

# Combined pasture and housing systems in Italy: year-round access to pasture for growing-finishing pigs

## Description

This Italian farm uses an extensive outdoor system to breed and fatten the local heritage breed Cinta Senese. The farmer aims to keep his animals outdoors, with access to soil all year round, using agroecological approaches to maximise pasture usage.

Pregnant sows are kept together with a boar year-round in a large metal fenced olive grove. Lactating sows are moved indoors to protect piglets from predation, with access to an outdoor run for about 60 days. Weaners then move into large paddocks with pasture, trees and bushes. The 80 growing-finishing pigs rotationally graze the 8 ha of pasture, cultivated with different crops to prolong as much as possible the use of fresh forage. Growing-finishing pigs are only fed in the evening with a complete mixture, having up to 40 % forage in their diet. The intensive use of pasture increases the percentage of linolenic acid (C18:3n-3) in the growing-finishing pigs' meat and back fat. Pigs are slaughtered at the age of one year with a live weight of 100 to 130 kg. The whole production is sold directly on the farm.

## Pasture management

The farmer aims to offer growing-finishing pigs a long grazing period with constant access to crops at an optimal level of ripeness. The grazing season begins in March and ends in November, depending on the climatic situation. Each year, a different pasture is sown of pure or mixed alfalfa, clover, barley, sorghum, and peas. Pigs have access to pasture every day, from morning to evening, and the pasture is rotated every 15 days. During the summer, pigs spend the hottest hours of the day resting under trees or wallowing in mud while grazing in the mornings and evenings. Water is always available in troughs.



## Farm portrait

### Location

Tuscany, Italy

### Topography

Flatland and hills

### Farmland

1,100 ha forest and pasture +  
400 ha arable crops

### Size of pig herd

10 sows, 80 weaners,  
80 growing-finishing pigs

### Farming system

- Pregnant sows and weaners are housed outdoors on the pasture
- Lactating sows are housed indoors with an outdoor run
- Growing-finishing pigs are housed indoors with outdoor run and access to pasture during the day.





During the nine-month grazing period, growing-finishing pigs have access to various fodder, like alfalfa, clover, barley, sorghum or peas.

During winter, growing-finishing pigs stay in a large forested area.

## Animal welfare

- Given the availability of large outdoor areas, pigs are free to express their full behavioural repertoire, such as exploration, grazing, rooting, resting or hiding.
- Furthermore, the low density of pigs prevents aggression and social competition, which usually causes skin lesions.
- Using a local breed with slow growth, strong limbs, and dark skin is advantageous for preventing health problems, e.g. lameness, sunburn, in this outdoor system.
- Pigs are examined twice a year for parasites and dewormed only if necessary.
- After birth, piglets have immediate access to soil, making iron supplementation unnecessary.
- Due to the high number of manual tasks (opening and closing of fences, feeding with buckets and leading pigs to new pastures), the farmer

has a close relationship with his animals. This is demonstrated during clinical visits, in which pigs display curiosity rather than fear.

## Environmental impact and productivity

- The indoor areas have solid floor and are cleaned weekly. The outdoor areas are cleaned after each batch. The pastures are constantly in rotation, covered by vegetation (growing or regrowing), or used by pigs.
- Sometimes, after a new sowing, the farmer uses native microorganisms to increase soil life and improve the use of nutrients.
- The pasture-based diet and restricted feeding decrease the average daily growth of growing-finishing pigs. These pigs are allowed to grow slowly to develop the proper muscle maturity, suitable for processing into typical seasoned products sold in farmer-to-consumer direct marketing.
- The farm has a high level of carbon footprint (greenhouse gasses = GHGs), in the breeding system 9.29 kg CO<sub>2</sub> equivalents per kg average for weaned piglet, but a low carbon footprint of 3.84 kg CO<sub>2</sub> equivalents per kg of finished pigs. The high emissions from the breeding system are mainly due to the lower productivity of the local breed, as well as manure emissions due to the housed period during lactation. The farm makes extensive use of home-grown crops, but also uses some externally sourced feed. The long finishing period creates additional environmental burdens due to daily maintenance feed needs and manure

**Table 1: Animal welfare assessment**

Age group	Welfare parameter	Assessment during project period
Weaners	Ear lesions	Not detected
Weaners	Runts	Not detected
Pregnant sows	Skin lesions (scratches)	Not detected
Sows	Sunburns on ears, body, udder	Not detected
Sows	Soiling	Not detected
Sows	Vulva lesions, deformations	1 sow with vulva lesion in 28 sows visited
Sows	Lameness	Not detected
All animals	Short tails (tail biting)	Not detected
All animals	Diarrhoea	Not detected





production (mainly on pasture), typical of more extensive, specialty local breed production, maintained for reasons beyond the scope of LCA assessments.

## Labour and cost

Overall, this farming system requires a lot of labour and good planning. The most labour intensive tasks are:

- Fencing new paddocks during the grazing season
- Cleaning out the indoor areas, since the buildings are very old and not easily adaptable. However, since pigs stay mainly on the pasture the amount of manure accruing in the indoor areas is limited.

## Take away lessons

The use of cultivated, rotational pastures, the large outdoor areas for animals, the high level of animal welfare and the attention dedicated to the whole production chain, where the pigs are allowed to grow slowly can result in high quality of fresh and processed meat.

**Table 2: Productivity**

Productivity	Sow	
Average no. of litters / sow / year	1.6	
Average no. of piglets born / litter	5	
Average no. of piglets weaned / litter	4	
Average no. of Litters / Sow until Culling	9	
Feed usage / sow / year [kg]	1,000 <sup>1</sup>	
Productivity	Weaners	Finishers
Average daily weight gain [g / day]	300	350
Feed conversion rate [kg / kg gain]	3.3	5.7
Environmental impact	Weaners	Finishers
GHGs <sup>2</sup>	9.29	3.84
Terrestrial eutrophication [molc N] <sup>3</sup>	0.67	0.31
Marine eutrophication [kg N] <sup>3</sup>	0.24	0.144
Water footprint [m <sub>3</sub> ] <sup>3</sup>	0.04	0.019

<sup>1</sup>concentrate + pasture

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

<sup>3</sup>per [kg live weight] weaned/finished Pig (full lifecycle)





## Further Information

**ICROFS (2021):** Innovative pasture systems from Denmark and Italy. Video. International Center for Research in Organic Food Systems ICROFS, Tjele. Available in English: [www.youtube.com](https://www.youtube.com) [Link].

## Imprint

### **Publisher:**

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**Permalinks:** [orgprints.org](https://orgprints.org) → power, [projects.au.dk](https://projects.au.dk) → power

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The project "POWER – Proven welfare and resilience in organic pig production" is one of the projects initiated in the framework of Horizon 2020 project CORE Organic Co-fund (<https://projects.au.dk/coreorganiccofund/>) and it is funded by the Funding Bodies being partners of this project (Grant Agreement no. 727495). The opinions expressed and arguments employed in this publication do not necessarily reflect the official views of the CORE Organic Cofund Funding Bodies or the European Commission. They are not responsible for the use which might be made of the information provided in this publication.

