that are turning into forest. Here the Lüneburger-wethers in Storestrøms amt også is a unique example too. They grow old. The task for sheep flock is only to produce more wethers fore grazing.

The use of sheep for only grazing is a new type of work, unlike every other agricultural production, where the purpose entirely is nature conservation and no production.

## **Considerations about a grazing agreement:**

### **Considerations about management**

- Is the breed suited for nature conservation?
- Does the lambing system work with nature conservation?
- Does the stable function fit for nature conservation?
- Are you skilled enough as a shepherd?
- Are you able to find good sheep dogs?
- Are you able to find good assistants to help and substitute for you?
- Are you able to get a steady and high sale of my lambs?
- Is it possible to sell wool and skin?

### **Consideration about the area**

- Is there enough nutrition on the field?
- Is it possible to have daily monitoring on the area?
- Are shelter, shade and a dry lair available?
- Does the landowner provide with watering and fencing?
- Do tourists have access and are gates and drive-over cattle gates in prepared?
- Is there a danger of stray dogs?
- Can the ram be in the field?
- Will the landowner provide with reserve fields or allow supplementary feeding on the area?
- Is it possible to give the sheep minerals?
- Will the landowner cover the expenses of nature conservation?
- Does the landowner have a good understanding of your future co-work

### **Landowner's consideration about an offer of grazing**

- Are the sheep able to make the sort of nature conservation, which is needed?
- Are the sheep able to eat the unwanted plants?
- Are there unique plants that need to be preserved?
- Is there any reserve areas available for sheep treated with anthelmintics

- Do you have money to invest in fencing that also fit for different animals?
- Do the agreement maybe contain grazing with more animals?
- Is the landowner able to provide with daily monitoring?
- Is it necessary to cut down trees and scrub before or during the grazing?
- Do the tourists have to walk in the area?
- Which signs need to be put up?
- Are the sheep an advantage concerning the tourist experience?
- Can the ram be in the field?
- Is the chemistry between shepherd and landowner good?

## **You need to access if there is enough feed in each area.**

The most common plants that sheep eats are listed below.

### **Sheep like to eat**

Sycamore, *Acer pseudoplatanus* L. (leaves and bark)

Ash, *Fraxinus excelsior* L. (Leaves and bark)

Common Bent, *Agrostis capillaris* L.

Wood Millet, *Milium effusum* L.

Cock's-foot, *ssp. glomerata* (early in the year)

Hundegræs, *Phragmites australis* (Cav.) Steud. (young state)

Meadow Buttercup, *Ranunculus acris* L. (Poisonous, irritates the mucous membrane in the mouth)

Field Bindweed, *Convolvulus arvensis* L.

Mugwort, *Artemisia vulgaris* L. (parasite reducing)

Rosebay Willowherb, *Epilobium angustifolium* L.

Dandelion, *Taraxacum* F. H. Wigg.

Japanese rose, *Rosa rugosa* Thunb (especially leaves)

Cow-Parsley, *Anthriscus sylvestris* (L.) Hoffm.

### **Sheep might eat**

Rowan, *Sorbus aucuparia* L.

Broom, *Cytisus scoparius* (L.) Link (only to the height they can reach)

Hogweed, *Heracleum sphondylium* L. (især hvis nogle i flokken kender den)

Aspen, *Populus tremula* L.

Elm

Willow

Purple Moor-grass, *Molinia caerulea* (L.) Moench

Yorkshire-fog, *Holcus lanatus* L.

Creeping Buttercup, *Ranunculus repens* L. (Poisonous, irritates the mucous membrane in the mouth)

Raspberry, *Rubus idaeus* L. (early leaves)

Ramsons, *Allium ursinum* L. (early, the leaves produce Prussic acid, when growing)

Common Nettle, *Urtica dioica* L. (withered)



*Sheep have to get used to eating ramsons and need to be forced to eat them in the beginning.*

**Sheep eat if they are under pressure**

Birch, *Betula L.* (taste best when they sprout after being cut down)

Bramble, *Rubus subg. Rubus sect. Rubus* (depends on the specie, sheep get stuck if they have long wool)

Wavy Hair-grass, *Deschampsia flexuosa (L.) Trin.* (delicate leaves in tufts but the stalk is rough and uneatable)

Tufted Hair-grass, *Deschampsia cespitosa (L.) P. Beauv.* (even taller and rougher stalk than wavy Hair-grass)

Purple Small-reed, *Calamagrostis canescens (F. H. Wigg) Roth* or Wood Small-reed, *Calamagrostis epigeios (L.) Roth* (Have to be eaten before earing)

Rosebay Willowherb, *Epilobium angustifolium L.* (exist in places with fallen trees, especially Conifers)

Pedunculate Oak, *Quercus robur L.* (watch out for large quantities of acon, which is poisonous)

Hazel, *Corylus avellana L.*

Honeysuckle, *Lonicera periclymenum L.*

Creeping Thistle, *Cirsium arvense (L.) Scop.* (usually a problem between Christmas trees)

Cleavers, *Galium aparine L.*

Common Mouseear, *Cerastium fontanum Baumg.*



*Wood Small-reed is rough when withered. Sheep do not eat it then.*

**Sheep eat reluctantly and only under hard pressure**

Wood Anemone, *Anemone nemorosa* L. (poisonous)

Bracken, *Pteridium aquilinum* (L.) Kuhn (poisonous, but sheep can under a certain pressure get used to eat it)

Hairy Wood-rush, *Luzula pilosa* (L.) Willd.

Soft-rush, *Juncus effusus* L. (best eaten during winter under hard pressure)

Common Nettle (is only eaten at a certain state after blossoming)

Noble Fir (Shropshire sheep can keep plants clear with out eating them)

Nordmann Fir (Shropshire sheep can also keep them clear with good management)

The list of poisonous plants is in the chapter called "Health and Diseases"

**Link:**

Find plants on the website <http://linnaeus.nrm.se/flora/>

## Profit on lamb production

When landscaping, the lambs' growth depends on how much grass is available. Lambs weigh about 20 kg at weaning, when they are 2-3.5 months old, and they need to grow 30 kg more before they are ready for slaughter. You get most profit of a lamb weighing 50 kg alive weighs around 25 kg slaughtered.

The example below is a calculation for a sheep (for instance a Gotland sheep), which lambs the 1<sup>st</sup> of April and is put out on good natural areas with the lambs that are weaned at the age of 3,5 months, when weighing 23kg. The lambs grow 200g per day throughout their period of growth. This means that they gain 6kg per month. The lambs are slaughtered when they weigh 44kg in average, around the 15<sup>th</sup> of October, which gives a carcass weight 22kg. The lambs are put on a field with good grass from the 15<sup>th</sup> of July. They eat 0.6 FU of a feed mix containing grain and grass pellets supplementing the grazing. In total 1 FU per day until slaughter the 15<sup>th</sup> of October.

### Biological Facts

Lambs per ewe	1.75
Replacement rate	25
Percentage of lamb mortality	5
Lambing	1 <sup>st</sup> of April
Put out	1 <sup>st</sup> of May
Weaning	15 <sup>th</sup> of July
Slaughter	15 <sup>th</sup> of October
Lambs gain per day	200 grams
Carcass weight	22 kg

### Feed consumption

Sheep in a stable	217 FU
Sheep with lambs on natural areas	313 FU
Growing lambs, Pellet feed	95 FU
Growing lambs, Grass from arable land	63 FU
<b>Total feed consumption per ewe</b>	<b>688 FU</b>

## Prices

Feed for dry sheep until 12 <sup>th</sup> of February	1 kr. FU
Pelleted feed for lambs	1.5 kr. FU
Feed for sheep in late pregnancy and lactating sheep	1.5 kr. FU
Good grass from arable land	0.4 kr. FU
Mineral	25 kr. per year-sheep
Lambs delivered to the slaughterhouse	28 kr. per kg carcass weight
Anthelmics for sheep and lambs	25 kr. per year-sheep
Vet, registration and other	60 kr. per year-sheep
Ewe subsidies	80 kr.

## Result of lamb production

Revenue of lambs	870 kr.
Ewe subsidies	80 kr.
<b>Total income</b>	<b>950 kr.</b>
Feed costs	460 kr.
Fee for research	14 kr.
Expenses for vet, registration and other	124 kr.
<b>Total expenditure per ewe</b>	<b>598 kr.</b>
<b>Contribution margin per ewe</b>	<b>352 kr.</b>

*The contribution margin must cover transport to the slaughterhouse, salary to the staff, interest and depreciation of stable and materials*

## Influences on the contribution margin

If the Slaughter price changes 1 kr. per kg the contribution margin is changing with 31 kr. per ewe

If lamb mortality percentage is changed 1% the contribution margin is changing with 9 kr. per ewe

If the culling rate is changed 1% the contribution margin is changing with 6 kr. per ewe

If the number of lambs born per ewe is changed 0.1 the contribution margin is changing with 47 kr. per ewe.

If the feed price is changing 0,1 kr. the contribution margin is changing with 31 kr. per ewe.

If the lambs are fed one more month and grow up to 50 kg live weight (25 kg carcass weight) the contribution margin is increasing with 66 kr. per ewe.

## The price of a lamb

In Denmark you get the highest price per kg lamb meat when the carcass weight is between 20 and 25 kg and the lamb is in moderate condition score (2,5-3,5). Lambs need to be equal and high quality to make good sale.

In 2007 you could find the prices of lam on a website: Danish Lamb. The price was consisting of more elements. Price for the meat, withdraw for fatness, bonus /withdraw for carcass shape. It cost between 30 and 70 kr. to send the lamb to the abattoir depending on the number delivered. You can drive the lamb to he abattoir yourself to safe this money.

To give an example: Week 15 2007 the price of one kg lamb was 28 kr. One lamb of 20 kg carcass was  $20 \times 28$  kr, that is 560 kr.

If you sell the lamb private you deliver the lamb to the abattoir and the buyer fetch the slaughter lamb when its finished. The prices for private costumers have to cover butcher work, Vat and organizing the sale. (Calls, agreements, payments).

Basicprice	560
Slaughtering	160
Slaughters work	100
<u>Advertisement/sale</u>	<u>100</u>
All in all ex Vat	920
Vat	230

**Costumers price for a 20 kg lamb 1150 kr.**

**Lambs to private costumers ought to cost 58 kr per kilo including Vat. If the basic price per kilo is 28 kr.**

### Organiced sale of lambs from natural pastures.

Vallølambs are a good example of equal lambs made of Texel rams and different ewes. The lambs are weighed and fed to reach exactly the right weight and fatness at slaughter. The price of Vallølambs is high, but consumers are willing to pay for meat of high quality. The Brand has an advantage because it helps the communication between costumer, slaughter and shepherd, which makes it possible for the shepherd to in optimize the production.

Hammershuslambs are also interesting, because the lambs has been grazing famous natural pastures of Bornholm. The demand of the product has increased because the meat is equal and can be delivered all the year around. The lambs are produced from Gotland ewes and Texel rams.

The best lambs are made by careful monitoring of lamb growth, health and equal feeding. The sale is furthermore stimulated by the stories told about the origin of the lamb and the nature conservation.



*The local abattoir in Bornholm did a good marketing of Hammershuslamb. The cooperation with Jan Seerup, has increased the lamb prices to 20 % basic price.*



*Good lamb meat is a delicacy of high demand, sold at high prices. 162 kr per kg for best cuts.*



*Hammershuslambs served on a gourmet restaurant Le Port at Vang, Bornholm. The restaurant is close to the most beautiful nature pastures with the best view to the Baltic Ocean*