

Chapter 11. Environmental enrichment



Introduction

The natural environment of pigs is complex. They interact with other individuals of all ages. They eat a wide range of foods using a wide range of behaviours. Pigs face a range of temperatures and weather, which they use a range of behaviours to cope with. They have opportunities to rest, but will be active for much of the day.



Growing pigs in barren environment

By contrast, intensive environments are often barren. For example, social interactions are less varied, the environment is less changeable and there is much less opportunity for foraging. Intensive systems often fail to address the needs of pigs to perform natural behaviours.

The social and physical environment of pigs can be enriched by:

- Keeping pigs in more natural social groupings

- Positive handling and social contact with stockpeople
- Provision of bedding and fibrous materials for foraging
- Provision of toys such as tyres, chains and footballs (this is much less effective)
- Providing access to the outdoors

Social enrichment



Recently weaned piglets are often fearful of people and are easily panicked by a range of novel stimuli. Both research and the common experience of stockpeople suggest that social and environmental stimulation helps pigs to stay calm when faced with novel experiences including handling and transport.

In one piece of research, Landrace cross piglets were exposed to a range of enrichments including regular interaction, regular handling and petting by the stockpeople and the provision of rubber-hosing to play with. Compared to controls, all these treatments reduced the excitability of the piglets, especially the social interaction with stockpeople (Grandin, 1988). This is likely to be beneficial later on during handling and transport to slaughter. Reduced stress is likely to be beneficial for meat quality.



Two systems compared at Sitio Sao Luiz, Brazil - social and environmental enrichment reduces fearfulness in piglets

These findings tie in with the experience of stockpeople. Josi Nelson Camiloti at Sitio Sao Luiz, Brazil, experimented with a deep bed system based on peanut shells for his weaned pigs. He found they were more active and less fearful than piglets reared on slats. Tony Connolly, pig manager at Eastbrook organic farm in the United Kingdom, believes that free-range piglets travel much better than intensive piglets due to the greater complexity of their life experience. Josef Skenlár, of Sasov organic farm in the Czech Republic, visits and interacts with his pigs several times a day. He attributes the fact that not a single pig has died on the way to slaughter in the last three years to regular handling and friendly contact between pigs

and humans. Their social environment is also enriched by very late weaning and social contact with boars as well as a group of sows. Their physical environment is enriched by the provision of plenty of straw and access to an outside run.

Physical enrichment



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Enrichment of the physical environment for comfort, nesting, foraging and diet can make a significant contribution to the welfare of pigs. For these reasons, the EU have made it compulsory to provide pigs with bedding (see Chapter 16 on legislation).

Comfort and nesting



Bedding makes a significant contribution to the physical comfort of pigs at all stages. When lying, as little as 10-20% of a pig's total body surface area comes into contact with the floor (Baxter, 1984). The amount of strain on these areas of the body, especially the bony parts, will obviously be high and increase with body size.

Bedding also provides thermal comfort and can reduce the temperature requirements of growing pigs by as much as 6°C (Bruce and Clark, 1979). In natural environments, pigs construct nests for sleeping, particularly in cold and wet conditions.

Dung and urine are absorbed by bedding, reducing the contact between these residues and the animal and providing a good foot-hold. Bedding reduces injuries, particularly the leg injuries and infections that cause lameness.



Fibrous bedding helps sows to deal with their hunger

Shortly before farrowing, sows construct elaborate nests in which they give birth and rear their young. Sows that are prevented from building a maternal nest become highly stressed. The bedding in these nests helps improve piglet survival by keeping them warm and also reducing the risk of being crushed by the sow lying on top of them.

Foraging and diet



Tamworth piglet foraging for bracken roots



Sítio Sao Luiz, Brazil - peanut shells also make a good foraging substrate

In natural environments, pigs are omnivorous opportunists. Their diet is usually highly varied, high in fibre and generally takes several hours to find and consume. Even when their daily food requirements are provided, they can still spend more than half the daytime foraging (Stolba and Wood-Gush, 1984). Most foraging is directed to objects at ground level which are investigated by sniffing, rooting, chewing before finally being eaten. Intensive housing systems provide little or no opportunity for these activities. As a result, pigs develop abnormal behaviours such as:

- Belly-nosing and navel-sucking in piglets
- Tail-biting in growing pigs
- Boredom and stereotypies in sows

In modern husbandry systems, sows are usually fed a daily ration, which contains little fibre and takes just over 15 minutes to eat. Generally, the ration meets their daily nutritional requirement but leaves them feeling hungry. Bedding can promote foraging behaviour and compensate for the lack of fibre. EU rules require that pigs should have permanent access to material such as straw for investigation and manipulation (see Chapter 16 on legislation).

Enrichment can be provided by a number of different materials. These include straw, hay, wood shavings, sawdust, spent mushroom compost and

The sow's lying-down routine



By pushing downwards and forwards on a soft substrate, sows can make themselves comfortable. Pigs kept on a hard substrate like concrete will sometimes attempt to do this, but with less satisfying results

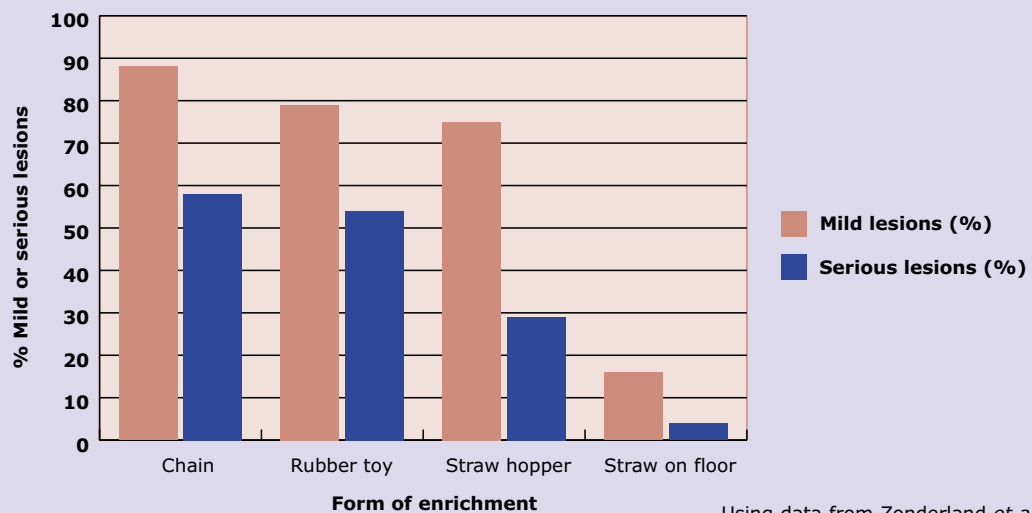
peat. Each substrate can have different benefits but it is important that the substrate fulfils all the components of foraging including investigation, manipulation and consumption. Artificial enrichment such as rubber tyres, chains and footballs are less effective because they fulfil too few of these foraging components. They soon lose their novelty value, whereas pigs will root through straw for hours.

In one study (Zonderland *et al*, 2004), undocked weaned piglets were provided with a range of enrichments including a suspended chain, suspended rubber toy, access to a straw hopper (5g per piglet

per day) and the provision of 10g of straw on the floor per piglet twice per day. The effect on the appearance of minor and serious tail lesions was recorded. The results are shown in Figure 3. The provision of a reasonable quantity of straw on the floor was clearly the most effective method of reducing tail-biting.

The best form of environmental enrichment is to provide access to the outdoors. Free-range pigs can forage for a range of foods including grasses, roots and worms. They can exercise and experience a range of environmental conditions.

Figure 3. Effect of environmental enrichment on tail-biting in piglets



Chains lose their novelty value; organic substrates will keep piglets occupied for hours

Summary

Pigs are adapted to complex physical and social environments. They benefit from good relationships with people and other pigs.

Access to pasture, or to deep bedding in indoor environments, provides opportunities for:

- Comfort
- Nesting

- Temperature control
- Exercise
- Foraging

Keeping pigs occupied helps reduce aggression, tail-biting and cannibalism. Providing environments adapted for the pig can be good for production, health and welfare.