

# Combined pasture and housing systems in Denmark: year-round outdoor housing for sows and piglets

## Description

On this Danish farm, organic sows are on pasture all year round. Only during insemination, the sows are brought indoors for about 6 days. On pasture, lactating sows have individual paddocks and pregnant sows stay in groups of 8-20 sows. Huts are bedded with straw. Besides fresh grass, the sows get concentrate all year round and additional roughage during winter.

Piglets are born outdoors and stay there during the lactation period. After weaning, at 7 weeks of age, most piglets move indoors, but every 12 weeks, 700 weaners stay for another 5 weeks outdoors, where they have access to large tents with bedding and ad libitum feed. Thereafter, also those weaners move indoors. They are housed in groups of 220 pigs on a straw bedded area with an outdoor run and partly slatted floors indoors and outdoors. They furthermore have access to roughage and ad libitum feed. At around 30 kg the pigs are sold to another farmer, who raises the finishers indoors with an outdoor run.

## Pasture management

The grazing season is long in Denmark and therefore the sows are outdoors all year long. The farm has a two-year rotational pasture management; one year with pigs on clover/grass mixture and cultivated crops the year after. Sows in Denmark are allowed to have nose rings and therefore they cannot severely damage the vegetation. On average 90 % of the land is covered during summer and autumn and 40-50 % during winter.

There is crop rotation, and pigs in different production stages rotate from one pasture area to another. Piglets weaned on pasture for periods of 5 weeks take over pastures, previously used by pregnant sows turning the pasture upside down.



## Farm portrait

### Location

Jutland, Denmark

### Topography

Flat

### Farmland

255 ha: 240 ha arable land

### Size of pig herd

540 sows, 16,000 weaners

### Farming system

- Pregnant and lactating sows are housed on the pasture.
- During service, empty sows are housed indoors
- Some weaners are housed first outdoors and then are moved indoors with concrete outdoor run. The other groups of weaners are housed indoors.





Indoor pens for weaners have a partly slatted floor, which reduces the workload for cleaning.

This leaves only an average of 20-30 % of the area in those paddocks with full vegetation cover, preparing the land for next year's crops.

## Animal welfare

Clinical assessments on the farm show problems with ear lesions for weaners housed indoors (see table 1). No thorough assessment was conducted for weaners held on pasture, as this was not possible for the large groups of pigs on large pasture areas. However, ear lesions don't seem to be a problem here. The same can be said for short tails due to tail biting as well as diarrhoea.

There were no major welfare issues for pregnant sows. Only a few skin lesions are seen when sows are mixed in groups after the lactation period, where they have been on single paddocks. Only very few sows had sunburns on ears, body or udder. Soiling of pigs from mud, which is not a welfare issue, was very widespread, especially during summer. This makes a clinical assessment difficult.

Nevertheless, vulva lesions or deformations as well as lameness, were not a problem on the farm.

Sows on pasture did not perform negative behavioural manipulation of other sows, huts or feed troughs. For the weaners, this was also not the dominant behaviour

## Environmental impact and productivity

- For weaners housed indoors, the indoor area is cleaned once a week. During the project period both, solid and slatted floors, were in 6 out of 12 pens 10-50 % soiled, never more than 50 %. The outdoor area is only cleaned after each batch, i.e. every 5 weeks, resulting in hygiene scores where in most of the pens 10 to 50 % of the area was soiled on the solid floor more than 50 %.
- The farm has a low level of carbon footprint (greenhouse gasses = GHGs) in the breeding system of 3.41 kg CO<sub>2</sub> equivalents per kg of weaned piglet. As the pigs spend most of their time at pasture, emissions from manure handling and storage are minimised, with most of the emissions related to the home-grown feeds. Due to the high level of feed self-sufficiency and closing of nutrient cycles the farm has lower than average eutrophication and water use values. The farm is also productive with 25 weaned piglets per sow per annum, and a high weaner live weight gain of 0.44 kg per day.

**Table 1: Welfare Assessment**

Age group	Welfare parameter	Assessment during project period
Weaners, indoors	Ear lesions	In 8 out of 12 pens: < 3 %; in 1 pen: > 3 %
Weaners, outdoors	Ear lesions	Not detected
Weaners	Runts	A few in 2 out of 12 pens
All	Short tails / tail biting	Not detected
All	Diarrhoea	Not detected
Pregnant sows	Skin lesions (scratches)	43 out of 394 sows
Sows	Sunburns on ears, body, udder	Only very few
Sows	Soiling, in summer	115 out of 224 sows: < 30 % of body muddy
Sows	Vulva lesions or deformations	Not detected
Sows	Lameness	Not detected



To provide shade, some of the pastures are partly covered with trees.

## Labour and cost

- The farm has nine full-time employees. Six of them are involved in management and planning; all take care of the sows, and three take care of the weaners.
- Installation of fences on pasture, modification of huts according to season and washing stables and equipment are done by hand. The indoor, provision of feed, new bedding and manure removal is done by machines, and removal of huts and pigs on pasture. Only feeding of weaners housed indoors is fully automated.
- It is crucial for the farmer to organize the different tasks well and to allow employees to contribute throughout the decision-making process, and to be able to test new ideas. They would like to have even more employees to have more time for the small details of the various work tasks.

**Table 2: Productivity**

<b>Productivity</b>	<b>Sow</b>
Average no. of litters / sow / year	1.9
Average no. of piglets born/ Litter	17
Average no. of piglets weaned / Litter	13
Average no. of litters / sow until culling	3.5
Feed usage / sow / year [kg]	1,700 <sup>1</sup>
<b>Productivity</b>	<b>Weaners</b>
Average daily weight gain [g / day]	441
Feed conversion rate [kg / kg gain]	2.17
<b>Environmental impact</b>	<b>Weaners</b>
GHGs <sup>2</sup>	3.41
Terrestrial eutrophication [molc N] <sup>3</sup>	0.32
Marine eutrophication [kg N] <sup>3</sup>	0.083
Water footprint [m <sub>3</sub> ] <sup>3</sup>	0.04

<sup>1</sup>concentrate + 700 kg roughage + pasture

<sup>2</sup>Green house gases [CO<sub>2</sub>-Equivalent] per [kg] weaned piglet

<sup>3</sup>per [kg live weight] weaned pig



## Take away lessons

- Having sows on pasture all year requires working routines that ensure optimal conditions for the sows regardless of the different weather conditions throughout the year.
- Calm sows are a necessity to be able to handle them on free range areas.
- This farm has many committed and experienced employees and structured working routines that ensure a high level of animal welfare and good pasture management.

## Imprint

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Research Institute of Organic Agriculture FiBL, Switzerland  
Ackerstrasse 113, Postfach 219, CH-5070 Frick  
Phone +41 62 865 72 72, info.suisse@fibl.org, www.fibl.org

**Author:** Rikke Thomsen (CFF, DK)

**Contact:** RIKTH@frilandsdyr.dk

**Revision:** Rennie Eppenstein, Sophie Thanner (both FiBL, CH)

**Proofreading:** Lauren Dietemann, Andreas Basler (both FiBL, CH)

**Editors:** Rennie Eppenstein, Sophie Thanner (both FiBL, CH)

**Layout:** Brigitta Maurer, Sandra Walti (both FiBL, CH)

**Photos:** Marie Buus (CFF, DK) p. 2, Rikke Thomsen (CFF, DK) p. 1, 3, 4

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