

# Alternative farrowing accommodation in the pork industry

**Graeme Taylor and Greg Roesse**

Livestock Officers Pigs

**Ian Kruger**

Environmental Engineer

Intensive Industries Development, Tamworth

This Primefact provides a brief overview of alternative farrowing accommodation (for giving birth to piglets) as the global pork industry continues to look for economically viable alternatives to the farrowing crate.

## Introduction

In the Australian pork industry, the most common form of sow housing for lactating sows is full confinement farrowing crates in climate-controlled sheds.

The traditional farrowing crates restrict sow movement to protect newborn piglets from being crushed by the sow. Animal welfare groups around the world have concerns over their use. Activists oppose the use of farrowing crates and their use is becoming banned in some countries. Many niche market groups discourage their use.

Hormonal changes in the sow, which occur for the 2 days prior to farrowing, often provide motivation for nest building. Sows are often restless during this period but farrowing triggers

different hormonal changes that end this desire to build a nest. In a natural environment, the sow will often remain in the nest for 2 days post-farrowing.

The pork industry recognises the concerns about the conventional farrowing crate system, which restricts sow movement and nesting behaviour. There are currently no commercially viable alternatives that meet all sow and piglet welfare aims.

To meet the challenge of designing alternative farrowing systems, research over recent years has trialled many systems:

- farrowing crates
- sow pens
- group housing
- extensive systems.

It would be unwise for Australian pig producers to invest in new farrowing accommodation without considering the possible effects of future legislation. For more information, refer to the Australian Pork website:

<http://www.australianpork.com.au>

and click on 'Issues watch' for information on animal health and welfare issues. The long-term future of the pork industry ultimately depends on production methods being accepted by consumers and retailers.



There are many varieties of farrowing crates and pens in modern piggeries.

If you are planning new farrowing accommodation or upgrading existing units, consider systems that allow a greater freedom of movement and natural behaviour for sows and litters.

## Farrowing crates

Options for farrowing crates appear to be based on:

- sow comfort, freedom from injury and maintenance of body condition;
- low preweaning piglet losses and high weaning weights;
- ability for sows to move freely and perform natural patterns of behaviour.

Farrowing crates are aimed at providing a comfortable, hygienic environment for sows and litters whilst making management as easy as possible. This is achieved by using a crate to control sow movement which reduces the risk of crushing piglets. Heated creep areas are provided to allow optimal temperature control for piglet comfort and growth. Crates also protect the stockperson from sow aggression, allowing free access for litter management tasks.

Conventional farrowing crate systems provide pig producers with excellent working conditions and the piglet mortality rate is less than 10%. However, these benefits come at a cost of \$1000 or more per sow place. Also the crates impose restrictions on sow behaviour.

There are many farrowing crate designs in use. Some are commercially available models while others are homemade or are adaptations of purchased models. The most common have bowed or finger rails and slatted flooring. Variations of conventional crates include the following:

- **Hydraulic crates.** These allow sows to descend slowly to their lying position, resulting in fewer overlays.
- **Crates with moveable floors.** The crate floor rises and falls depending on sow posture. The floor is level when the sow is lying, but when she stands, the floor falls away on either side to protect piglets from injury.
- **Hinged crates.** The sow is able to walk freely around the pen when the crate is open. Just prior to farrowing, the crate is closed. It is opened again about 5 days post-farrowing.
- **Ellipsoid crates.** These allow the sow to turn around, and productivity can be similar to that obtained when a conventional crate is used. However, these crates require more room.
- **VIP mushroom system.** Sows can move around the pen freely at all times. The pen has plastic spring-loaded 'mushrooms' attached to the floor that encourage the sow to lie down in



Werribee pen



Ellipsoid crate



Family pen



Turn-around pen/crate



Sloped farrowing pen



Swedish system

These pictures show examples of different farrowing systems (Source: John McGlone, Texas Tech University, 2004 and Minnesota Department of Agriculture, 2001)

a particular direction. This provides some protection from piglet overlays.

## Sow pens

Most of the pen designs that give sows more freedom to move result in a higher piglet mortality than when conventional farrowing crates are used. On the positive side, sows are able to turn around and they can express a higher level of maternal behaviour.

A large variety of farrowing pen designs are in use. They often have piglet protection bars around the walls 250 mm off the floor and the sow is restrained during parturition by a hinged gate. The pens can also be used as weaner pens.

Floor space is limited and many pens are designed with fully slatted floors to maintain a high standard of hygiene. Larger pens are required for systems that use deep litter in a separated lying area and these require a higher labour input.

Production figures indicate that many farrowing pen designs perform as well as farrowing crates, and capital costs are often similar for both systems. However, the alternative designs generally result in higher piglet losses through crushing but there are often fewer stillbirths.

- **Kennel and run systems** have a straw-bedded kennel and a solid or slatted floor run. The creep area is isolated from the sow, and piglets may have restricted access to the sow feeding and dunging area. These units show greatest success when the kennels have accurate thermal control.
- **The Werrabee pen** has two separate sow areas, one of which has a protected area for piglets. Whilst these pens show excellent performance, they require about double the floor space of conventional farrowing crates. Details of the Werrabee pen can be found on the Animal Welfare Science Centre website: <http://www.animal-welfare.org.au>
- **Turn-around pens** are designed to allow the sow to turn near the rear of the pen.
- **Sloped farrowing pens** have an 8° to 14° slope. The piglets are able to gravitate down the slope, which leads to a protected area.

## Group housing

With group housing, sows are often provided with free access to individual nest sites. Sows have a greater freedom of movement and common areas can be used for dunging. Drinkers and feeders can also be shared.

Disadvantages include higher piglet mortalities through increased fighting of restless sows prior to farrowing. Also, extra sow aggression after

farrowing may be directed towards staff, so staff will need to increase their stock management skills.

To overcome the problem of some sows farrowing outside designated areas, sows can be retained in nest areas. However, this counteracts the concept of providing increased space and freedom of movement. Problems may also exist with multisuckling and cross-suckling, which can cause an increased number of smaller piglets.

An extension of this system was the development of **family pen systems**. Sows were kept in stable family groups throughout their production period. A boar was allowed to run with the group and serve sows while the sows were still lactating. Piglets were often weaned at 12 weeks. Major problems with this system were poor synchronisation of sows for farrowing and high piglet mortalities.

The disadvantages of group systems are that they generally lead to cross-suckling and increased variability in piglet weight. Sow condition at weaning can also be highly variable.

An **alternative group housing system** has been to combine the use of farrowing crates and deep-litter housing. Sows are housed with piglets in farrowing crates for the first 2 weeks. This minimises crushing and allows piglets to bond with the sow and develop a stable teat order.

After 2 weeks sows and litters are moved to larger pens with deep litter and are housed in a group. Ideally, sows mixed in this way will be from the same parity to minimise the risk of fighting. These systems have less piglet mortality, and cross-suckling problems are reduced.

The Swedish deep-litter farrowing system, called the **Vastgomodel system**, is a recent development in group-based farrowing systems. It was designed to minimise pig stress and levels of feed antibiotic usage.

Thorstensson and Ljungstrom are two versions of the Vastgomodel system. In the **Thorstensson system**, cubicles with rollers are used for farrowing. Sows are allowed to select their own bedded farrowing cubicle and when piglets are 2 weeks old the cubicles are removed to allow group lactation. Sows are removed at weaning and weaners are grown out until 10–12 weeks of age. Successive groups of sows move through the system in a continuous process.

This system has a lower capital cost compared with conventional systems and has achieved good reproductive performance. However, the preweaning mortality has been very high and excellent stock skills are essential.

In the **Ljungstrom system**, sows farrow in conventional crates. They are moved with their litters to group housing when the piglets are

10–14 days of age. New sows with their litters can be introduced into a group shortly after the sows and litters from the established group move into it. Sows are preoccupied with mothering, therefore fighting is minimised.

Producers in Iowa in the USA have achieved 24–27 pigs per sow using this system, with 8–10 sows per group. This system significantly reduces preweaning mortality, and pig growth is similar to conventional systems.

## Extensive systems

Outdoor systems are relatively cheap to establish and, if well managed, are considered very welfare-friendly. Performance of these systems can often be similar to conventional farrowing crates. However, outdoor systems require specific soil types and climatic areas. Also, when compared with indoor systems, a higher labour input using different husbandry skills is required.

## Conclusion

The choice of farrowing system is based on:

- sow and piglet performance;
- welfare acceptability;
- environmental acceptability;
- ease of management;
- capital costs;
- financial returns / productivity.

There is currently no single alternative farrowing system that meets all the welfare aims and has commercially acceptable levels of performance. Sow and litter productivity can be as good or better in some alternatives when compared with

the farrowing crate. However, these better alternatives generally require more space than the farrowing crate.

In the future, there will be continued pressure for the pork industry to find economically viable alternatives to conventional farrowing crates.

## Further reading

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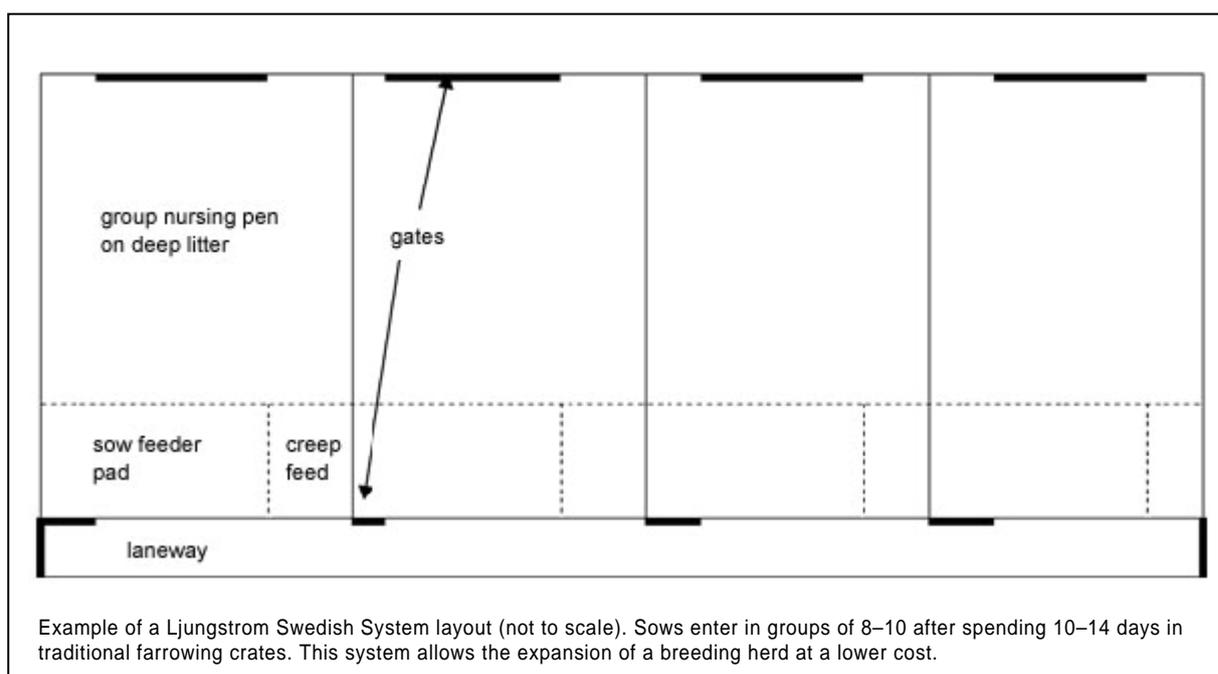
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Example of a Ljungstrom Swedish System layout (not to scale). Sows enter in groups of 8–10 after spending 10–14 days in traditional farrowing crates. This system allows the expansion of a breeding herd at a lower cost.

A wide range of information sources can also be found on many pig industry websites:

- **NSW Department of Primary Industries** has a range of resources and contacts on their website:  
[www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)  
and the authors of this Primefact can be contacted on (02) 6763 1100.
- **Australian Pork Limited (APL)** is the national representative body for Australian pig producers. It is a producer-owned not-for-profit company combining marketing, export development, research, innovation and strategic policy development to assist in securing a profitable and sustainable future for the Australian pork industry. Resources and contacts are listed on their website:  
<http://www.australianpork.com.au>  
or they can be contacted on 1800 789 099.
- **NSW Farmers' Association's NSW Pork Committee** have resources and contacts listed on their website:  
<http://www.nswfarmers.org.au/pig>  
or they can be contacted on 02 8251 1700.

A number of pig-specific magazines and newspapers also exist, including:

- *Australian Pork Newspaper*, (07) 3286 1833
- *The Pork Producer*, (07) 4690 9253
- *Pork Journal*, (02) 9798 3078
- *Pig Industry News*, (08) 8372 5222

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