## **Best Practice**

# Combined pasture and housing systems in Austria: benefits of keeping sows and piglets on large pastures and growingfinishing pigs indoors

## Description

On this farrow-to-finish farm, sows are kept on 4 ha pasture all year round. The area is part of the crop rotation, although the sows remain on the same paddock for three years continuously. Pregnant sows are kept in groups. Lactating sows and their piglets are on individual paddocks. Weaners and growing-finishing pigs are either indoors with access to an outdoor run or in an outdoor climate barn with access to an unroofed outdoor area. The pigs of a conventional breed are slaughtered with a live weight of about 120 kg. Partly, they are sold directly on-farm, another part to a local butcher and a small part to the central Austrian organic producer organisation.

## Pasture management

About 8 ha of arable land adjacent to the farm are fenced with a stationary game fence. This area is part of the crop rotation and also serves as pasture for the sows.

It is divided with an electric fence in two parts of almost the same size. The sows stay on one half for 3 years until they are moved to the other half. Sows are kept outdoors all year round with access to huts. All lactating sows have access to their own hut, whereas pregnant sows or sows for service share huts. Solely during farrowing and lactation, each sow has her own paddock, where the piglets can move freely under the electric fencing on the whole area. Additional to artificial insemination, a boar is running with a group of sows for natural service. Water is provided in small troughs, with a maximum of two sows per drinker.



## Farm portrait

#### Location

Upper-Austria, Austria **Topography** Flatland and hills, close to village **Farmland** 32 ha arable land, 2 ha forest **Size of pig herd** 18 sows, 40 weaners, 70 growing-finishing pigs

#### **Farming system**

- Sows and piglets are housed outdoors on pasture with huts.
- Weaners and growing-finishing pigs are housed indoors with access to an outdoor run.







The paddocks are cultivated with a clover/alfalfa/grass mix and mowed 4 to 5 times per year. Concentrate feed is provided daily on the floor. During winter, silage is provided. In summer, the sows dig wallows, which the farmer fills with water as needed.

## Animal welfare

- As sows and piglets are kept on natural soil with very low stocking density and huts with straw, they can graze, root, wallow and build nests. Furthermore, the separation of sows shortly before farrowing corresponds with their natural behaviour to farrow away from the others. Still, litters can mix soon, as piglets can go under the bottom wire of the fence.
- The risk of competition for resources is minimized by large paddocks with one hut for each lactating sow, a maximum of two sows per drinker and easy access to food through floor feeding.
- When rooting in natural soil, piglets ingest sufficient amounts of iron, so that no iron supplementation is needed.
- Since the piglets of different litters already had

contact with each other on the pasture, weaning stress is minimised, as no grouping with unfamiliar pigs occurs.

- The weaners and growing-finishing pigs are kept on straw in pens with higher space allowance than required by organic legislation. This enables the animals to explore, play and hide; in other words, to perform species-specific behaviour, which was also reflected in the low occurrence of tail and ear-lesions.
- On pastures, sows can regulate their body temperature using natural wallows. To prevent heat stress of indoor housed pigs, showers are installed in most of the pens.
- Frequent work on the pasture close to the sows, like fencing, feeding, maintaining wallows and huts, and examining sows individually on a daily basis not only maintains good animal health but may also enhances good human-animal-relation. As piglets are used to human presence since birth, they react with curiosity to visitors, also after weaning when kept indoors.

Age group	Welfare parameter	Assessment during project period <sup>1</sup>
Sows <sup>2</sup>	Skin lesions (scratches)	On 2 out of 5 occasions in only one sow
Sows <sup>2</sup>	Vulva lesions and deformations	Not detected
Sows <sup>2</sup>	Lameness and shoulder lesions	Not detected
Weaners <sup>3</sup>	Post-weaning diarrhoea	Mild, at 1 out of 5 occasions in one group
Weaners <sup>3</sup>	Runts, respiratory problems, eye inflammation	Not detected
Weaners <sup>3</sup>	Short tails	On 5 out of 5 occasions <33 % of the animals in 1-3 groups
Weaners <sup>3</sup>	Skin lesions (scratches)	On 4 out of 5 occasions <33 % of the animals in 1-2 groups
Finishers <sup>4</sup>	Tail lesions	On 1 out of 5 occasions <33 % of the animals in 1 group
Finishers <sup>4</sup>	Skin lesions (scratches)	On 4 out of 5 occasions <33 % of the animals in 1-2 groups
All animals	Sunburns	Not detected

#### Table 1: Animal welfare assessment

<sup>1</sup>Five assessment days at different seasons, <sup>2</sup>Always 10 sows assessed individually, <sup>3</sup>Assessed on group-level, average 3 pens <sup>4</sup>Assessed on group-level, average 7 pens



Part of the growing-finishing pigs are housed in an outdoor climate barn with access to a non-roofed outdoor run.

# Environmental impact and productivity

- The paddocks are part of the crop rotation and are covered by vegetation (growing or regrowing) when not used by sows. The vegetation cover during the period with sows varies from 70 % to 90 %.
- Weaners and growing-finishing pigs are housed in barns with a deep litter system, cleaned every two months. They are kept either in an outdoor climate barn with solid floor or in a solid building with outdoor runs and a partly slatted floor.
- The farm achieved a low carbon footprint (greenhouse gasses = GHGs) of 4.1 kg CO<sub>2</sub> equivalents per kg weaned piglet and a medium carbon footprint for the finished pigs at 4.37 kg CO<sub>2</sub> equivalents per kg finished pig. This results from median productivity, low mortality, and reduced slurry emissions due to sows being kept on the pasture. The farm also has a high level of feed sufficiency, supporting nutrient circularity.

#### Table 2: Environmental impact and productivity

Productivity	Sow
Average no. of litters / sow / year	1.8
Average no. of piglets born/ litter	9-10
Average no. of piglets weaned/ litter	8-9
Average no. of litters / sow until culling	4-5
Feed usage / sow / year [kg]	1000
Environmental Impact	Weaners
GHGs1 / kg piglet weaned	4.14
Terrestrial eutrophication [molc N] <sup>2</sup>	0.361
Marine eutrophication [kg N] <sup>2</sup>	0.094
Water footprint [m <sub>3</sub> ] <sup>2</sup>	0.043
Productivity	Finishers
Average daily weight gain [g / day]	628
Feed conversion rate [kg / kg gain]	3.2
Environmental Impact	Finishers
GHGs <sup>1</sup> / kg finished pig	4.37
Terrestrial eutrophication [molc N] <sup>3</sup>	0.230
Marine eutrophication [kg N] <sup>3</sup>	0.070
Water footprint [m <sub>3</sub> ] <sup>3</sup>	0.022

 $^{\rm 1}{\rm Green}$  house gases [CO $_{\rm 2}$  equivalent] per [kg] piglet weaned

<sup>2</sup>per [kg live weight] piglet weaned

<sup>3</sup>per [kg live weight] finished pig (full life cycle)



An electric fence separates lactating sows from the boar and sows in oestrus. Piglets can use the whole area, as they pass under the electric fence.

## Labour and cost

- The family farm does not employ any workers.
- The feed is home-grown except the minerals and the protein component.
- The daily work routine for sows consists of checking on each pig, controlling the fences, manual provision of feed and straw. For weaners and growing-finishing pigs the daily routine consists of checking on each group, manual provision of concentrates, roughage and straw.

## Take away lessons

- Due to the large pasture area per sow and the management, this farm achieves a good vegetation cover all year round.
- The combination of a professional pasture system for sows and piglets until weaning with a growing-finishing period indoors provides the basis for good animal health and welfare and at the same time reduces the negative impact on the soil.

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