

# Piglet management in organic and low-input systems

Herman Vermeer

## About

Mortality tends to be higher for piglets born outdoors or under organic management compared with those reared in a more controlled environment.

Scientists in the EU-funded LowInputBreeds project collected knowledge to improve health and survival of low-input and organic piglets, and compiled their findings in the technical note.



## Two major challenges in young organic piglets

Young piglets have two major challenge periods in early life: The first days after birth and the first weeks after weaning. If organic piglets survive these two threats, the risk of dying prematurely is minimized.

Organic sows suckle piglets for at least 40 days and their feed intake is not depressed by heat stress. These two characteristics lead to a good body condition and a high ovulation rate compared to conventionally kept sows. Nevertheless, many low-input and organic herds experience relatively high new-born piglet mortality – around 20 % compared to 12 % on conventional farms.

The high mortality is partly explained by the subsequent large litters of small piglets and too few teats, although suboptimal climatic conditions and maternal behaviour can contribute. Open buildings with outdoor access hold a risk of draughts and chilling. Maternal behaviour has an element of genetic control, although there is also growing scientific evidence, echoed by common belief of organic farmers that problems related to maternal abilities of gilts and

sows are also influenced by their rearing environment and social experience.

Post-weaning diarrhoea is another significant challenge on some farms with the risk of high mortality. This risk is increased by possible reluctance for antibiotic treatment and the limitations on dietary raw materials imposed by organic standards. Often relatively indigestible plant proteins, poorly balanced in amino acid composition and often with anti-nutritive factors are fed to young piglets. All these factors are known to increase risk of enteric disease.

The pig is especially susceptible to diseases after weaning, being a culmination of stressful events. At weaning, piglets could be separated from the sow, mixed with piglets from other litters, moved to other housing and climate and also offered a very different diet to maternal milk. Careful management can diminish the stress of weaning.

These challenges can apply equally to pigs kept solely in outdoor systems as well as those kept indoors with access to outdoor runs.

## Typical physical characteristics of piglets

Physical characteristics of piglets	
Weight at birth:	1.2-1.5 kg
Weight at 6 weeks:	10-14 kg
Weight at 10-12 weeks:	25 kg
Temperature at birth:	39 °C
Temperature 1 hour after birth:	37 °C
Temperature after 24 hours:	39 °C
Temperature until 10 weeks:	39 °C
Breathing frequency at birth:	50-60/minute
Breathing frequency at 10 weeks:	21-40/minute
Heart beats per minute at birth:	200-250
Heart beats per minute at 10 weeks:	90-100

## Management of pre-weaning piglets

With larger litters individual birth weights decrease making new-born piglets more vulnerable. Today, piglets only weigh 1.2 kg at birth and are susceptible to losing body heat. To minimize cooling after birth and promote vitality, the following measures can be taken (see also chapter on "Housing and climate control"):

- Minimize air movement around piglets.
- Maintain a temperature of at least 20 °C (preferably 25 °C).
- Offer dry, absorbent conditions around the birth place.
- Ensure good insulation in farrowing buildings.

### Sow behaviour (freedom to behave)

- Access to nesting material, freedom to move around and access to outdoor result in a more relaxed sow with a quicker birth process, leading to more vital piglets and a sow, which is more responsive to piglet signals.
- Nesting material offers insulated bedding to piglets as well as an enriched environment, which stimulates development of social behaviour.

### Sow nutrition

General advice is to move sows 1 week before expected farrowing to the farrowing environment and gradually change from pregnant sow feed to a higher protein lactating sow diet. A too abrupt or too late change can lead to obstipation and problems with the birth process and with subsequent feed intake.

- Therefore, it is preferable to continue feeding the sow before farrowing on the same level as the dry sows.

The ration can be decreased on the day of expected farrowing, but the sow will anyhow reduce feed intake on that day. Feeding sows at a high level in late pregnancy will result in heavier piglets and less problems for the sows.

- Water should always be available.

### Health care

- The most crucial factor for new-born piglets is a quick and adequate colostrum intake supplying maternal antibodies in the first 12 to 24 hours of life. In larger litters earlier and heavier piglets can temporarily be put aside to give smaller ones access to a teat at this critical time.
- Microorganisms can enter the body by the navel (umbilicus), abrasion of the skin of the carpal joint ("front knees") and castration wounds. Good hygiene, a soft and smooth floor and drying of wounds (absorbent like Mistral) can reduce the risk of infection.
- Under some circumstances, piglets can be given an iron injection shortly after birth to prevent anaemia, although this may not be permitted and is often unnecessary in outdoor systems.
- Vaccinations against pathogens like Mycoplasma and Circovirus play a role in preventing lung and gut problems.

### Cross fostering (foster sows/stepmothers)

- Often the number of live-born piglets is greater than the number of functional teats. Moving surplus (strong piglets) to a sow with free teats gives the smaller piglets in a litter a greater chance for survival. Such changes should be made at the earliest 12 hours after birth to ensure colostrum intake.
- Some farmers practice a two-step action: After weaning, a sow is given a new litter of several weeks' old piglets. Their birth mother becomes the foster mother of some new-born piglets, leaving some of her own smaller piglets to help accept the new ones.

### Housing and climate control (including bedding material and enrichment)

Insulation by hair and fat reserves are very limited in new-born piglets, so a warm environment and/or good insulation and drying are crucial for new-born piglets.

- As soon as the piglets are dry and have consumed several portions of colostrum, healthy piglets become more robust.
- All the piglets experience a drop in body temperature. The sooner reduction of temperature is stopped and reversed, the more vital the piglets are. A dry and warm environment and high colostrum intake encourage temperature increase.
- Temperature increase is also promoted by the absence of draughts inside buildings or huts and by covering outdoor openings.
- Providing a mixture of straw and sawdust helps the new-born piglets to stay warm.

- An extra heat source near the piglet nest is an additional measure to keep piglets warm.

Vital piglets are less susceptible to crushing compared to cold, undernourished piglets, looking to the sow for warmth and additional nutrition.

- As soon as all the piglets in the group are dry and suckling, temperature can be lowered to stimulate piglets to use the piglet nest, thus lowering the risk on crushing.

### Feed and water before weaning

The digestive tract of the piglets must get used to solid feed. Good eaters have fewer problems with diarrhoea after weaning.

- From as early as the second week, sows and piglets can explore together and eat some silage offered on a solid floor.
- In the last 1 or 2 weeks before weaning, piglets should eat substantial quantities of solid feed.
- A separate drinker for the piglets should be available from birth to weaning.

### Alternative weaning systems: split suckling and intermittent suckling

- In large litters, some farmers put the largest piglets in a box to give the smaller ones a chance to suckle in the first days after birth.
- After feeding the piglets can be locked into the piglet nest to reduce the risk of crushing.
- Later in lactation the number of piglets shouldn't be more than 14 or the number of teats of the sow.
- In the last week of lactation a "natural" weaning process can be started by separating sow and piglets temporarily for some hours. This system is called "intermittent suckling" and can be used for a more gradual weaning process and to stimulate lactational estrus. Piglets also become hungrier and have a higher solid feed intake, which reduces stress at weaning.

#### Dos and don'ts in the management of pre-weaning piglets

##### Dos:

- Split large litters.
- Provide dry and warm environment.
- Avoid draughts in stables and huts.
- Use moisture absorbing material.
- Provide additional creep feed after two weeks.
- Lower room temperature after 6 hours.

##### Don'ts:

- Do not cross foster piglets in the first 12 to 24 hours.



The sooner piglets dry after birth, the less their body temperature drops. (Photo: Herman Vermeer, Wageningen University and Research Centre)



During the first 24 hours piglets stay near the sow. Afterwards piglets will go to a warm nest soon, when the room temperature is low. (Photo: Herman Vermeer, Wageningen University and Research Centre)



Bedding offers an ideal microclimate. (Photo: Herman Vermeer, Wageningen University and Research Centre)



**Additional heat is crucial in open buildings.**  
(Photo: Herman Vermeer, Wageningen University and Research Centre)

#### Changes in the process of weaning, which should be minimized:

- Change from milk to solid feed
- Separation from the mother
- Change to a new group
- Change in microclimate
- Change environment

## Management of post-weaning piglets

After weaning at 6 weeks organic piglets might weigh between 10 and 14 kilograms and are likely to be housed in groups of several litters for another 4 to 6 weeks until a bodyweight of about 25 kilograms. The aim of management is to reduce the number of stressors at weaning.

### Grouping/mixing

When litters are mixed this can result in aggression and around weaning such an additional stressor can make piglets more susceptible to diseases. Giving piglets the opportunity to mix during the suckling period by openings between farrowing pens, can lower aggression. Mixing whole litters gives better results than mixing subgroups or even individuals.

### Moving piglets

If piglets are left in the lactation environment for several weeks after the sow is moved the stress of weaning can also be reduced. When piglets are not moved, it is often linked to other positive measures like consistent grouping, diet and micro-climate. When piglets have less stressful changes around weaning the risk of infectious diseases is also lower.

### Housing (group size, climate control, floor design)

Normally piglets are moved to another environment with more space at weaning and this combined with loss of heat from sow and low feed intake initially, the room temperature or micro climate becomes important. An insulated kennel with adequate straw bedding should be sufficient to keep the body temperature constant although additional heating may be necessary in periods of sub-zero temperatures.

### Feed and water

Feeding piglets liquid feed in a long trough simultaneously 20 times per day has many similarities with milk intake during suckling. However if the piglets are already eating sequentially in groups of 2 to 3 from a hopper with ad lib feed the contrast with lactation is acceptable.

### Health care

All measures mentioned affect piglet health and survival. In addition, relevant nutritional factors are: avoiding feeds resulting in acid gut content and ensure gradual changes in diet ingredients. Some pig farmers vaccinate their pigs before weaning to prevent gut infections like *E.coli*, *Circovirus*, porcine intestinal adenopathy (PIA) PIA and Haemophilus in cooperation with their veterinarian. Vaccination against *Actinobacillus pleuropneumoniae* (App) and mycoplasma can reduce lung problems. The use of antibiotics in organic pigs is already low, but such measures can reduce this further.

### Uniformity in weight, age and/or sex

Uniform batches of animals within pens and rooms have uniform requirements for feed, climate and health care. An 'all in all out' system is more effective when all the animals can be moved to the next room or to slaughter at the same time. If smaller or younger animals have to stay behind, groups will be merged and the risk on disease transfer increases. When younger pigs join a room with animals of the previous batch, cleaning is not possible and infection risks are high. For organic pigs the advice is to use all in all out and no mixing in the last months before slaughter.

#### Dos in the management of post-weaning piglets

- Reduce stressors around weaning.
- Minimize mixing occurrences.
- Leave piglets in farrowing pen after weaning.
- Maintain a constant creep diet over weaning.
- Consider heat supplementation in the first two weeks.
- Encourage simultaneous eating in groups.
- Give preference to vaccinations over antibiotics.
- Build uniform groups for health and production.

## Further information

- Andersen IL, S Berg, KE Bøe (2005). Crushing of piglets by the mother sow (*Sus scrofa*) – purely accidental or a poor mother? *Applied Animal Behaviour Science*, 93, 229-243.
- Bonde M and JT Sørensen (2006). Animal health and welfare in organic European pig production: State of the art and challenges for the future, based on a North-western European questionnaire survey. Joint Organic Congress, Odense. <http://orgprints.org/8029/>
- Grandinson K (2005). Genetic background of maternal behaviour and its relation to offspring survival. *Livestock Production Science*, 93, 43-50.
- Knol, E. F., Ducro, B.J., Van Arendonk, J. A. M., Van der Lende, T. (2002b). Direct, maternal and nurse sow genetic effects on farrowing-, pre-weaning- and total piglet survival. *Livestock Production Science* 73, 153–164.
- Marchant, J. N., Rudd, A. R., Mendl, M. T., Broom, D. M., Meredith, M. J., Corning, S., Simmins, P. H. (2000) Timing and causes of piglet mortality in alternative and conventional farrowing systems. *Veterinary Record* 147(8), 209-214.
- Vermeer, Herman M. and Altena, Henk (2004) Farrowing accommodation for organic pigs. 38th Congress of the International Society for Applied Ethology, Helsinki, Finland, August 3-6 2004.
- Wellock IJ, JGM Houdijk, PD Fortomaris, SA Edwards, I Kyriazakis (2006). Too much of a good thing- protein, gut health and performance. *The Pig Journal*, 57, 158-172.

## Imprint

### Author

Herman Vermeer, Animal Sciences Group (ASG) Wageningen U R Livestock Research, Animal Sciences Group (ASG), 8200AB, LE-LYSTAD, The Netherlands, <http://www.wageningenur.nl/en/Expertise-Services/Research-Institutes/livestock-research.htm>

### Title photo

Herman Vermeer, Wageningen University and Research Centre

### LowInputBreeds

LowInputBreeds is the acronym of the project 'Development of integrated livestock breeding and management strategies to improve animal health, product quality and performance in European organic and 'low input' milk, meat and egg production'. It is funded under the Seventh Framework Programme of the European Community for Research, Technological Development and Demonstration Activities (Contract No. 222623).

### Disclaimer

The contents of this technical note are the sole responsibility of the authors, and they do not represent necessarily the views of the European Commission or its services. Whilst all reasonable effort is made to ensure the accuracy of information contained in this technical note, it is provided without warranty and we accept no responsibility for any use that may be made of the information.

### Layout

Helga Willer and Gilles Weidmann, Research Institute of Organic Agriculture (FiBL), Frick, Switzerland

### Editing

Gillian Butler, Newcastle University, UK

### Publishers

Consortium of the LowInputBreeds project, c/o Newcastle University, UK,

and

Research Institute of Organic Agriculture (FiBL), Frick, Switzerland

### Download

This technical note is available for download at <http://www.lowinputbreeds.org/lib-technical-notes.html>

© LowInputBreeds Consortium 2014