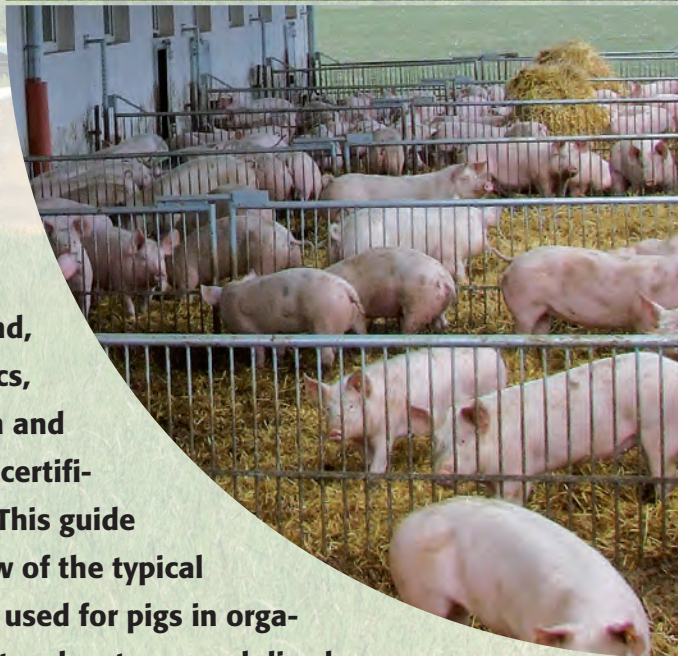


Organic Pig Production in Europe

Health Management in Common Organic Pig Farming

Organic farmers in Europe have developed different housing systems for pigs based on the availability of land, soil characteristics, climate, tradition and national organic certification schemes. This guide gives an overview of the typical housing systems used for pigs in organic farming. It lists advantages and disadvantages of the different systems and provides relevant recommendations to farmers for health management.



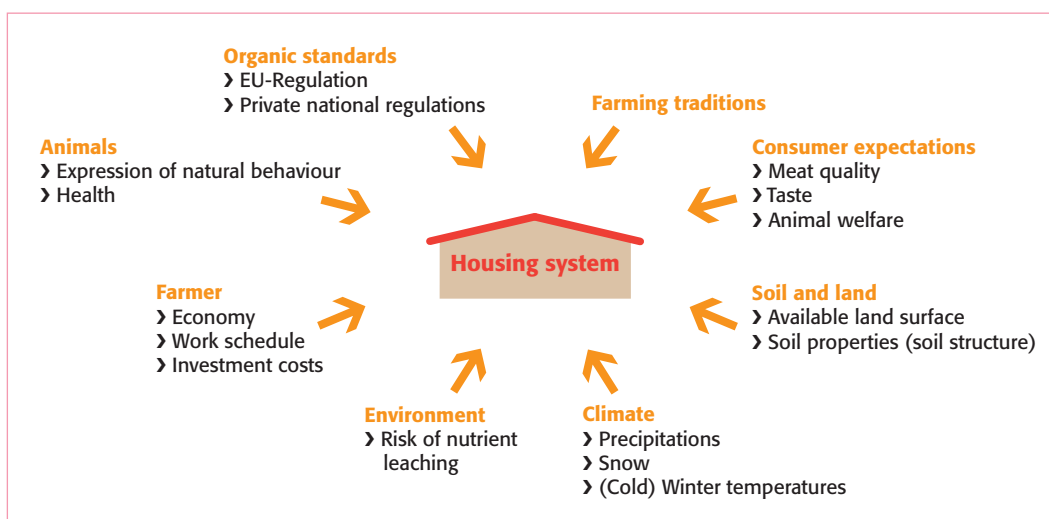
Based on national histories of organic pig production, diverse climatic conditions and national organic farming regulations, different housing systems are used for keeping pregnant and lactating sows in organic farms in European countries. In some countries sows are at pasture throughout all stages of pregnancy and lactation. In other countries most lactating sows are housed indoors during this time. Mixed indoor and outdoor housing systems can also be found.

Consumers and farmers expect organic farming to ensure high standards of animal health and

welfare. Consumers expect pigs to be kept in natural surroundings, such as provided by outdoor systems.

Related to the housing systems and management routines in the herds, organic farmers face a number of challenges in prevention of diseases and maintenance of animal welfare.

This booklet describes the main housing systems used in organic farms in Europe and the main challenges that are related to them, and lists measures to reduce risks related to these challenges.



Prevalent housing systems in organic pig production

In contrast to conventional systems, organic standards require that animals are kept with outdoor access. According to national rules and based on national interpretation of the EU-regulations for organic farming (Council Directives 2007/834/EC and 2008/889/EC), outdoor runs in European countries vary from concrete and slatted floors to deep litter and from open to fully covered by a roof.

Some private schemes define even stricter rules. For example, Soil Association requires all organic pigs in UK to be kept on pasture, whilst the Swedish certifier KRAV requires access to pasture during summertime for all pigs.

Organic pig husbandry systems can basically be divided into three major categories: indoor housing, outdoor housing and mixed housing.



Indoor housing systems in organic farming must provide an outdoor run, so the pigs can experience climatic influences of sun, rain and wind.



Outdoor housing systems allow pigs to express their natural behaviour at comparatively low investment costs.

Indoor Housing

In the indoor system pigs are housed mainly indoors with access to a concrete outside run (e.g. Austria, Germany or Switzerland). Barn types range from heated buildings with artificial ventilation to uninsulated barns with an open front.

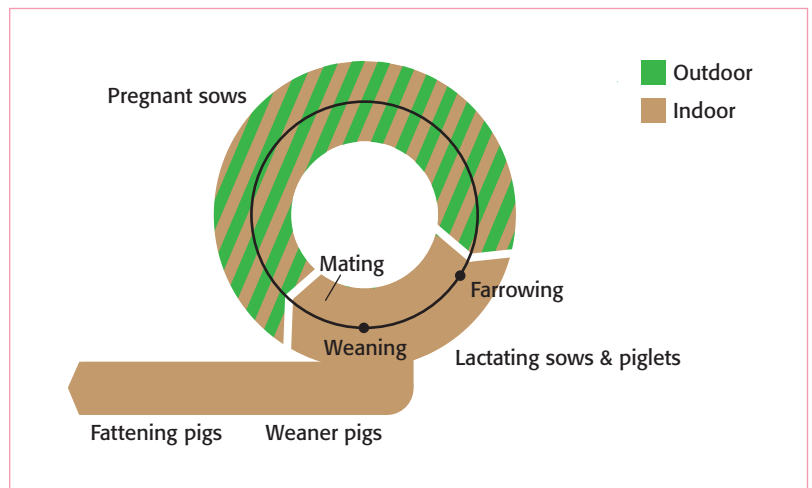
The main challenge related to this housing system is to provide a pen that allows sows and piglets to express natural behaviour. The separation of the lying, defecation and activity areas is the prerequisite to avoid health problems, economic losses and extra work. Another challenge concerns provision of the individual temperature for sows, piglets, weaners and fatteners depending on their individual requirements.

Advantages:

- › Suited for harsh climatic areas with snow and long, frosty winters.
- › Moderate land needs.
- › Efficient examination of the animals.
- › Little negative impact from manure on the environment, if manure is distributed appropriately.

Disadvantages:

- › High building and energy costs.
- › Does not satisfy consumer expectations of organic pig production.
- › Restricts the expression of natural behaviour.
- › The higher animal density increases the risk of disease infections.
- › Limited flexibility in the production concerning the amount of sows and fatteners that can be kept.
- › Requires more technical equipment.
- › Higher requirements on hygiene management due to the housing of pigs of different ages.
- › Sows kept in conditions of artificial and controlled light regime.
- › Requires oral iron preparations or injections for piglets shortly after birth to prevent anaemia in the piglets.



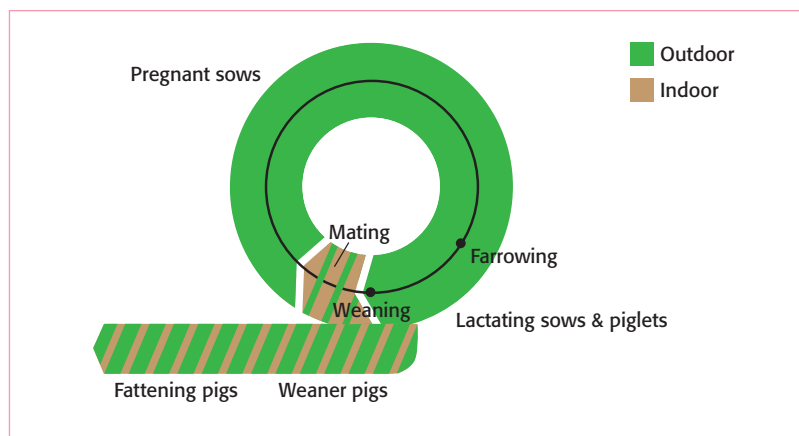
Farrowing pens with the piglets' nests in the middle (design: SCHMID).



If the concrete outdoor run is covered with deep straw litter, it can be used for lying and rooting.

Outdoor Housing

In this system pigs are housed outdoors all year round with huts or natural shelter. This housing system is mainly practiced in Denmark, Italy and UK.



The main challenges related to this system are the organisation of a pasture rotation to maintain vegetation cover, ensure biosecurity and identify and treat health problems. Another challenge is to organise in a way to keep the amount of work low.

In Denmark all farrowing sows and piglets are kept outdoors all year round. Pregnant sows have to be on pasture for a minimum of 150 days. Most weaning and fattening pigs are kept indoors with concrete outdoor runs. However, in order to prevent diarrhoea, some farmers keep the pigs on pasture for a certain period after weaning and then they take them indoors when they reach a weight of 30 kg.



In summertime the water from the trough is used to make a wallow.

In Italy, farrowing and weaning take place outdoors mainly (about 95 %). Fatteners are kept either outdoors (about 60 %) or indoors with an outdoor run.

Advantages:

- › Little or no building costs.
- › Meets consumer expectations.



Outdoor rearing in forests as practiced here with Cinta Senese in Italy, offers high animal welfare in a diverse, natural environment and allows a wide range of behaviour.

- › More space and environmental diversity permitting better expression of natural animal behaviour with a positive influence on health and welfare.
- › Low animal density and good air quality positively contribute to health.
- › Access to natural light.
- › Efficient use of the manure, if pig husbandry is integrated into the farm's crop rotation and the huts and feed area are moved regularly, as this provides nutrients for the following crops and prevents major losses through nutrient leaching.
- › Vegetation and soil provide significant quantities of vitamins and minerals to the animals at pasture.
- › Anaemia is unlikely to occur since piglets can find enough iron from the soil.

Disadvantages:

- › An excessive stocking density of 15 sows per ha per year on outdoor areas results in a large net input of nutrients and an increased risk of nitrogen leaching.
- › The management logistics can be laborious during the cold and wet climates.
- › Rigorous parasite control is necessary.
- › Reduced biosecurity. Contact with wildlife disease reservoirs and soil may be a risk for health due to infection with a range of parasites.
- › Greater difficulty in identifying and treating sick animals.
- › Supervision around birth is more challenging when lactating sows are outdoors.
- › Young piglets may be subject to predation by ravens, foxes or even badgers.

The performance of conventional indoor and outdoor breeding herds in the UK (BPEX, 2008)

	Outdoor	Indoor
Sow mortality (%)	3.1	3.9
Replacement rate (%)	45.8	47.7
Conception rate (%)	82.2	81.6
Litters per sow and year	2.19	2.25
Liveborn piglets per litter	10.9	11.4
Stillborn piglets per litter	0.5	0.6
Mortality of piglets born alive (%)	12.3	13.0
Pigs weaned per sow and year	20.9	22.4

The results indicate that outdoor management may result in slightly better health, as reflected by mortality and replacement rates, but in poorer reproductive performance, as reflected by litters per sow per year and litter size, but not conception rate. Farrowing problems and post farrowing disorders might be slightly reduced, as reflected by stillborn piglets and piglet survival to weaning, although this might also reflect the difference in initial litter size.

Mixed Housing System

In some countries (e.g. France or Sweden) different combinations of the indoor and the outdoor housing systems are used. These systems allow to combine the advantages of both housing systems. The practicability of these systems depends on climatic conditions or/and historic or farm specific development.

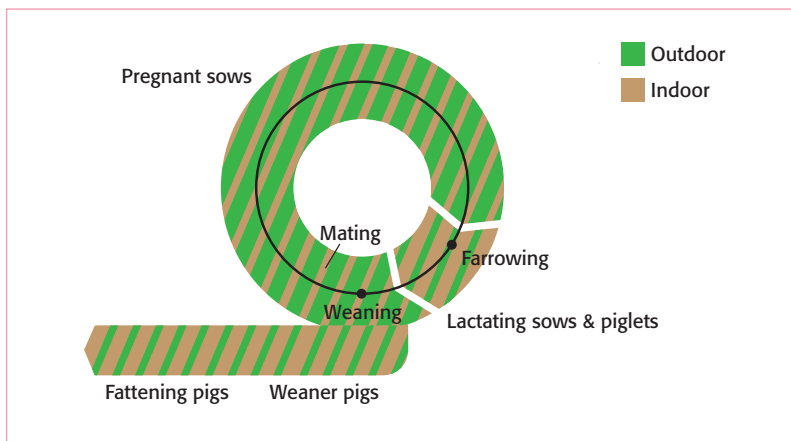
Mixed housing systems enable sows to be kept on pasture during different stages of their life, e.g. during pregnancy or during group suckling. In some farms, sows are kept indoors in individual pens for farrowing and within 10 days are moved to a group pen in a barn or to a group on pasture with huts. Weaners and fatteners are usually kept in a barn in large group pens with concrete outdoor run. During summer weaners and fatteners are given access to a pasture or are moved to huts on pasture.

In Sweden, most lactating sows are kept indoors with concrete outrun during winter and outdoors during the warmer seasons. Less than 10 % of organic piglets are born in outdoor systems.

In France, about 80 % of the farrowing happens outdoor and 20 % indoor. 70 % of the sows are kept outdoors after weaning on pasture or in huts with an outdoor area covered by deep straw. 95 % of fatteners are kept indoors with one side of the building often being 'closed' by a net only.

Advantages:

- › Indoor farrowing facilitates the supervision of the newborn piglets and the sow around farrowing.
- › When the sows and the piglets are moved to a group pen (e.g. outdoor) within 10 days, the sow receives a more stimulating and cooler environment, which stimulates her feed intake at a time when her milk production is increasing.
- › Keeping the pigs in huts during summer has hygienic advantages, as it makes it easier to clean the barn and keep the pens empty for some weeks.



Pregnant sows are well suited for outdoor housing.

Disadvantages:

- › Moving pregnant sows from the outdoor climate to an indoor farrowing pen may create climatic stress for the sow.
- › When lactating sows are kept in groups, mobile facilities are required to feed them individually.

How keep the vegetation high and parasite pressure low, when sows are on pasture?

The impact of outdoor housing on sow health and welfare depends mainly on soil conditions. Influencing factors are soil type, rainfall, stocking density and paddock rotation management.

The rooting activities of sows make it difficult to maintain vegetation cover. This means that wet and muddy ground can predominate in winter. In rotational grazing systems higher stocking densities may result in severe damage of pasture and prevent subsequent recovery. Lower stocking densities of sows with less frequent

moving avoids this problem, but might have adverse implications for parasite build-up.

The impacts of pasture management on parasites are complex because of micro-environmental factors. High herbage, for example, which may only be found at very low stocking densities, strongly favours the survival of infective larvae of different parasites, e.g. nodular worm (*Oesophagostomum* spp.); red stomach worm (*Hyostrogylus rubidus*).



A good rotation and a low animal density allow the vegetation to remain high.

Challenges and recommendations

Proven issues of particular importance in organic pig production are (i) control of the microclimate surrounding neonatal piglets, (ii) management strategies to decrease the risks of infectious and parasitic diseases, (iii) selection of genotypes with high robustness and appropriate litter size.

Sows and piglets are highly exposed to fluctuations of the environment, parasites and infectious diseases.

Organic regulations do not allow general preventive use of allopathic medicines to avoid health problems. Organic farmers must thus rely on other preventive measures to ensure health of their animals. Management in organic animal husbandry depends on careful observation of the animals to be able to adapt management according to the animals' needs.

Piglet mortality appears to be relatively high in organic farms, but high variability between farms suggests that improvement is feasible. Similarly, management and housing conditions seem to differ greatly between farms. This makes it evident that a better knowledge of the relationships between farm characteristics and piglet mortality should help reduce the problems.

Lactating sows

Housing and Management

According to the EU-Regulation, the area per lactating sow with her litter should be at least 10 m², including at least 2.5 m² outdoors. Lactating sows must be kept in free farrowing systems. However, in some indoor systems, movements of sows may be restricted in crates around farrowing.

In outdoor systems, sows are usually penned in individual paddocks, but suckling piglets can circulate between paddocks. In some farms (in both indoor and outdoor systems) lactating sows are kept in groups, a few days or weeks after parturition.

During farrowing and the first week of lactation, one of the highest risk periods for health problems in sows can be observed, e.g. vulval discharge or MMA (mastitis-metritis-agalactia).

How to prevent health problems:

- › Check the housing temperature: The lower and upper critical temperatures under conditions of housing on straw in extensive conditions with typical feed intakes are approx. 7 °C and 26 °C degrees for lactating sows and 12 °C and 31 °C for dry sows.
- › Ensure sufficient water supply with a flow rate for sows of 2–3 l per minute.
- › Adapt the feeding regime to the needs of farrowing sows.
- › Examine the sow during and after farrowing and check her rectal temperature and immediately treat the animals in case of farrowing sickness/MMA with signs of a hard udder, hollow and/or agitated piglets, the sow not exposing her udder to the piglets, injured faces of piglets, the sow refusing to stand up, the sow stopping to eat or the sow having hard/solid faeces.
- › Offer the sow separate lying and defecation areas, enough exercise and roughage.

- › Have and use an animal health plan including a description of the situation, a farm specific prevention strategy and treatment plans such as vaccination schedule and control of intestinal parasites.

Farmer supervision and intervention around farrowing allow:

- › Removal of placental membranes around the piglet snout to prevent suffocation.
- › Drying of the newborn pigs and positioning under a heater lamp to avoid chilling.
- › Extracting pigs from the uterus to avoid prolonged farrowing.
- › Ensuring sufficient colostrum.
- › Shortly after farrowing, supervision of the litters and of the sows allows a more rapid treatment of sows displaying MMA.

But human intervention during farrowing can result in the interruption of the farrowing process. Pulling out piglets of the uterus can furthermore cause infections resulting in MMA and conception problems.

How to ensure good farrowing:

- › Make sure that an intervention during farrowing does not happen too early.
- › Thoroughly clean hands and arms before intervening or use long disposable gloves.
- › Provide the possibility to the sow to move during gestation.
- › Provide a quiet and undisturbed farrowing environment to the sow with sufficient straw and roughage for nestbuilding.

Heat and cold stress

The majority of organic sows are kept in naturally ventilated housing. The nature of the sow housing system will thus affect the extent of climatic challenge as a hazard to sow health and welfare. Depending on the geographical location, sows may experience both heat stress and cold stress at different times of the year.

Heat stress is more likely to be a problem for lactating sows, with high feed intake and metabolic activity for milk production, while dry sows will be more susceptible to cold stress because of their restricted feed level.

How to prevent heat and cold stress:

- Provide shade, wallows or water sprinkling systems to alleviate heat stress.
- Provide huts or covered kennels and plentiful dry straw bedding to alleviate cold stress.

Feeding

Organic sows are expected to support a longer lactation (EU-Regulation: minimum 40 days). This requires provision of diets with a high nutrient quality, and a high energy and protein digestibility based on organic feedstuffs. This is a challenging task.

Organic feedstuffs must be produced according to organic standards. Animal welfare legislation and organic regulations require, that occupational material/roughage must be provided to all pigs. Providing roughage can give significant health and welfare benefits and reduce costs.

How to optimise feeding:

- Condition score sows before and after lactation. BCS should never be below 2 or above 4 on a scale from 1 to 5.
- Make feed analysis of home grown feedstuffs to ensure optimum formulation of the feed ration.
- Calculate feed rations regularly.

Hygiene

Cleaning and disinfection can help control the most frequently occurring helminths in sows, the nodular worm (*Oesophagostomum* spp.) and the red stomach worm (*Hyostromylus rubidus*), which are transmitted as free-living larvae. Disinfection has though very little effect on infective helminth larvae, e.g. large round worm (*Ascaris suum*), which are protected by egg shells.

Batch systems with an all-in, all-out (AIAO) use of housing allow efficient cleaning, drying and disinfection between batches of pigs. In organic pig husbandry though, smaller size of organic herds limits the ability to operate such a system. Outdoor access furthermore makes it more difficult to protect the animals against pathogens from wildlife and visitors.



A water sprinkling system in the outdoor run is an efficient possibility to enable the fatteners to prevent heat stress.

How to ensure good hygiene:

- Wash carefully between litters: When the pen is empty after the sows and piglets have moved out, remove faeces and rough dirt, also in corners, narrow openings and under troughs. Repair worn rough floors.
- Soak the pens with water for several hours before cleaning with a high pressure cleaner. Clean until the water comes down clear from the surfaces. Warm water (40 °C) helps to dissolve dirt and faeces. Stalls must be dry before disinfection and before entry of new animals.
- Drying of the pen is essential in reducing the number of parasite eggs and larvae. UV light is helpful. Ideally the clean pens are left empty for five days.
- Wash sows with warm water and a brush before moving them into the farrowing house.
- Moving of huts provides a cleaner environment for the next farrowing and appears to reduce transmission of the coccidia *Isospora suis* to piglets.



Some farms with the indoor housing system offer a natural outdoor run with a wallow. Using the same area for a longer time increases the parasite pressure.

Suckling piglets

Organic standards define longer lactation periods (at least 40 days, and in some countries 8 weeks) than are normally used in conventional production systems (3–5 weeks). Weaning after 7 weeks can improve piglet health and can save barn space (weaning pen) but can also reduce reproductive performance if sows have low body condition at weaning.

Milk production varies during lactation: maximum level is reached around the 3rd and 4th weeks of lactation. Thereafter, milk production is probably not sufficient to cover the nutrient needs for maintenance and growth of piglets. Therefore, suckling piglets should have access to creep feeding adapted to their nutritional needs and digestive abilities from first week of age. It can be calculated that creep feeding can supply between less than 1 % to more than 50 % of the metabolic energy intake of piglets between 21 and 40 days of age. The sow diet is probably not adapted to their digestive abilities and to their nutritional needs. The creep area for the piglet feed must be setup in such a way that the sow cannot reach it, but it is beneficial for the learning process to feed piglets next to the sow.

Water supply for suckling piglets is necessary from the beginning of life and should be offered in troughs or bowls so that normal drinking behaviour is possible. Especially under warm conditions, when episodes of diarrhoea occur or when the end of lactation is near (above 4 weeks) – when milk production starts to decrease whereas piglet needs increase – sufficient flow rates and water quality are vital.

Piglet mortality

Piglet mortality is related mainly to crushing by the mother and to weakness/starvation.

Mortality increases when piglets become chilled and lie close to the sow because of a cold environment, when there is insufficient colostrum intake

or milk production or a large litter size, with a lack of protection of the piglets against sow crushing (lack of piglets' nest, lack of anti-crushing systems); and with heavy and lame sows. A high litter size is a major hazard for piglet mortality. Numerous factors can explain this phenomenon: longer farrowing duration, lower birth weight of piglets, reduced colostrum/milk intake per piglet, piglets closer to the sow, lower number of functional teats than litter size.

How to keep the piglet mortality low:

- Provide good farrowing accommodation with sufficient space (lying area min. 2,2 x 2,2 m), design features to minimise crushing, bedding and a creep area.
- Monitor farrowings, but don't disturb your sows constantly.
- Practice split suckling of large litters by shutting the stronger early born piglets, which have already suckled in a warm creep area for an hour to allow the weaker piglets to suckle without competition. Adjust the litter size by cross-fostering to match the number of functional teats on the sow.
- Use sows with appropriate litter size for replacement.
- If cross fostering is necessary use piglets with higher birth weight.

Cold environment

Provide supplementary heat by use of a heat lamp or floor heating. This is unlikely to be possible in outdoor systems when other solutions must be exploited. If floors are not insulated, ensure that a good layer of dry bedding is present in all places where piglets might lie. Make a creep area which is warm and draught free and attract piglets to it by lighting. Train piglets to use this area at a young age by shutting them into it for short periods (about 1 hour, but ensure adequate ventilation).



Piglets should start eating in the lactation period. Therefore they need a separate feeding area and high quality and good tasting feedstuff.



The water supply for sow and piglets must be offered in different bowls. In the pen they are normally next to each other to teach the piglets to drink and to cause only one wet area.

Muddy environment

In outdoor production, poor 'drainage' of soil may favour health disorders and mortality since animals are more likely to be wet and dirty. Moreover, bacteria and parasites are more likely to survive and/or develop in damp environments.

How to keep health risks low:

- › Use well drained land for farrowing paddocks.
- › Use land with a good vegetation cover. If paddocks become muddy, make a straw 'doormat' outside the hut to dry animals as they enter.

Predation

Larger raptors may carry off piglets. Corvids may peck at piglets, especially when newborn or weak, causing injury and even death. They are known to enter farrowing huts for this purpose.

Foxes will kill and eat suckling piglets of all ages. They may carry them away, leaving no trace, or leave some partly eaten corpses around the site. Their presence around the farrowing area also disturbs the sows, making them more restless and likely to crush piglets.



To maintain a clean and dry environment requires a good vegetation cover in outdoor housing. Straw at the entrance to the hut helps to keep the indoor space clean.

How to keep losses from predation low:

- › Farrowing huts can be protected by using bird proof plastic curtains.
- › Put food in lidded hoppers to reduce attraction to birds.
- › Improve fencing around the farrowing area to ensure that foxes are excluded (this can be quite difficult to achieve).
- › Implement a fox control policy for the farm if possible, for example use herd dogs.

Weaner pigs

Organic weaners must be housed with bedding and with outdoor access.

Recently weaned piglets are experiencing stress because of the separation from the mother, meaning lack of maternal milk and care, a new environment and often mixing with other piglets. Diarrhoea after weaning is frequent and causes health problems.

Housing

How to provide appropriate housing:

- › House weaners in separate building, if possible.
- › The number and design of the pens should allow an all-in-all-out system.
- › Offer a warm, insulated area for the weaners.
- › The more space the weaners have, the less aggressive encounters and stress will be. Generous space promotes exercise and general health and reduces risk of infectious diseases.
- › Offer a bedded and draught-free nest, which is as far away from the defecating area as possible.
- › Leave the piglets in the suckling area for 48 hours after weaning. Staying in the suckling area after weaning reduces stress caused by a new environment.
- › Group piglets of comparable size or keep litters together, if possible. Place very small piglets into a separate pen. Smaller piglets have reduced

access to feed, water and nest space, if there is competition. This increases their susceptibility to disease.

Management

How to prevent disease by good management:

- › Close monitoring of piglets increases chances for early recognition and timely intervention in case of problems. Early intervention reduces severity of illness, and thus the number of animals to be treated.



Also in huts it is necessary to offer a warm insulated area for weaners.

- › Check weaners at least twice a day after weaning. Pay close attention to early signs of disease such as hanging tails, hollow flanks, soft faeces, or muted general demeanour. Interfere or treat as soon as possible.
- › Separate sick individuals in a sick pen until they are fit enough to claim resources in a larger group (but do not reintroduce them individually or they will experience high aggression).
- › Always empty weaner pens completely and only restock after thorough cleaning and drying to re-



To keep a high hygienic standard it is helpful to offer several bowls instead of a trough for the piglets.



Weaned and pregnant sows are well suited for outdoor systems that have positive effects on health and fertility.

duce parasite infections (mainly large round worm *Ascaris suum*, which causes liver white spots, and whip worm *Trichuris suis*) during the fattening period.

- › If outdoors, the use of clean pastures is important as some endoparasite eggs (*Ascaris suum* and *Trichuris suis*) can survive for several years in the soil.
- › Have and use an animal health plan including a description of the situation (e.g. results from faecal and blood samples), a farm specific prevention strategy and treatment plans such as vaccination schedule and endoparasite and ectoparasite control plans.
- › Ectoparasites can be effectively eradicated but only if there is no direct contact to wild boars.

Feed and Water supply

Sufficient water supply is very important for weaners. Water increases appetite and helps in case of diarrhoea.

How to ensure good feeding and drinking:

- › Make sure that there are no more than 10 piglets per drinker. Piglets drink easier from cup drinkers and troughs than from nipple drinkers.
- › Keep drinkers clean.
- › Make sure, piglets eat well already before weaning by starting early enough with attractive food.
- › Sudden changes in ration cause consumption depressions: pigs will hesitate to eat unknown feed. In addition, sudden changes impact the digestive system. Change rations slowly. Mix old ration step by step with new ration to facilitate adaptation.

Breeds used in organic farms

Austria, Switzerland	Mostly conventional breeds used; sow: Large White x Landrace; boar: Pietrain (in Austria), Large White (in Switzerland); few exceptions using Duroc, Schwäbisch Hällisch or crosses of both
Denmark	Mostly conventional breeds; sow: Danish Landrace x Yorkshire, boar: Duroc
Germany, France	Mostly conventional breeds; Germany: sow: German Landrace x German Large White; boar: Pietrain or Hampshire x Duroc France: sow: Large White x Landrace, boar: Pietrain
Italy	50 % conventional breeds; sow: Large White, Landrace and Duroc (and hybrids), 50 % local breeds like Mora Romagnola and Cinta Senese
Sweden	Mostly conventional breeds; sow: Swedish Landrace x Yorkshire, boar: Duroc or Hampshire
United Kingdom	Small farms often use traditional breeds. Large farms generally use special outdoor lines that were developed for the conventional outdoor sector.

Organic standards recommend the use of traditional breeds that are adapted to the local environment. However, such breeds are often less productive and give progeny with poorer feed efficiency and accumulate more fat in the carcass (lower percentage of lean meat). This gives an incentive to use higher selected breeds as in conventional systems.



The dark-skinned Italian local breed Mora Romagnola is very suited for outdoor rearing.

Deliverables of the COREPIG project are management tools based on the HACCP principle (Hazard Analysis Critical Control Points). These tools help farmers (in a farm specific way) to solve and prevent problems with endoparasites, reproduction and farrowing problems, weaning diarrhoea and suckling piglet mortality. They are available as Microsoft Excel® files. We recommend that the tools be used by the farmer together with the farm's advisor or veterinarian.

Each tool contains instructions for use and consists of three parts: i) a questionnaire for the farmer, ii) a check list to be used in the barn and iii) the farm specific report.

Description of the HACCP tool

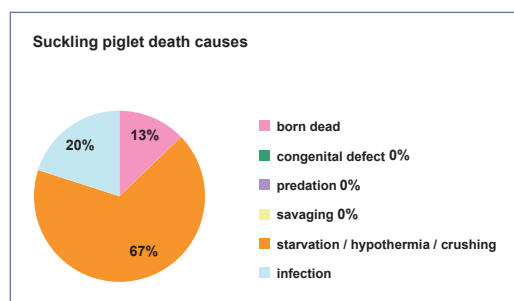
The **questionnaire** collects information on the farm conditions and farm management that are relevant to **suckling piglet mortality**.

The **checklist** serves to record the situation in the barn.

Environment		
Insulated foors	Are farrowing pen floors insulated (construction or bedding) ?	yes
Draughty pen	Is the pen draughty ?	no
Creep area	Is here a heated piglet creep area (unless farrowing outdoors) ?	yes
Nest	Does the farrowing nest have effective fenders ?	yes

The **report** consists of four parts:

1) Summary of the potential death causes of suckling piglets on the farm



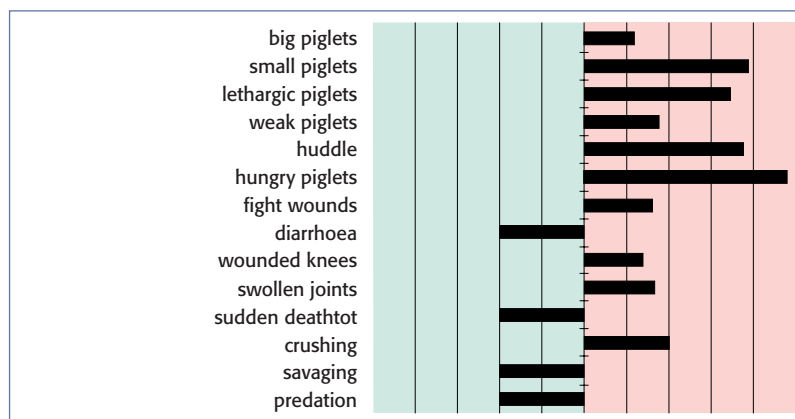
2) List of preventive measures already implemented on the farm (with explanation of their causal relationship)

Current situation	Is related to dying from	Reasoning/ causation
Do you confine the sows during farrowing? - no	born dead	Restriction of movement can impair nest building in the pre-farrowing period. This stresses the sow and can prolong farrowing because stress hormones antagonise the effects of oxytocin (> contractions).

3) List of high impact hazards which should be changed (plus recommendations for improvement)

Current situation	Key-word	Contributes to dying from	Reasoning/causation	Solutions
Are piglets small at birth (many <1 kg)? - yes	small piglets	crushing, hypothermia	Piglets of low birthweight lose heat rapidly because of their high surface area to volume ratio. They also suckle less well because of competition with bigger littermates. This makes them lethargic and prone to remain in high risk areas close to the sow.	<ul style="list-style-type: none"> Ensure that sows have adequate body condition at farrowing. Consult a nutritionist to check that the gestation diet is correctly formulated. If possible provide supplementary heat at the site of birth until piglets are dry.

4) Overview of the farm's 'strengths and weaknesses' regarding suckling piglet mortality



Bars to the left indicate preventive measures already being implemented, while bars to the right point out criteria, which indicate an increased suckling piglet mortality on the farm. The longer the bar, the stronger the impact.

Advisory service is helpful
 Advisory expertise and diagnosis by a veterinarian is needed in a proper management system. It can supplement the farmers expertise by offering an outside view and specific knowledge for certain issues. Farmers groups can also be a useful way of finding solutions for problems.

This guide is one of the deliverables of the CORE-PIG project financed by the CORE Organic program.
 The aim of the COREPIG project is to increase the knowledge about the prevention of selected diseases and parasites in organic pig herds – by means of a HACCP (Hazard Analysis Critical Control Points) based a management and surveillance programme.



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