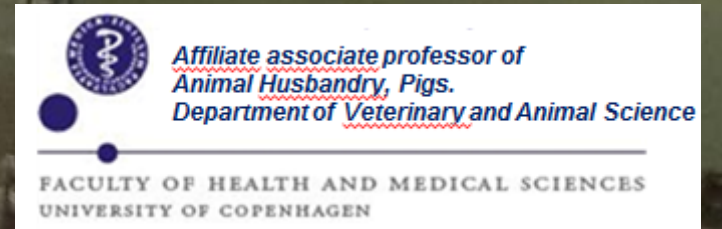


Critical points on free farrowing/lactation

Chief Scientist
Vivi Aarestrup Moustsen, Ph.D., M.Sc.

5th May 2022



Danish Pig Levy Fund **SEGES**
INNOVATION

Critical points

Before investment

- Decision making
 - Key decisions

Daily management

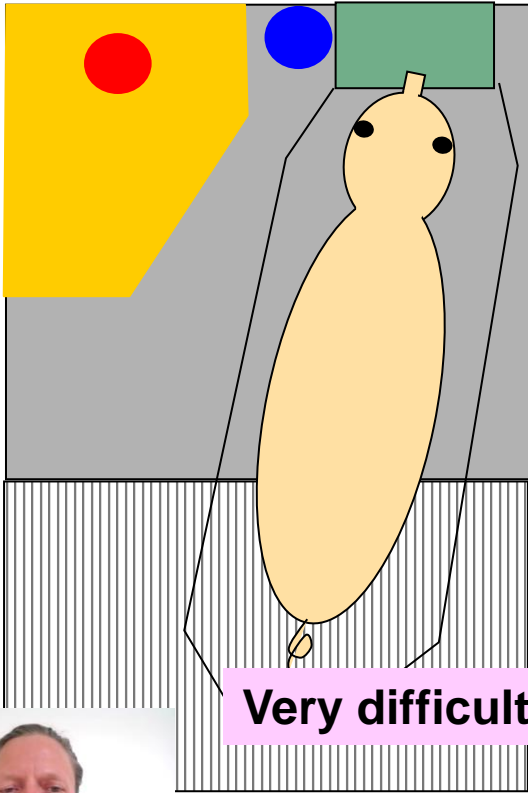
- Calm handling of sows
- Use of confinement



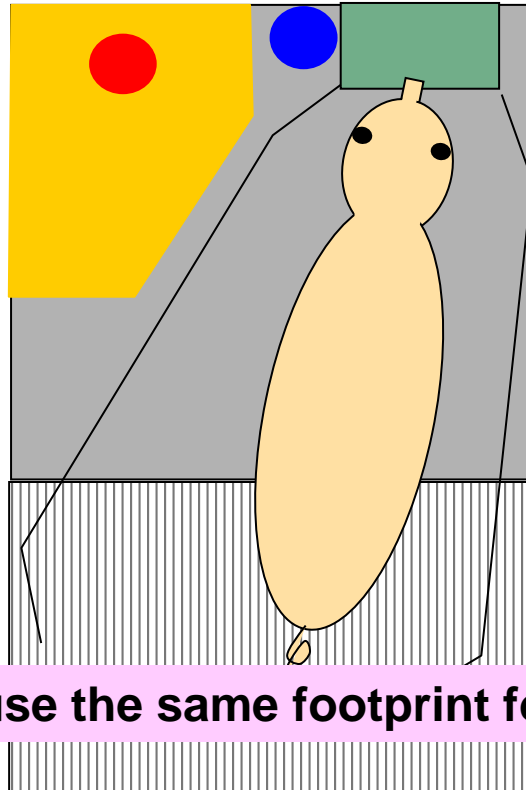
Can we prepare pens with crates?

The answer is 'no'

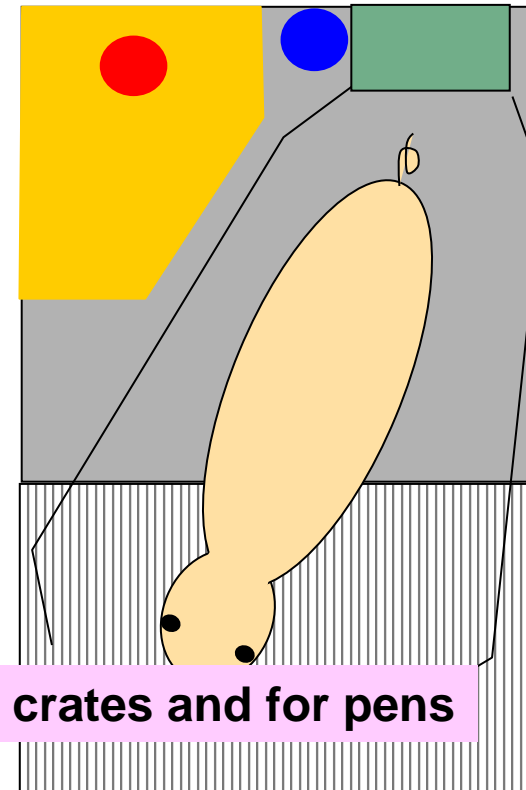
While the crate is **closed**, the sow eats and defaecates in the same position.



When the crates is **open**, the sow continues to eat at the trough.



But turns away from the trough when defaecating.



Very difficult to use the same footprint for crates and for pens

The sow is/will be loose most or all of the time

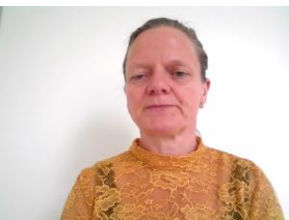
Farrowing crate
– confined sows



Farrowing pen
– loose sows

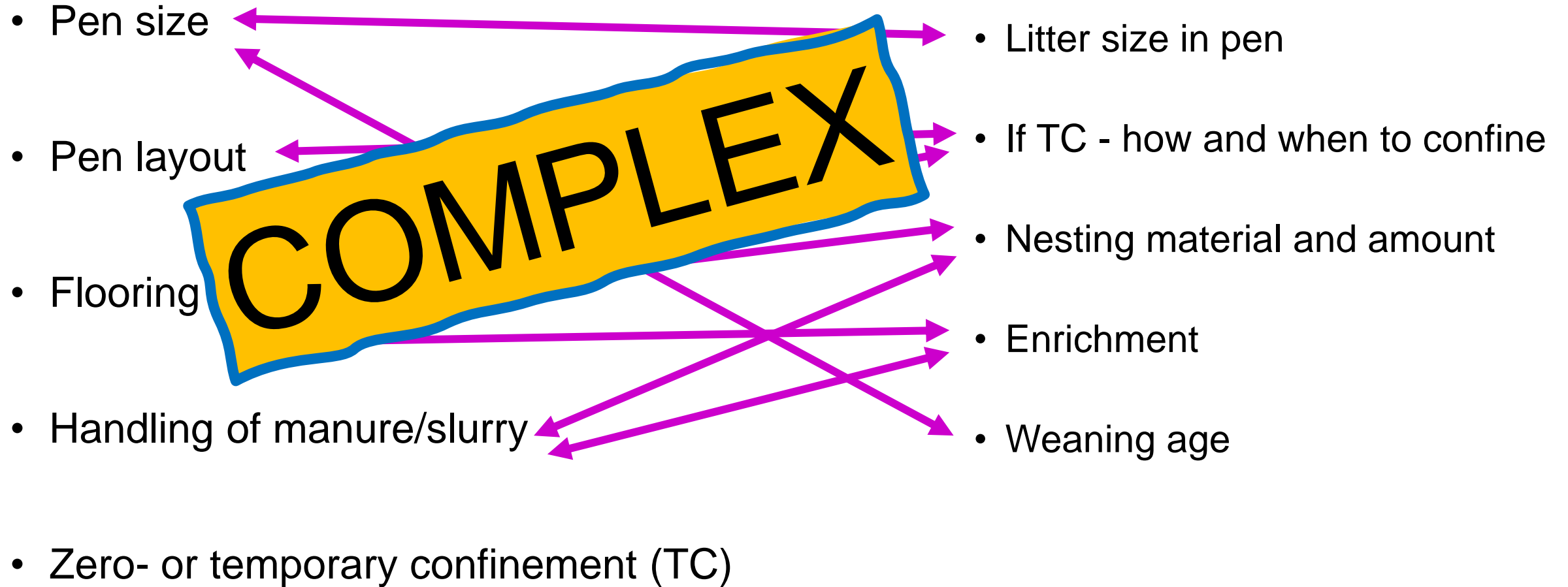


Use temporary confinement –
BUT in a pen designed for
a loose sow



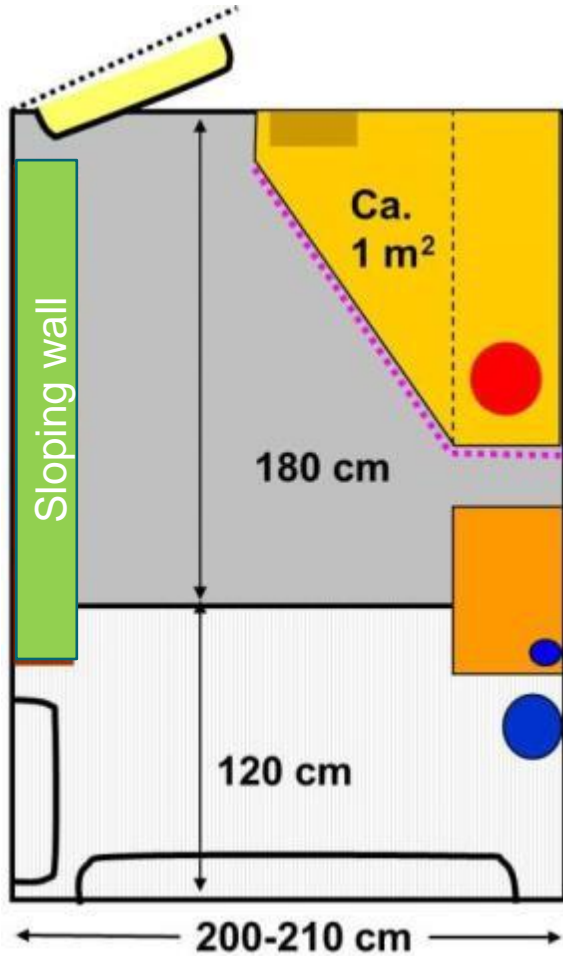
Initial key decisions

Other key decisions



Free farrowing

- Initially - Pen meeting needs of sow, piglet, caretakers



1. Creep area adjacent to the pathway

- Piglets are checked everyday
 - Safety
 - Fast
 - Limit risk of disease transfer

2. Sow-resting area next to creep

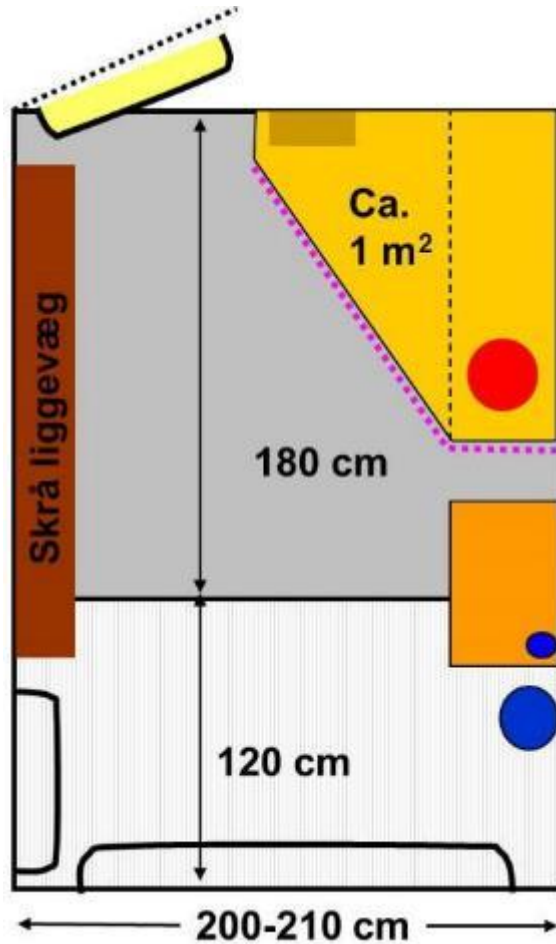
- The sows choose to lie next to creep
 - Partly solid floor – at least in Denmark
 - Reduce environmental impact
 - Partly solid floor is cheaper than aircleaners etc
 - Warmth – dry floors before farrowing – and piglet survival
 - Keep nestbuilding- and rooting material in pen – not in slurry

3. The sow walks away (turns away) from feeding area, when defaecating



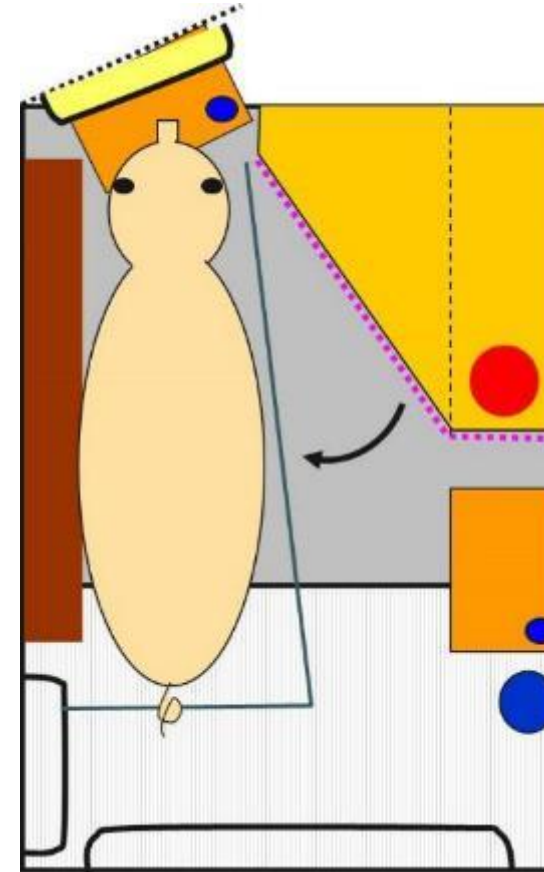
Two pen designs

FF = Free Farrowing



AU/DAWS/PRC +

SWAP = Sow Welfare And Piglet protection

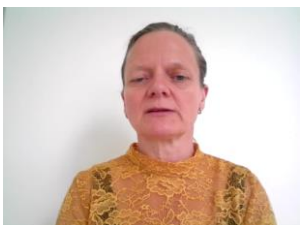


UCPH/PRC



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Two designs



Impact of SWAP on sow movement?



- Before farrowing – nest building period
 - No difference in duration of nest building period
 - No difference in duration of nest building per hour
- After farrowing
 - The sows were lying lateral majority of the time
 - >110 minuts out of 120 minuts observed (4 x daily)



No difference between loose and confined
- in pens designed for loose housed sows

Hales et al., 2014

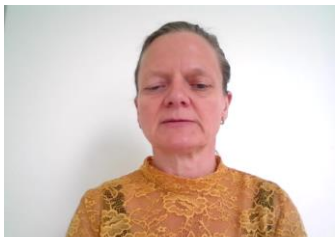


Impact of swap on salivacortisol-level (stresshormon)?



Hales et al., 2014

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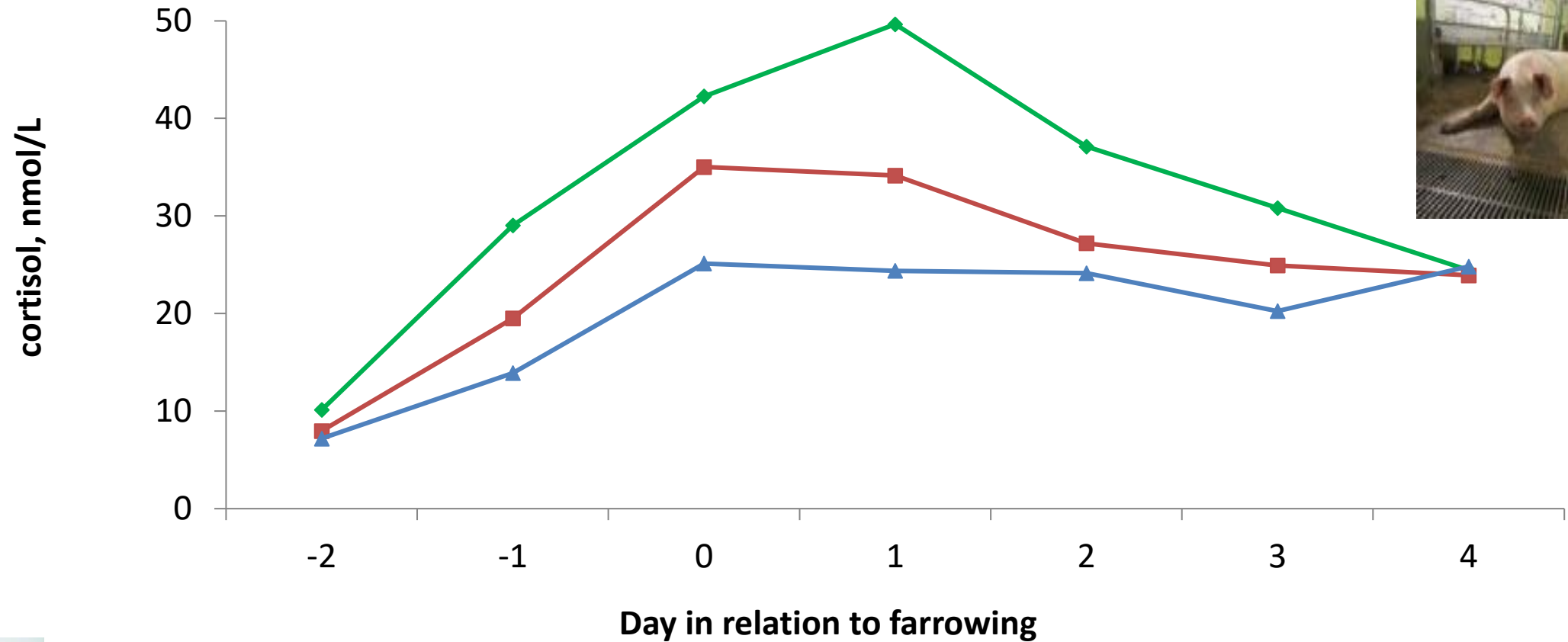


Cortisol

LC: Loose-Confined: Loose D114 gest until finished farrow then confined day 4 post farrowing

LL: Loose-Loose: Loose D114 gest until day 4 post farrowing

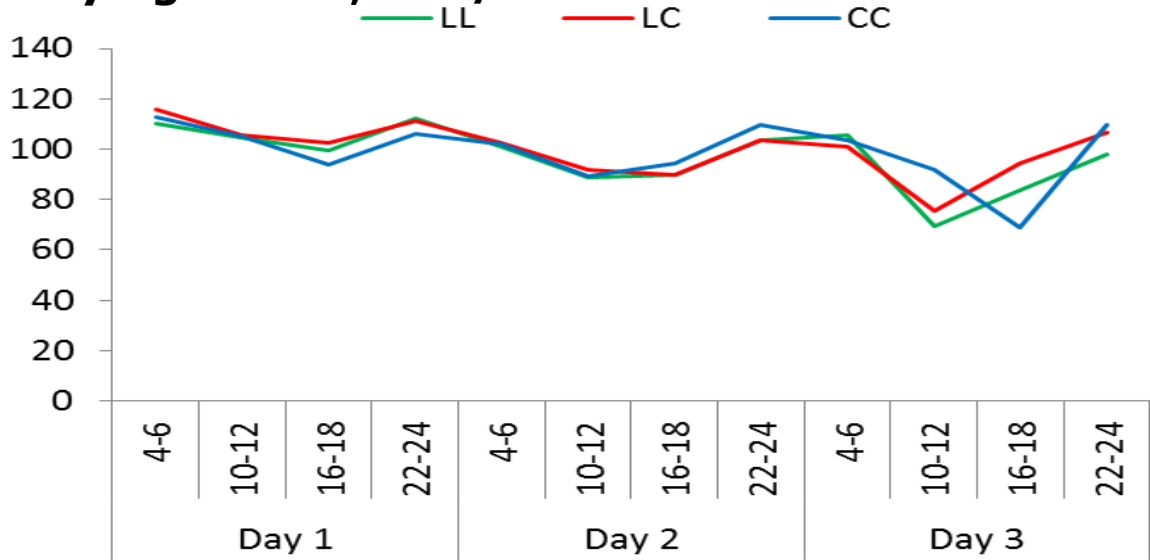
CC: Confined-confined: Confined D114 gest until day 4 post farrowing



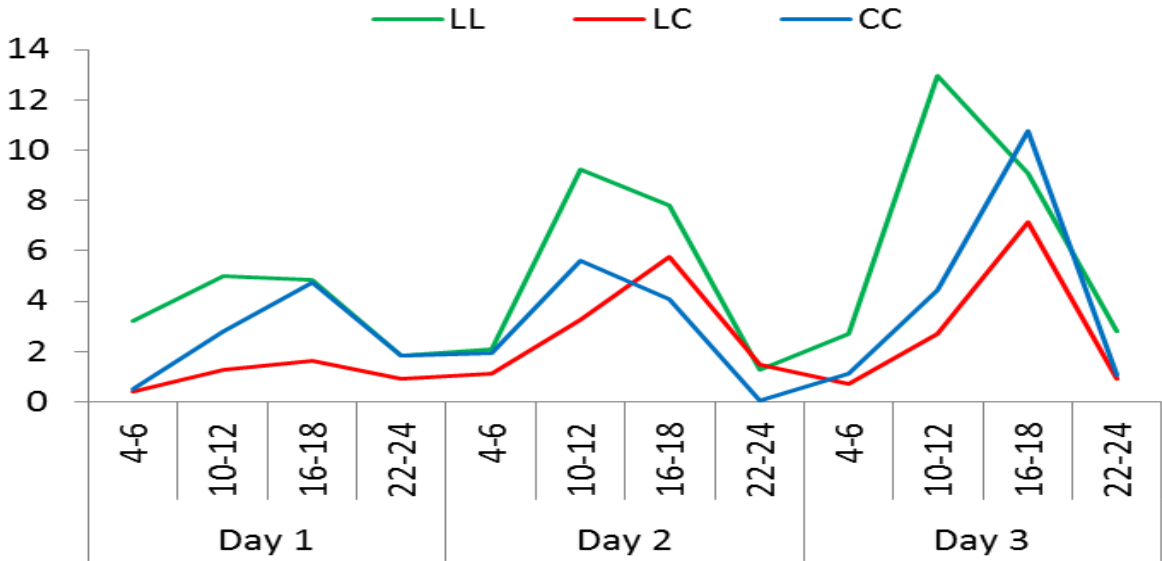
Sows postures



Lying lateral, min/interval



Standing, min/interval

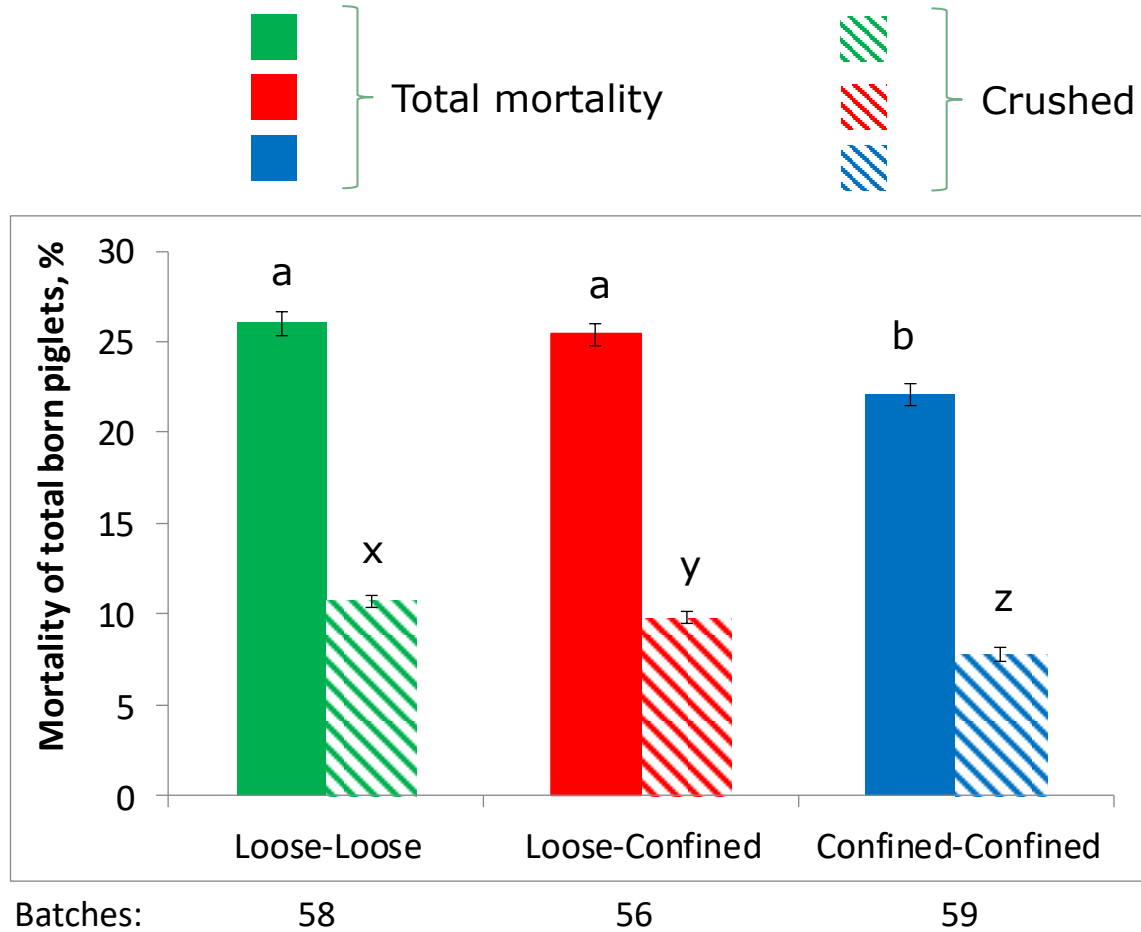


Hales, 2015

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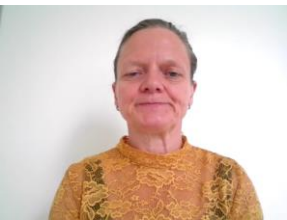


Piglet mortality - impact of confinement



Hales, 2015

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Farrowing unit – loose sows

- Two kinds of pen design

SWAP = Sow Welfare and Piglet protection



FF = Freedom farrowing



Decisions before building and running afterwards

- Key decisions
- Once you've build – conditions are given - live with it....and optimize within conditions
- Start with successful implementation of higher welfare initiatives
 - Understanding:
 - What do pigs do
 - When do they do it
 - Why do they do it
 - How do they do it
 - ...

Urinate and defaecate



Socialize



Explore



Eat and drink



Nurse



Rest



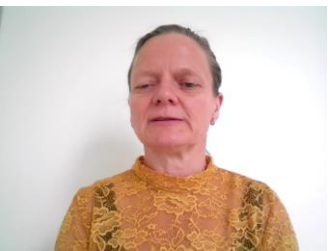
Initial key decisions

‘Irreversible’ decisions

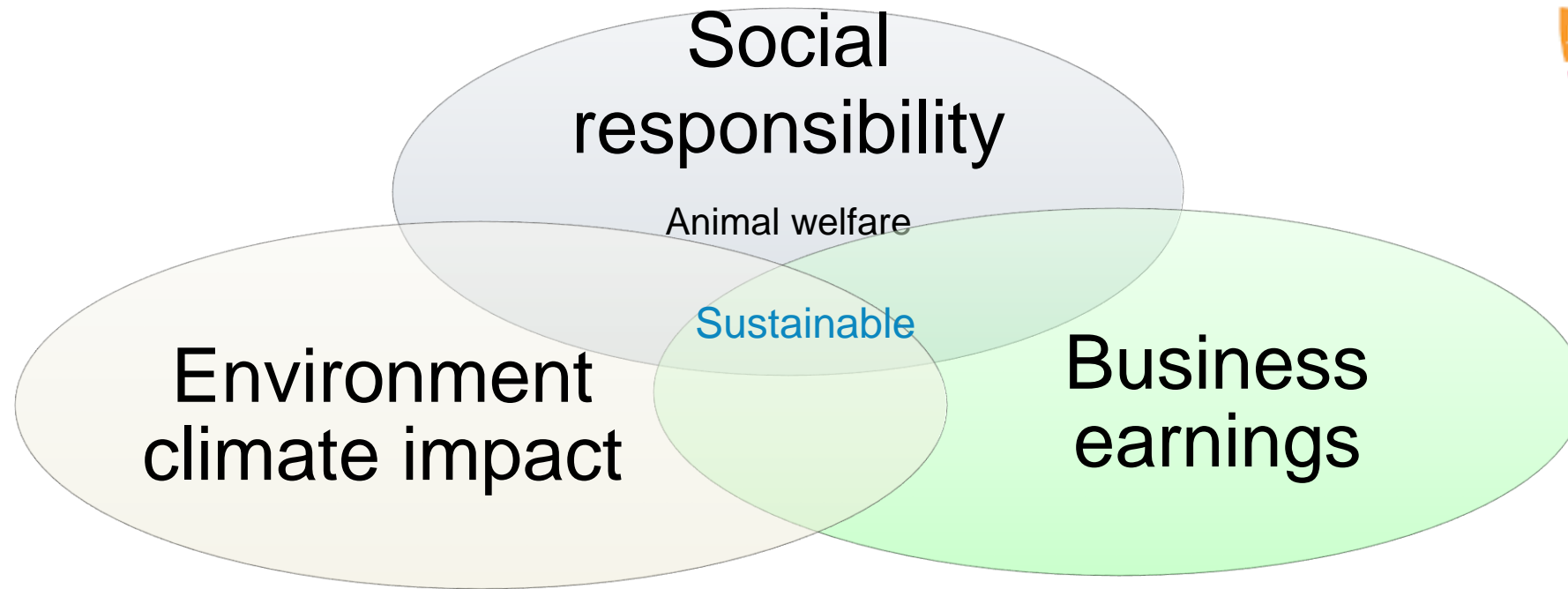
- Pen size
- Pen layout
- Flooring
- Handling of manure/slurry
- *Zero- or temporary confinement (TC)*

Other key decisions

- Litter size in pen
- If TC - how and when to confine
- Nesting material and amount
- Enrichment
- Weaning age



A more sustainable Danish pork production



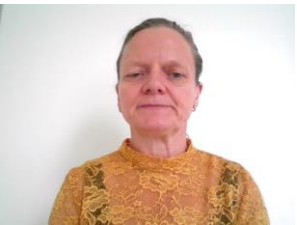
From animal welfare to sustainability

'We' want

- Space
- Cleanliness
- Low input labour
- Healthy piglets

'However:

- Space
 - Larger surfaces - increase emissions
- Cleanliness
 - If slatted floor – increase emissions
- Low input labour
 - If slatted floor – increase emissions
- Healthy piglets
 - If slatted floor – increase emissions



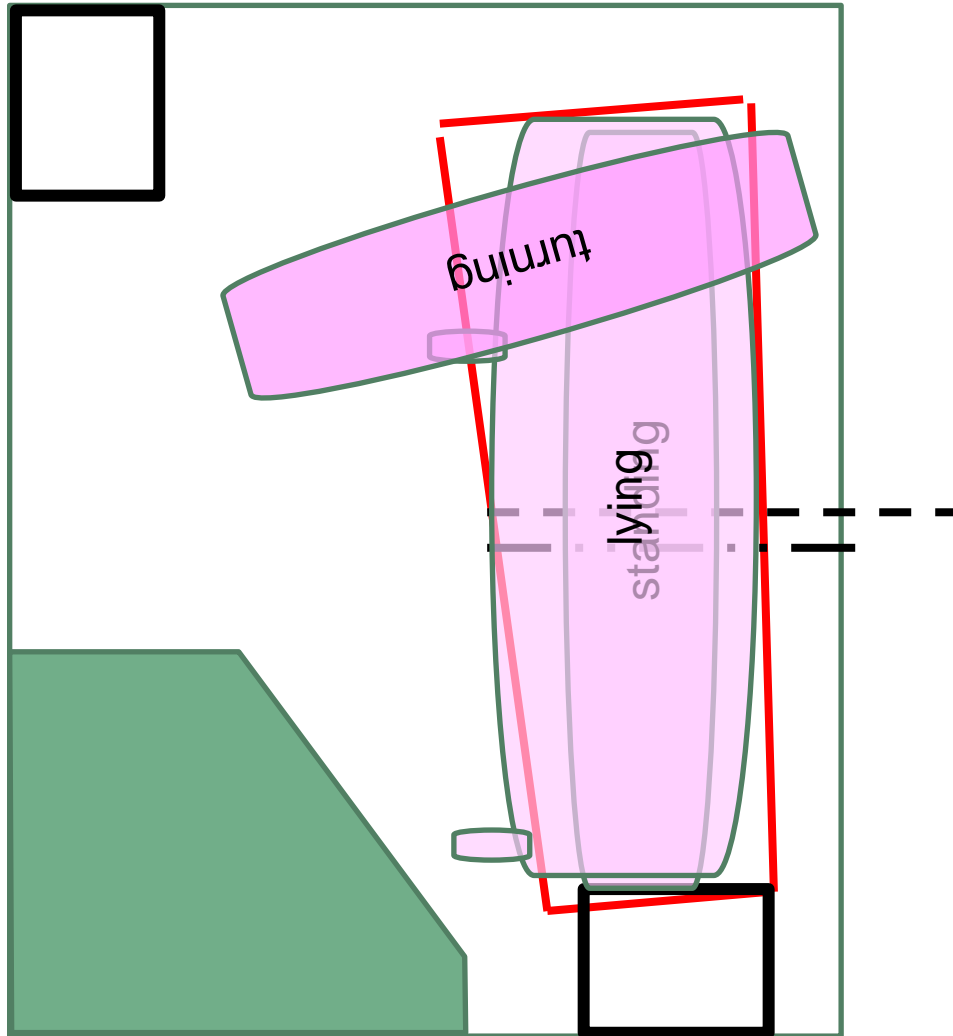
Space – dilemma between space for welfare and risk of emissions

- Austria
 - 5.5 m²/sow
- Germany
 - 6.6 m²/sow
- It's not as simple
 - Is there a perfect size?
 - Key decisions
 - Solid or partly slatted floor?
- Examples
 - Square pens (equal sided)
 - Fully slatted floor
 - Rectangular pens
 - Dimensions – pen
 - Fixed width
 - Fixed length
 - Fixed ratio width/length
 - Dimensions flooring (solid / slatted)
 - Within each of the above designs
 - Fixed ratio solid/slatted floor
 - Fixed depth of slats of 100 cm
 - Fixed depth of solid of 200 cm



Rectangular – fixed width (220 cm)
 $273 \text{ cm} * 220 \text{ cm} = 6.0 \text{ m}^2$

20



R60FWFR

Fixed ratio 2:3

R60FWFS

Fixed slats 100 cm

R60FWVS

Fixed solid 200 cm

‘Ideal’ pen size (1)

- Sows’ dimensions



- Planar width – turning space



Planar width of 153 cm

Planar area of 3.17 m²

considered necessary to allow unobstructed turning for sows with the 95-percentile weight.

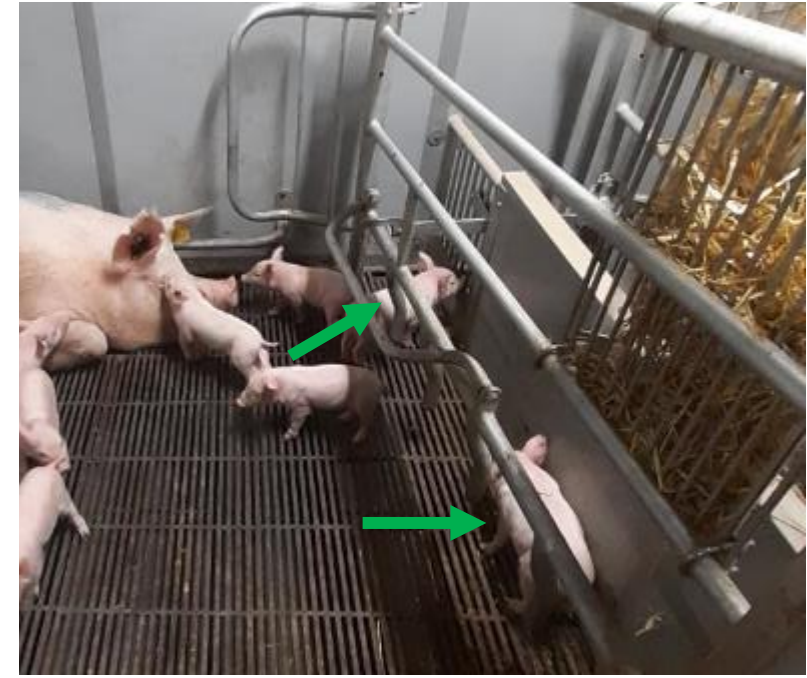
Needs further research

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‘Ideal’ pen size (2)

- Dimensions*number
- Piglet dimensions
 - Birth,
 - One week
 - Four-five weeks
- Litter size in pen
- Functional areas
- Piglet safety zones



Pen layout (1)

- First decision regarding design
 - Creep area along passageway
 - Safety
 - Efficiency
 - Reduce risk of transferring diseases
 - Easy access

[FFL21 : Change experiences by a Danish farmer \(openagrar.de\)](https://openagrar.de)



<https://www.freefarrowing.org/research/references/freedom-in-farrowing-and-lactation-2021-ffl21/>

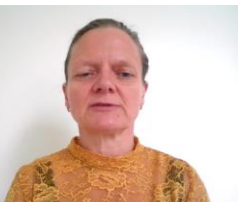
Overcoming barriers, facilitating change



Virtual Workshop August 12th-13th 2021

As part of the [Free Farrowing series of workshops](#), a virtual event (organized by FLI, SEGES, SRUC and Vetmeduni Vienna) was held over two days.

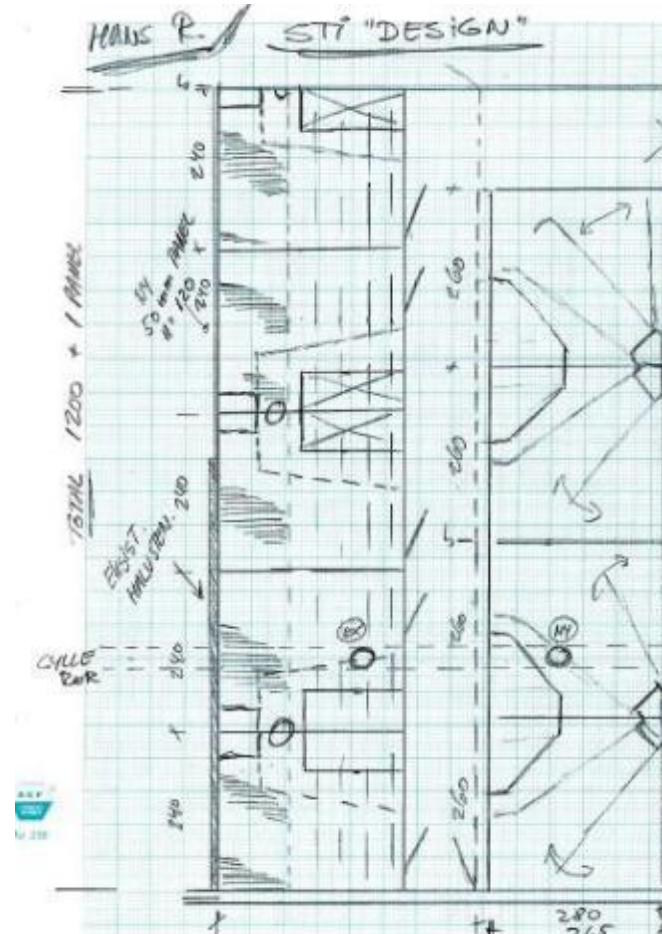
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Limited number (e.g. five-ten pens) or full scale – pros and cons

2010-2015

- Limited numbers – pros
 - Get experience
 - Develop and optimize
 - Limited investment
- Limited numbers - cons
 - Ventilation etc
 - Management
 - Sows



2015-

- Full scale – pros
 - Optimize management
 - Sows accustome
 - Stockpeople accustome
- Full scale - cons
 - 'Irreversible'
 - Large investment

Be aware of the pros and cons of the way you start up with loose housing

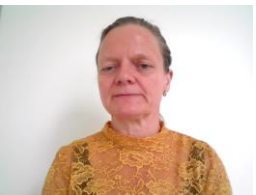


Confinement

- Temporary confinement – take the best of both loose and confined
 - Loose – natural behaviour, access to udder,
 - Confined – lower piglet mortality, safe work conditions
- Before farrowing - loose
 - No piglets at risk, active nest seeking and nestbuilding
 - Quiet/calm the last couple of hours
- During farrowing - confined
 - Ensure access to udder when confined
 - Recent review
 - ‘Lower’ mortality with TC than FF
 - ‘Higher’ mortality with TC than permanent C
- After a few days – loose again
 - Awareness when opening

Ref:

<https://doi.org/10.3389/fvets.2022.811810>



Daily management

- Calm calm calm
- Not just in farrowing unit
- Include 'calmness' in layout
 - Sections
 - Less pens per section
 - Creep alongside passageway
- Include 'calmness' in daily routines
 - Handling of sows and piglets



Critical points

- Investment
 - Design for a loose sow
 - Acknowledge key decisions and complexity
 - Ensure space for piglets
 - Include three pillars of sustainability
- Daily management
 - Calm handling
 - Optimize
 - Mindset

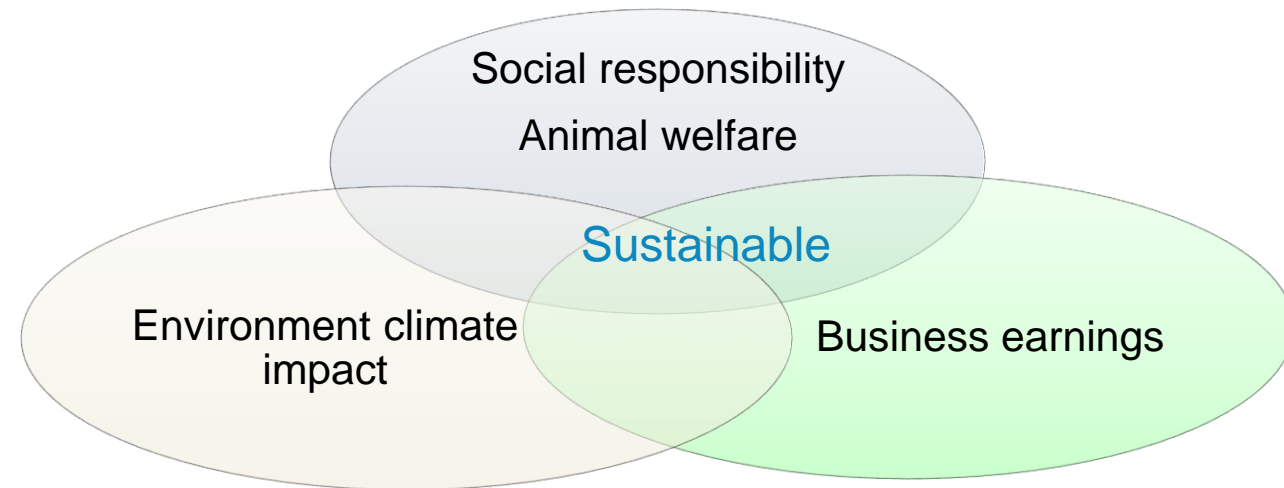


Critical points

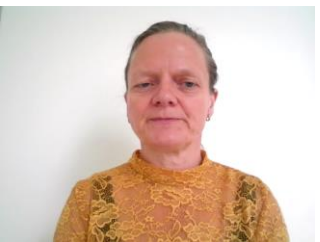
- Loose housing – with an option to confine
- In respect of the three pillars of sustainability
- Science based
- Work together – across borders



Overcoming barriers, facilitating change



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Future

- Reflections
 - German legislation
 - End the Cage Age Initiative
 - EU?
- Challenges
 - Sustainability
 - Competitiveness
- Opportunities
 - Increased milk production
 - Large litters
 - Licence to produce

