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IPHS



Environmental enrichment for fully slatted pig housing systems



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Outline

1. Enriched vs. barren environment
2. Welfare legislation
3. Enrichment requirements
4. Case studies - Practical solutions
 - Switzerland
 - Netherlands
 - Denmark
5. Other options for slatted systems
6. Take-home messages

Enriched vs. barren environment

- **Pig's natural behaviour**
 - Highly developed social structure
 - Activity peaks: early morning & evening
 - Rooting, foraging and exploring activities
 - Highly intelligent and curious
- **Effects of barren environments**
 - Inability to express these natural behaviours
 - Expression of adverse behaviours
- **Effects of “enriched” environments**
 - Reducing aggression, fearfulness, stereotyped & adverse behaviours
 - Increasing behavioural diversity
 - Adaptability to change and learning ability
 - Possibly improve meat quality by calming down excitable pigs



Welfare legislation

- EU pig welfare legislation

*“must have **permanent access** to a sufficient quantity of **(manipulable) material** to enable proper investigation and manipulation activities, such as straw, hay, wood, sawdust, mushroom compost, peat or a mixture of such”.*

- Other legislation

- Prohibits the use of routine tail docking/tooth clipping without implementing other measures to prevent tail-biting and other vices

- Non-compliance issues remain



What is effective enrichment?

- Questions to be considered:
 - Does it allow proper investigation and manipulation activities?
 - Does it reduce tail-biting (and other vices)?
- Key properties:
 - ✓ **Destructible** (and changeable)
 - ✓ **Edible**
 - ✓ **Nutritional**
 - ✓ **Dung-free**
- This means:
 - Indestructible objects (chains, tyres) not sufficient and legally not permitted (on their own)
 - Generally most toys are found ineffective



What is effective enrichment?

- Definition of an appropriate enrichment material
“a material which stimulates exploratory behaviour for an extended length of time, preferably comparable to the level of occupation provided by straw”
- The challenge:

To provide effective environmental enrichment in slatted housing systems without blocking slurry disposal systems



European perspective - Case studies

- Switzerland:
 - 2 farm visits
 - Meeting at Research Institute
- Netherlands:
 - 2 farm visits (one outdoor)
 - Meetings at Wageningen UR Livestock Research and VIC Sterksel
- Denmark:
 - 3 farm visits
 - Meeting at Danish Pig Research centre

Switzerland - background

- Tail docking banned since 2008
- Farrowing crates banned, farrowing sows must have straw
- Pigs (excl. weaners) can be on fully slatted floors until 2018, weaners must not be kept on fully slatted floors
- Males are castrated
- Enrichment legislation the same as EU
- Estimated 1.4 million pigs on Swiss farms with no more than 1,000 pigs on any one farm

Farm visits - Switzerland

➤ 2 farms:

1. Partially slatted floors
2. Fully slatted floors



Farm visits - Switzerland

- Growing-finishing farms of around 1,000 pigs;
- Weaners brought in at 23-30kg
- Pigs housed in groups of 8 – 10 and liquid-fed
- A lot of emphasis on ventilation, air temperature and monitoring for signs of aggression or agitation in the pen



Farm visits - Switzerland

- Compressed straw blocks (*Presswürfel*) commonly used for finishers
- Straw racks and/or compressed straw blocks are the most commonly used enrichments for weaners. (i.e. Weaners partly solid floor)
- Cost of compressed straw blocks: £60.00 for 100kg
- How long a block lasts depends on other enrichment, group size and meal composition (3-10 versus 50-60 days)



Farm visits - Netherlands

- Majority of commercial pig farmers tail dock
- Weaners on fully slatted floors (not concrete)
- Grower/finisher pigs need at least 40% solid floor



★ ★ ★

- More space
- Better enrichment material against boredom
- Piglets are not castrated
- Transport to farm and the slaughterhouse is shorter

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Varkens

★ ★ ★

- Lying on straw
- Covered spout
- Tails not docked

★ ★ ★

- Larger interior
- Sows may in the meadow

Farm visits - Netherlands

- Farm visit to “1* Better Life” pig farm
 - More space
 - No castration
- >15 years trying to improve animal welfare
- Last 6 years based on 10 basic needs/requirements of pigs (as formulated in Comfort Class housing) – but in indoor housing
- Now keeps 80% of tails – curly tail
- Group sizes
 - 70 weaners/pen – slatted & separated on sex
 - 85 growers-finishers/pen – part slatted/solid either in “standard” pen or pen with “veranda”
- Rarely tail biting



Farm visits - Netherlands

- Straw:
 - Sows bedded on straw
- Wood:
 - Chew post - untreated pine wood
 - <2 E each last one or more batches
 - Held in brackets for grower/finishers
 - ~ E 20 – last decades
 - Suspended from chain for weaners
 - Available at all stage











Farm visits - Netherlands

➤ Chains:

- Available at all stages

➤ Hay:

- Potato basket (small grid)
- Pigs 7-11 weeks old (highest risk)
- E 50 and last 3-5 years
- Year costs and maintenance ~nihil (13 rounds x 70 pigs x 3 years)
- Hay usage - ½ small bale/week



Farm visits - Denmark

- Pigs (excl. weaners) on fully slatted floors (until 2015) and generally tail docked
- No more than half of the tail can be removed (2000)
- Weaners must have >50% solid or 'drained' floor
- Requirements for natural rooting materials and misting systems
- Farmers draw up animal welfare control plans
- Private veterinarians audits based on these and gives feedback

“In a fully slatted system, environmental enrichment is difficult. This is why we have a requirement for some of the floor to be either solid or drained.”

Farm visits - Denmark - Sow Unit

- 1,350 sows and 38,000 piglets/weaners
 - ~50% pigs at 7kg to neighbour farm (not-castrated)
 - ~50% pigs at 30kg to other neighbour farm (castrated)
- Misting machine if $T > 35^{\circ}\text{C}$
- Weaners
 - Group size of 30 (some 40) part solid/part slatted
 - Mixed sex & castrated
 - Meal fed
- Enrichment
 - Straw (1 handful/day short chopped)
 - Wooden blocks (4 per 30 pigs or 6/7 per 40 pigs)



Farm visits - Denmark



Farm visits - Denmark - Commercial finisher

- Pigs in at 30kg from sow unit
 - 3 types of building (1 side ventilation, 2 roof ventilation)
 - Growth rates 910 g/d; slaughter at 110-115kg
 - Some solid/slatted / some slatted
 - Wet feed (incl. Sugar water) fed 2x day, 32cm feeding space
 - Tail biting problems – emergency housing 80% tail biting



Farm visits - Denmark - Commercial finisher

- Rope
 - 90% reduced tail biting problem (mortality 1.7%; reduced by ½ since rope)
 - Cost ~£0.34-0.80/pig (expensive but cheaper than tail biting)
 - Labour 10s/pen – now only 1x week - £0.57-0.69/pig
- Wooden posts
 - Average lasts 12 weeks (6 weeks – 6 months)
 - 9 pigs/post
 - Costs ~ £1.49-1.83
 - Spiral holder ~ £17.16



Farm visits - Denmark - Antonius finisher

- 13,000 pigs undocked
 - 4 stables at ~ 5,500
 - Weaners come in at 30kg (28-30) finished at 115 kg
 - 2/3 solid – 1/3 slatted floor with 0.5-1° slope to slats
 - 16-26 pigs/pen – reduces in stages
 - Wet feeding 5x – 4x a day (incl sugar water)
 - Tail biting problem – have to take tail bitten pigs out (audit ↓3% money)
 - Fly control
- Environmental enrichment
 - Chopped straw every day in morning 1.5kg/pen (barley straw)
- Manage tail biting
 - Check pigs every day when giving straw
 - As soon as wet tails/tail-in-mouth behaviour pen gets bucket with rope
 - For 2-3 days – mostly solves it
 - In addition get double straw as well



Other options for slatted systems



- Straw racks can supply a daily amount of straw per pig (e.g. 20g/finisher) with minimum wastage
- It has been show to reduce biting behaviour (similar to straw on floor)
- An extra feature can be added: i.e. Pigs have to turn wheel 10x first

Other options for slatted systems

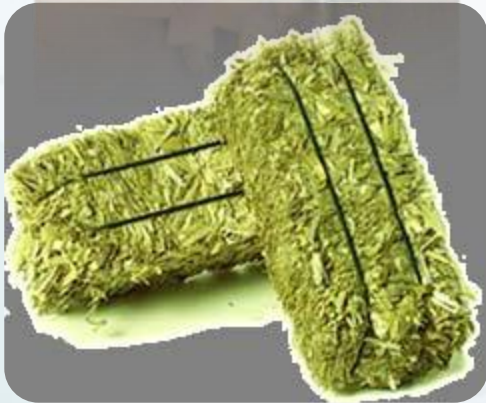


- **Düsser Rooting Tower** (won innovation prize at Eurotier 2012)
- Offering variable fibrous rooting or playing materials (e.g. straw, hay, silage)
- Allows natural rooting behaviours
- Possible applications in strawless operations

Other options for slatted systems



Other options for slatted systems



Environment Enrichment for Pigs



Providing objects or substrates for proper investigation and manipulation

Keeping pigs occupied in non-harmful behaviour

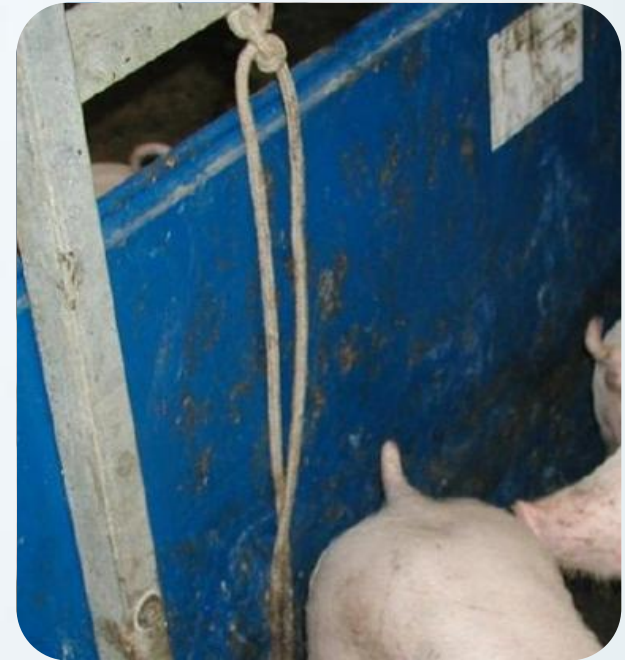
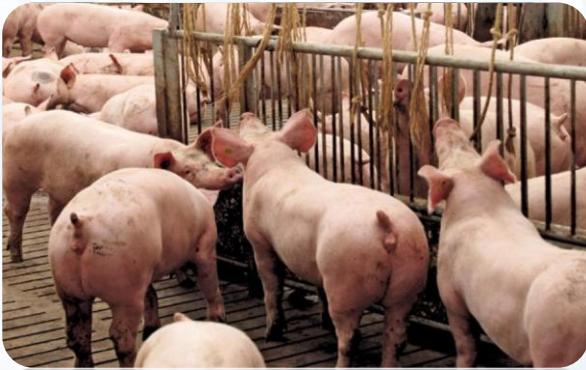
Key properties -

- Destructible
- Edible
- Nutritious
- Dung-free

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Other options for slatted systems



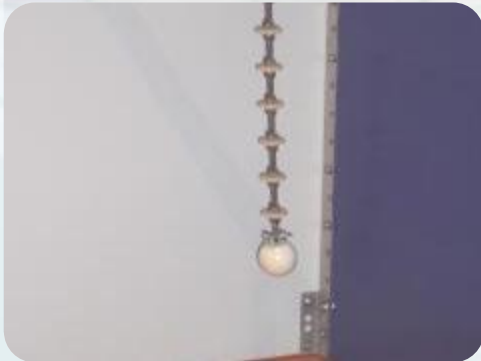
Other options for slatted systems



Other options for slatted systems



Other options for slatted systems - Commercial available toys



- Hanging toys are favoured to keep them dung free

Other options for slatted systems



Enrichment requirements

SAFE

No tyres with wire
No poisonous wood or wood that may have been preserved
No staples or fixings in wood
No materials that may be toxic to pigs



SANITARY

Materials should not be fouled



SUSPENDED

Provides extended novelty factor, avoids fouling and allows more pigs to gain access to the toy if it is suspended in a central position



SOFT

For the pigs to slowly destroy the object it must be malleable; this adds to the novelty factor



SIMPLE

Anything too complex can cause frustration and could actually lead to vice
A number of simple items is better than one complex one, allowing more pigs to gain access at one time



SITE

Do not site toys over lying, drinking or feeding areas
Dunging areas provide the optimum position
Switch sites regularly to help maintain novelty



Take-home messages

- The right choice of environmental enrichment is important
 - Animal health and welfare
 - Especially in fully slatted systems
- Straw generally seen as favourite enrichment
 - Costs, availability and practicality are issues
- Alternatives are available
 - Straw/hay racks; Compressed blocks (Straw or equivalent); Rope; Wood; Toys
- Need to evaluate in fully slatted systems
 - Effectiveness
 - Costs
 - Management implications
- Continued research and development in Europe
- Development of guidelines on the welfare of pigs (EU)

