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Finishing pigs in straw courts

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Summary

Keeping pigs in straw courts can be viewed as cheap diversification or a simple entry into pig production. Provision of the proper facilities is important however one overriding requirement is the ability of stockmen to identify when pigs are not performing or indeed unhappy. By following the advice in this technical note when adapting facilities, you can improve what you have and provide the ideal environment for the pigs. In turn giving yourself the greatest opportunity for your enterprise to be successful.

Introduction

Finishing pigs in straw courts is a popular system in the sector. From producers finishing their own pigs, to specialist finishers and to pigs being kept on a contract finishing or “bed and breakfast” basis.

There are several reasons for this:

- The ability to convert and utilise general purpose or cattle courts fairly simply and cheaply.
- Perceived welfare benefits which can lead to premium markets.
- The high cost of specialist slatted finished sheds.
- The potential future flexibility for other uses by erecting or converting straw courts for pigs compared to building slatted sheds, which have limited alternative uses.

This technical note looks to outline the current recommendations and considerations for the management of large groups of pigs on straw bedded courts whether part of an existing pig enterprise or for potential new entrants. Many of the figures provided refer to minimum standards. While these may be satisfactory in some cases and need to be met by producers, the ultimate test of whether these are right or indeed the pigs need more space, water, warmth, ventilation etc comes from the pigs themselves. Observing the pig’s behaviours closely and monitoring performance will provide stock people with key information on the pig’s environment and the success of the shed design, even allowing improvements to be made.

Aims of a Pig Finishing Enterprise

Regardless of housing, the aims of a pig finishing enterprise is to produce finished pigs as cheaply and efficiently as possible, whilst achieving the optimum margin.

Done well, the finishing period usually provides the greatest opportunity for profits on a pig farm. However, when done poorly, significant losses can be made.

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Welfare and ‘The Five Freedoms’

The basis for welfare codes and practices are formed by the Five Freedoms as defined by the Farm Animal Welfare Council.

These are:

1. Freedom for hunger and thirst
2. Freedom from discomfort
3. Freedom from pain, injury and disease
4. Freedom from fear and distress
5. Freedom to express normal behaviour

It is no coincidence that by achieving the five freedoms, you also ensure that livestock perform to their optimum, giving the enterprise the greatest chance of success. Providing the environment and accommodation that meets the pig’s needs therefore is paramount.

Court Design

Pigs finished on straw courts tend to exhibit more natural behaviours and less undesirable traits due to their enriched environment. Poor design and layout however can cause welfare problems to individual pigs where competition for space, feed and water arises. Poor designs and layouts can also see a greater likelihood of more dominant pigs bullying other pigs, restricting access to feeders, drinkers and lying areas causing unnecessary stress to these animals.

A good straw court will see the pigs have areas for lying and dunging, as well as areas for more general interactions and activity. Placing feeders close and easily accessible to the water supply has been found to be beneficial with pigs tending to drink either directly before or after eating.

Buildings can range from converted existing buildings, typically cattle courts or general-purpose sheds where pigs tend to be managed in bigger groups to more specialist buildings where pigs can be split into smaller pens. Some buildings will also have the capability to have separate defined lying, bedded areas and feeding and dunging areas, with the latter able to be scraped out regularly, helping reduce straw requirements.

Poorly designed sheds can mean that much lower stocking densities are necessary which ultimately reduces throughput. This can be affected by shape, layout, ventilation and drainage. A shed with water and feed areas at opposite ends will mostly likely require a lower stocking density than a similar sized shed with feed and water at one end of the shed. At the same time a shed with poor drainage can impact on the area of dry straw available for lying.

Space and Stocking Densities

Stocking density can impact on pig performance on numerous ways. If stocking density is too high, this can lead to pigs exhibiting undesirable behaviours and increased aggression. This can lead to more fighting, tail biting, bullying and destructive behaviour. Higher stocking rates also lead to more disease challenges as well as negatively impacting on growth rates and feed conversion. Reducing stocking rates and providing more space leads to much better overall welfare and pig performance, with lower aggression and improved health.

Space requirements on straw courts are higher than on slatted floors. While the straw helps encourage natural behaviours like foraging, rooting and exploring, pigs require sufficient space to be able to carry these out. In addition, within a straw court, pigs will establish separate areas for both sleeping and dunging, unlike cattle.

Table 1. Space requirements comparing minimum standard to higher welfare standards.

Weight of pig	Minimum space requirement for unobstructed floors (slats) (m2 / pig)*	Weight of pig	Suggested minimum recommended floor space requirement for straw bedded courts (m2 / pig)** ecommended floor space requirement for straw bedded courts (m2 / pig)**	Weight of pig	RSPCA Assured straw bedded regularly mucked out (m2 / pig)***	RSPCA Assured deep bedded courts (m2 / pig)***
Below 10kg	0.15	10kg	0.38	7-35kg	0.45	0.5
10-20kg	0.20	20kg	0.38	36-50kg	1.17	1.30
20-30kg	0.30	40kg	0.63	51-75kg	1.35	1.50
30-50kg	0.40	60kg	0.88	76-95kg	1.50	1.67
50-85kg	0.55	80kg	1.13	96-110kg	1.54	1.72
85-110kg	0.65	100kg	1.25			
110kg plus	1.00					

*** Source: Guidance for the Welfare of Pigs (Scottish Government) 2023**
**** Source TN437 Finishing Pigs in Straw Courts, SAC (1997), Stewart A & Robinson A.**
***** Source RSPCA Pig Welfare Standards March 2025**

Unless pigs are being managed under higher welfare conditions, where set minimum stocking densities and space requirements are prescribed, the minimum stocking density for pigs in straw yards are much more dependent on the environment and layout of the building. As mentioned earlier, this minimum space requirement will be much higher than the minimum required for pigs on unobstructed floors. Poor pen design and environmental factors within the pen or shed will mean space requirements are even higher when compared to a well-designed pen. Regular mucking or scraping out dunging areas can allow stocking densities to be higher compared with deep bedded courts where dunging areas are not mucked out regularly. Minimum space requirements should never be treated as targets. **Ultimately It is only through observing pig behaviours that allows the correct stocking density to be gauged although in many situations minimum space requirements may be dictated by end market and contract specifications with the high welfare premium compensating for the reduced number carried.**

Temperature Control and Ventilation

Like many factors, the ultimate guide to the correct temperature is the behaviour of the pigs. If the temperature is too high, this will reduce feed intake. Too cold and this can lead to outbreaks of vice and other undesirable behaviour. Ideally pigs should be kept within their thermoneutral zone. This is the temperature at which they feel comfortable. This temperature removes the need to huddle to stay warm and keeps them from showing signs of vice or wasting energy trying to keep cool (typically being outstretched and dirtier than normal). Some buildings will allow young pigs to be kept within a smaller area to help maintain temperature with pigs getting access to a larger pen area as they grow.

The Guidance for the Welfare of Pigs (Scottish Government) is shown in Table 2 and should be starting point for working out suitable air temperatures for a building relative to the weight of the pigs. Keeping pigs in straw courts can help reduce the Lower Critical Temperature (LCT) of pigs by up to 5C compared with slatted accommodation for similar feeding regimes and stocking densities. This is due to the pigs being able to bury themselves and create a micro-climate for themselves and highlights the importance of plenty good quality, dry straw.

By keeping pigs at 2-3 ^{0}C above this LCT, this avoids the risk of an estimated LCT being too low.

Table 2. Temperate guides for pigs based on welfare standards.

	Temperature °C	
Category of pig	**Min**	**Max**
Weaned (3 - 4 weeks)	27	32
Later weaned pigs (5 weeks +)	22	27
Finishing pigs up to 70kg	15	21
Finishing pigs over 70kg	13	18

Source: Guidance for the Welfare of Pigs (Scottish Government), 2023

Drafts are something that can impact heavily on temperature requirements with a 5 m/s draught increasing the LCT by around 9^0C, mitigating any of the temperature benefits of a straw bedded court.

Converted cattle courts or general-purpose sheds will generally keep pigs at the desired temperatures over the winter. This type of building can struggle however to keep pigs cool enough in the summer due to their poor ventilation. This is where improving airflow needs to be considered. Measures such as raised ridge caps in roofs can allow the heat generated by the pigs to escape. Some buildings will have fans or allow the installation of fans to help add more control to ventilation and temperature. Furthermore, as ammonia production tends to be lower in straw bedded courts, fans will allow the provision of more fresh air.

Feed and Trough Space

In most cases pigs in straw courts will be ad-lib fed using a dry meal. This is the most practical option in most cases, with the use of feedlines helping to reduce labour. Pigs finished in straw courts can have slightly higher P2 or backfat readings than those finished on slats although today's modern genetics mean that it should not be a significant issue for grading at normal sale weights.

Wet feeding is possible in straw courts. However, it will depend on the availability of the suitable co-products. Wet feeding systems can allow higher intakes and growth rates but also require significantly higher capital costs and cleanliness can also be an issue with more effluent produced.

Dry feeding systems work best where there is sufficient feeding space and water availability. Feed should be able to flow freely to allow optimum intake so long as it is possible to also minimise wastage.

The minimum feed space is shown in Table 3 for both restrict-fed and ad-lib pigs being fed dry feed. More space will be required where troughs do not have head barriers between spaces. More trough space is required when feeding dry meal-based diets as opposed to pellets and wet feed.

Table 3. Minimum trough length per pig and weight of pig.

	Trough / Hopper length per pig space (mm)	
Weight of pigs (kg)	**Restrict Fed**	**Ad-lib Fed**
5	100	75
10	130	33
15	150	38
35	200	50
60	240	60
90	280	70
120	300	75

Source: Code of Recommendations for the Welfare of Livestock (DEFRA)

Feeders placed too close to corners and water can see dominant pigs block access to other pigs. Feed should always be fresh and kept away from dunging areas to discourage fouling of troughs.

Health and Welfare

With most finishing enterprises operating large groups, this put a strong onus on stock people to monitor for health and welfare issues. More intensive systems tend to have much smaller group sizes with a controlled environment compared to straw courts where than can be much greater variation in both the pig's environment and social structure within the group.

For both disease and vice issues, early detection and containment is critical to bring outbreaks under control. The ability to identify and understand when to treat or remove an individual from the group cannot be overstated. While tail biting, flank and ear biting are generally lower in straw courts, they can still flare up quickly. Arthritis can also occur in straw courts but generally leg and feet issues are reduced.

All-in, all-out systems are recommended for finishing enterprises and while this can be easily achieved in slatted sheds with small groups, this is less easy to implement where larger groups in converted general purpose sheds where good weighing and handling facilities are paramount. With drawing undertaken over a few weeks to prevent over weights and excess variation in carcass size. Splitting large sheds into pens may make for a more expensive conversion but can facilitate management. There can also be an argument for splitting groups by sex with gilts more predisposed to grading fatter than boars at similar weights allowing easier drawing of females, albeit at slightly lower weights, which can also help reduce variability between carcasses. Splitting by sex also reduces the risk and incidences of excessive mating behaviours.

Consideration should be given at the design stage to group size with each batch having its own airspace if possible. Separate airspaces reduce the risk of respiratory diseases spreading from older pigs to more susceptible young pigs.

Good design should also include sufficient airspace to reduce the effects of dust, ammonia, and bacteria.

Hygiene between batches also important and sheds should be thoroughly washed, disinfected and allowed to dry between batches.

Water

Water should be regarded as a crucial nutrient – should water intake be below requirements, this directly impacts on feed intake and growth rates.

Pigs require a plentiful supply of clean water, and drinkers should be sited in an area away from the main bedded or lying area. It is important that consideration is given to the drainage of these areas, with any water being able to drain away freely without creating wet, spoiled bedding and leading to increased straw costs.

While nipples, bowls or troughs may be used, availability in terms of enough spaces and flow of water is important to avoid unnecessary aggression. Some of the main considerations for water supply include:

- Total volume available
- Flow rate
- Method of provision
- Accessibility
- Hygiene
- Cleanliness of supply

The current minimum requirements are shown in Table 4 and Table 5 although these can vary depending on assurance scheme.

Table 4. Recommended number of pigs for different water delivery method.

Delivery method	Recommended number of pigs
Nipple drinker	1 for up to 15 pigs 2 for up to 30 pigs 3 for up to 50 pigs (large groups)
Bowl drinker (with reservoir)	1 for up to 20 pigs 2 for up to 40 pigs 3 for up to 70 pigs (large groups)
Trough	0.8cm per pig (up to 15kg) 1.0cm per pig (15 – 35 kg) 1.2cm per pig (over 35 kg)

Source: Code of Recommendations for the Welfare of Livestock (DEFRA)

Table 5. Daily water requirement of different weights of pigs and flow rates of nipple drinkers.

Weight of pig (kg)	Newly weaned	Up to 20kg	20-40kg	40kg-100kg
Daily requirement (l)	1.0-1.5	1.5-2.0	2.0-5.0	5.0-6.0
Minimum Flow rate (l / minute) for nipple drinkers	0.3	0.5-1.0	1.0-1.5	1.0-1.5

Source: Guidance for the Welfare of Pigs (Scottish Government) 2023

As a rule of thumb, pigs will drink 1-1.5l of water for every 1kg of feed consumed. This can fluctuate depending on factors such as temperature and diets.

The true test of whether a pen or shed is supplying enough water is whether the pigs are showing signs of thirst. This could also be down to accessibility, with the height and availability of nipples, bowls and troughs being appropriate for the size and ages of the pigs.

Water quality is also important and should be human drinking water standard with regular testing for non-mains supplies. Water quality can be a cause of reduced feed intake, poor performance and conditions such as diarrhoea.

Straw

When finishing pigs on straw courts, straw is a variable cost and usage can be influenced by many factors including age and size of pigs, stocking density, quality of straw, weather, ventilation and shed design and layout.

Straw cost is also important to consider, for some farms the pigs finishing enterprise will dovetail with an existing arable enterprise however the lack of home-produced straw can represent a significant outgoing to the enterprise.

Straw usage can vary substantially although most units will typically be in the range of 300 - 500 grams per day per pig place.

Table 6. Straw cost based on usage and different prices.

	Straw price (£ / ton)	Weekly cost (£ / pig)	Annual Cost (£/ pig place)	Annual Cost (£ / 100 pig places)
300g / day	50	0.105	5.25	525
500g / day	50	0.175	8.75	875
300g / day	75	0.158	7.88	788
500g / day	75	0.263	13.13	1313
300g / day	100	0.21	10.50	1050
500g / day	100	0.35	17.50	1750

While older buildings can be easily and cheaply converted, they can also be more likely to be poorly ventilated and draining, leading to much higher straw usage than a more carefully designed shed.

Timing of straw purchases can also heavily impact on profitability particularly when straw is in short supply. Reducing exposure to fluctuations in the marketplace by understanding your yearly requirements and the ability to store undercover can go some way to mitigating this.

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Further Information

DEFRA (2020) Code of Practice for Welfare of Pigs. URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908108/code-practice-welfare-pigs.pdf

Scottish Government (2023) URL: https://www.gov.scot/publications/guidance-welfare-pigs/

Ventillating Pig Buildings (2016) AHDB URL: https://ahdb.org.uk/knowledge-library/ventilating-pig-buildings

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