

## Housing for the farrowing and lactating sow

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The majority of farrowing sows in the UK are currently housed in farrowing crates. The *Codes of Recommendations for the Welfare of Livestock – Pigs* state that such systems raise serious welfare problems as a result of close confinement. The Codes strongly recommend the adoption of alternative systems of housing where the animals' behavioural and exercise needs can be more fully met. This Technical Note outlines the alternative systems for farrowing and lactation that can be considered.

Ideally, accommodation for farrowing sows would:

- maximise piglet survival,
- allow sows to perform their natural patterns of behaviour,
- reduce labour and provide a good working environment,
- reduce capital requirement.

In practice, it would appear that some of these aims remain incompatible and some degree of compromise may have to be accepted. The systems currently available for housing the farrowing and lactating sow can be broadly divided into four categories:

- sows individually housed in farrowing crates,
- sows individually housed in pens,
- sows group housed with access to specialised nest areas,
- outdoor farrowing huts.

### Farrowing crates

Traditional indoor farrowing systems consisted of simple bedded pens. Over the years, the general trend has been towards reducing the size of the pens and restricting the voluntary use of this space by the sow. The increasing confinement has been aimed at controlling sow movement to reduce the risk of piglets being crushed. Specialised heated creep areas were added to prevent the piglets from becoming chilled. Floors became slatted or perforated to ease the removal of faeces and urine, thereby improving hygiene. Overall design was geared towards making management of the sow and litter as easy as possible.

As a result, farrowing crate systems allow easy inspection and supervision of the sow and litter, and can provide excellent working conditions. By reducing

the number of piglets crushed, mortality in top herds is less than 10%. However, these benefits do not come cheap with the cost per sow place at around £2000.

Despite their many advantages, farrowing crates impose severe restrictions on the behaviour of the sow. In natural conditions, sows wander considerable distances in search of a suitable nest site away from other pigs. Sows then build an elaborate nest which is designed to provide protection for their piglets. These activities have evolved over millions of years and have become an integral part of the biology of the pig.

Pig producers have to consider the long term future of the pig industry which ultimately depends on acceptance of pig production methods by consumers and retailers. Public perception and acceptance of animal products now involves not only the product itself but also the husbandry system by which it was produced. People are becoming increasingly concerned about issues of food safety, environmental sustainability and animal welfare. The latter involves an understanding that animals have a set of requirements for optimal welfare. For the sow, alternative systems which allow greater freedom of movement and behavioural expression are therefore more desirable.

### Multisuckling systems

In multisuckling systems, sows are generally housed with their piglets in farrowing crates for the first two weeks. The piglets are therefore protected from being crushed during the vital 2–3 days after birth. The two weeks in the farrowing crate also allows plenty of time for the piglets to bond with the sow and develop a stable teat order. The sow and piglets are then transferred to large straw pens along with other sows and litters. The mixing of sows at this time generally leads to less fighting than mixing after weaning. However, the social disruption can lead to more piglet mortality.

Furthermore, cross suckling may occur which means that smaller piglets get less than their fair share of milk. This generally results in lower piglet weights at weaning.

### **Individual sow pens**

A number of systems have been developed in which the sow is housed individually at farrowing but is not closely confined. Many have been designed so that they do not require much more space than farrowing crates. Sows can move more freely in these pens and take advantage of the ability to turn round. Expression of maternal behaviour such as sniffing at piglets is made easier and piglets may have greater access to the sow's udder. However, sows are highly motivated to travel large distances prior to farrowing which may lead to frustration in very small pens.

In most individual pen designs, floor space is limited and hygiene considerations dictate the use of fully slatted floors. Such systems do not therefore lend themselves to the use of bedding or nest building material. To accommodate bedding, slightly larger pens have been developed which provide separate lying and excretory areas for the sow but this invariably leads to greater demands on the stockperson. On the whole, individual pens are second only to farrowing crates for ease of management. Production figures have also been shown to equal those found in farrowing crates. More piglets are crushed but this may be compensated by fewer stillborn piglets. Capital cost per pig place is similar to that of farrowing crates.

### **Group farrowing systems**

Recently, there has been increased interest in group farrowing systems where animals are housed in large areas with free access to individual nest sites. The advantages are that sows have greater freedom of movement and facilities such as dunging areas, drinkers and electronic feeders can be shared by the group thereby reducing the need for space. Where farrowing systems are integrated with dry sow accommodation this saving can be even greater.

One disadvantage with group housing arises from the fact that sows are motivated to seek isolation prior to farrowing. As a result, dominant sows can become increasingly aggressive towards low ranking individuals and such disturbances can have serious consequences for piglet mortality. Another problem is that sows have different priorities when it comes to choosing an ideal farrowing site. No matter how attractive the farrowing areas are or how unattractive the non-farrowing areas are, certain individuals will farrow outside the designated areas, again putting piglets at risk. These

problems have been addressed in two ways. First, sows may be locked in the nest sites prior to farrowing which negates the benefit of providing more space. Second, the whole area available to the sows is deep bedded and therefore more suited to piglet survival, if sows do not choose the designated areas. A further problem with group systems is that, as with multisuckling systems, cross-suckling may occur.

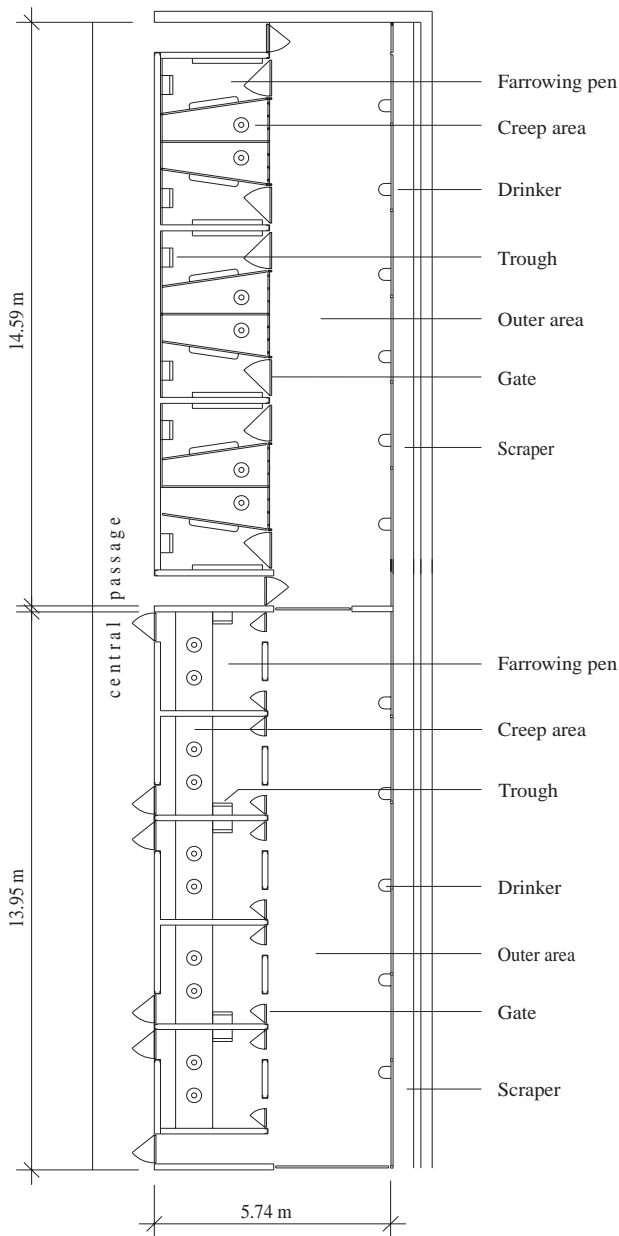
Having sows wandering around freely makes intervention by stockpersons more difficult, especially if there are problems at farrowing. After birth, some sows become very aggressive towards humans. These problems inevitably mean more supervision is required from skilled stockpersons and labour costs may therefore increase. In general, group systems can be less expensive than individual systems as equipment and space may be shared.

### **Family pen system**

The Family Pen system arose from the interpretation of observations made on a group of sows kept in a 'semi-natural' habitat. These findings were translated into a husbandry system that allowed pigs to carry out their normal patterns of behaviour and live in natural social groups. The pens were designed to incorporate key environmental features such as areas for nesting, foraging and dunging. The sows were kept in stable family groups throughout their production period. Shortly after farrowing, a familiar boar was allowed to run with each family group to serve the sows while they were still lactating. The piglets were weaned naturally by their mothers and were not removed from the family groups until they had reached market weight. By this time most sows were ready to farrow again and the cycle was complete. Any replacement animals were daughters from the family groups.

The system has been modified many times. At SAC Aberdeen, the system was brought completely inside, the space allocation was reduced and overall design simplified. Operation of the system was changed so that after the piglets were 12 weeks old, each family group was weaned and removed. This was because most piglets had been weaned naturally by 12 weeks. It also allowed two family groups to use each pen. Several pen designs based on family group sizes of 4–6 sows were tested (Figure 1). Each pen consisted of:

- nest areas which also functioned as individual feed stalls for the sows,
- heated creep areas which contained ad lib feeders for the piglets,
- an outer communal area for activity and dunging.



**Figure 1. The family system for pigs developed in Aberdeen showing two pen layouts**

The system was successful from a welfare viewpoint and the behaviour of the pigs was found to be similar to that observed in the original system. Another advantage of the system was that there was no need for specialised accommodation for farrowing, weaning, service and mixing sows. However there were two major problems. The main difficulty in managing the system was getting all the sows in each family group served at the same time while they were still lactating so that they all farrowed together next time round. Solutions to this problem such as providing large individual pens for each sow and litter, or weaning sows

which were late to show oestrous were deemed impractical. The other problem was that piglet mortality rates of 22% with 9.1 piglets weaned per sow would not be commercially acceptable. However, there was evidence that piglet survival did improve among long-term stable groups of sows.

### Outdoor systems

The main advantages with outdoor systems are that they are relatively cheap to set up and that there are many fewer sow welfare problems. Piglet mortality rates are now approaching those found in farrowing crates, particularly where sows are housed in single paddocks as opposed to in groups. The disadvantages are that not all locations are suitable for outdoor production because of soil type and climate. Different husbandry skills are required and labour input is generally higher than for indoor systems.

### Conclusion

Table 1 gives a simplified evaluation of the different farrowing systems based on an assumption that production, sow welfare, ease of management and capital cost are equally valued. Scores for management incorporates both the amount and level of labour required. Scores for piglet welfare were not included because aspects such as mortality are incorporated in production and aspects such as behaviour are similar to those for sow welfare. Ranking each system (highest = 4) was considered more appropriate than assigning each system a score. For individual pens, scores were based on slatted floor cubicles. Future designs of individual pens may be able to incorporate bedding to improve sow welfare without substantial increases in labour and capital input. However, until then, outdoor systems appear to be the most favourable while group systems appear to be the least.

**Table 1. An evaluation of the main farrowing systems based on the four main performance criteria (highest = 4)**

Criterion	Farrowing crate	Individual pen	Group system	Outdoor
Production	4	3	1	2
Sow welfare	1	2	3	4
Management	4	3	2	1
Capital	1	2	3	4
<b>Total</b>	<b>10</b>	<b>10</b>	<b>9</b>	<b>11</b>

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