



Research and development Initiatives and plans Improving pig welfare on farm

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The future is not 'only' welfare - it is a more sustainable production



Environmental / climatic influence



Social responsibility
Including pig welfare

Economic potential
Long term investment and
daily management



Expectations and conditions

- High expectations regarding the sows' performance
 - Must provide conditions for them to be able to meet our expectations



Housing

+



Nutrition

+



Management and producer / barnstaff needs

+



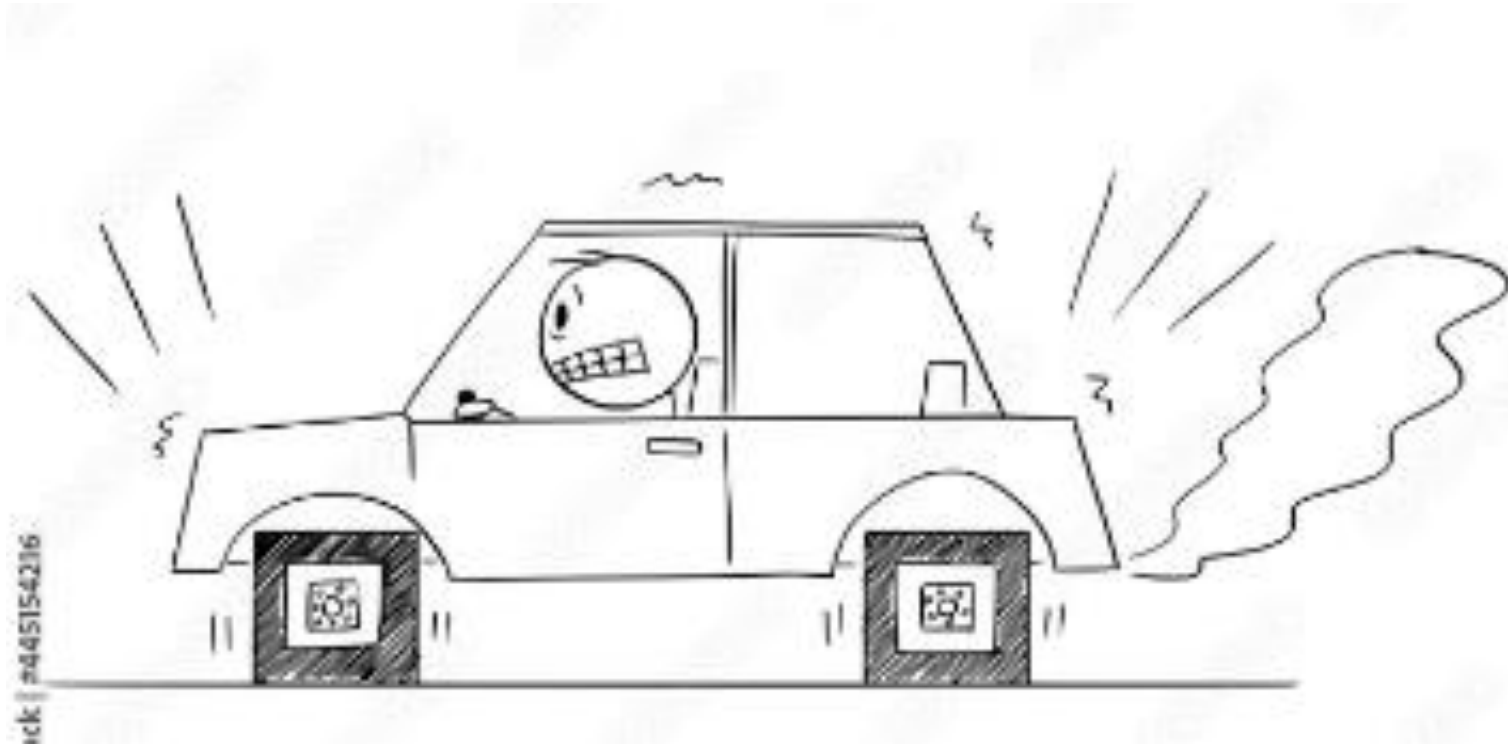
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Species specific needs: Meet basic requirements for welfare

The importance of optimizing the farrowing environment

- It may sound obvious but...Get the basics right!



SEGES Innovation - Pig

- Feeding placenta
- Energy at farrowing
- Milk composition
- Milkuptake
- Feedcomposition
- Space - activity
- Thermoregulation
- Enrichment

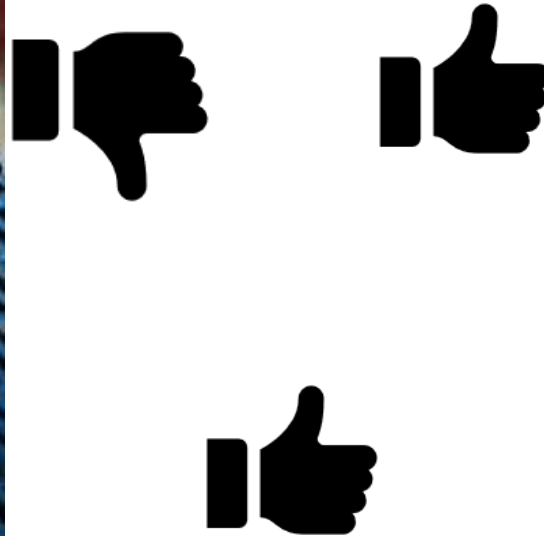
- Survival
- Health – PRRS
- Water – quantity, availability, quality
-

- No castration / no pain
- Transition feed
- Risk assessment - tails
- Hernia – or navel outpouches
- Transport
-

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Spatial dimensions



Early use of milk-cup?

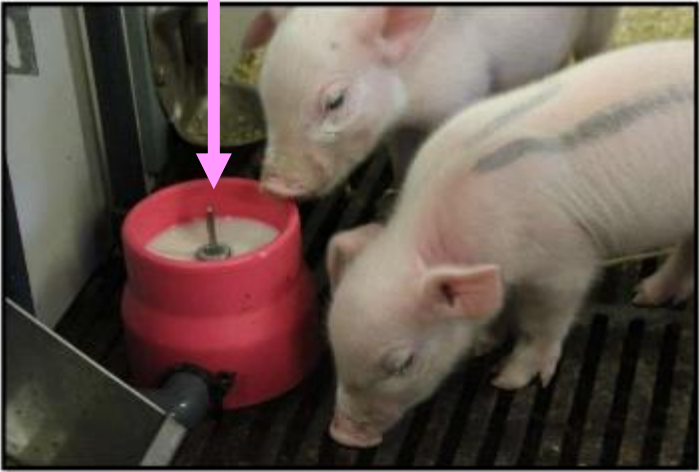


Figure 6 A milk cup was placed inside each farrowing pen. To release milk, the vertical tap needs to be pushed either to the side or downwards. (Photo: Giulia Ciarcelluti).

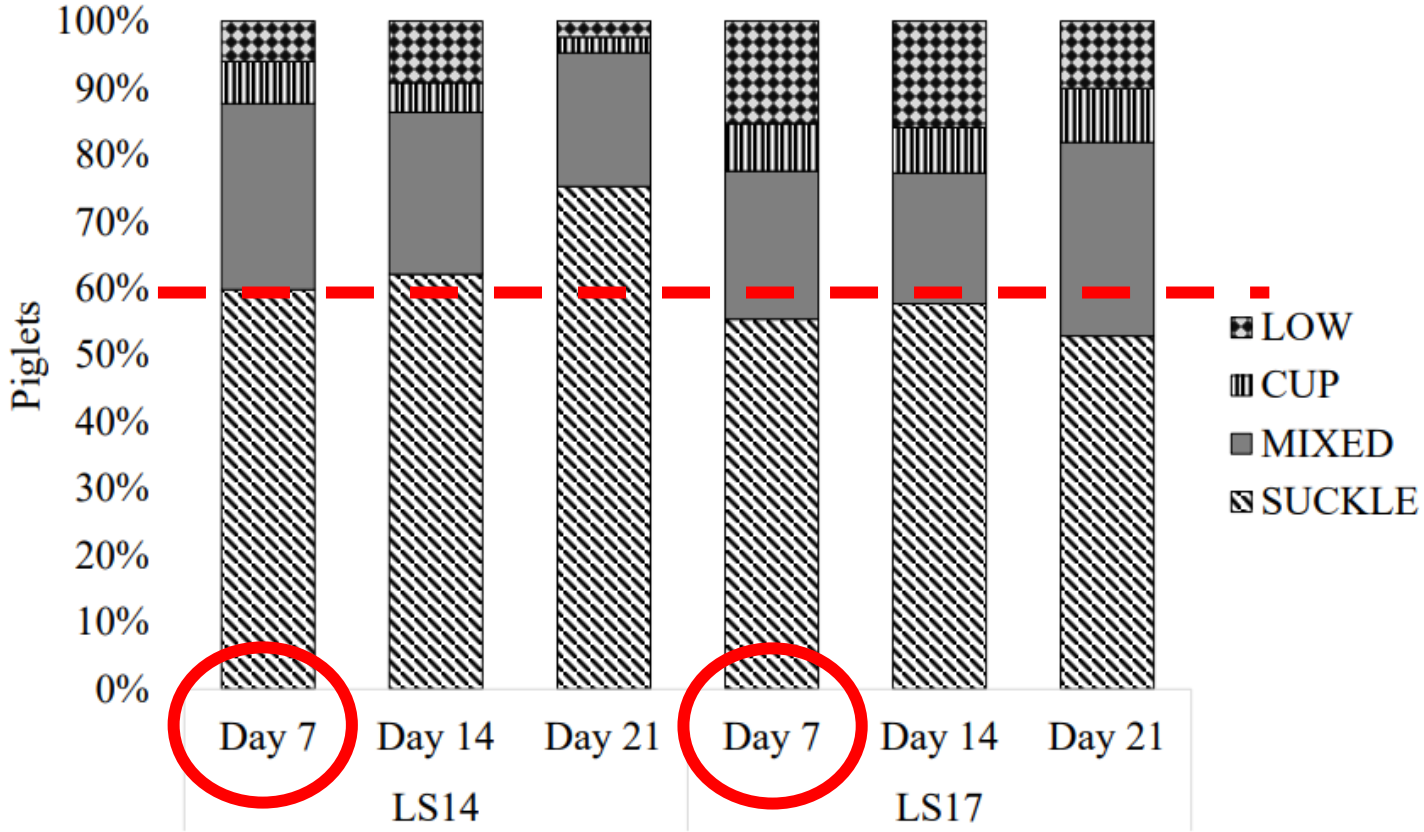


Figure 9 Percentage of piglets in each category of Nutrition Source (NS) on days 7, 14 and 21 according to the standardised litter size on day 1 of either 14 piglets (LS14) or 17 piglets (LS17). (Reproduced from paper IV).

'Pattinator' in initial trial



<https://www.seges.tv/channel/27487274/svin>

Large litters – no nurse sows



[Pattegrise dier nu på livet løs på kunstige kirtler - SEGES TV](#)

Choose English subtitles

Milk teats in incubators – pairs of piglets



Trial - 0-44 hours; Three incubators with two piglets each; Two teats in each incubator

Milk teats in incubators – six piglets together

Trial – 44-76 hours

One enclosure, six piglets

Six teats and one PigLET Starter



SEGES Innovation - PIG

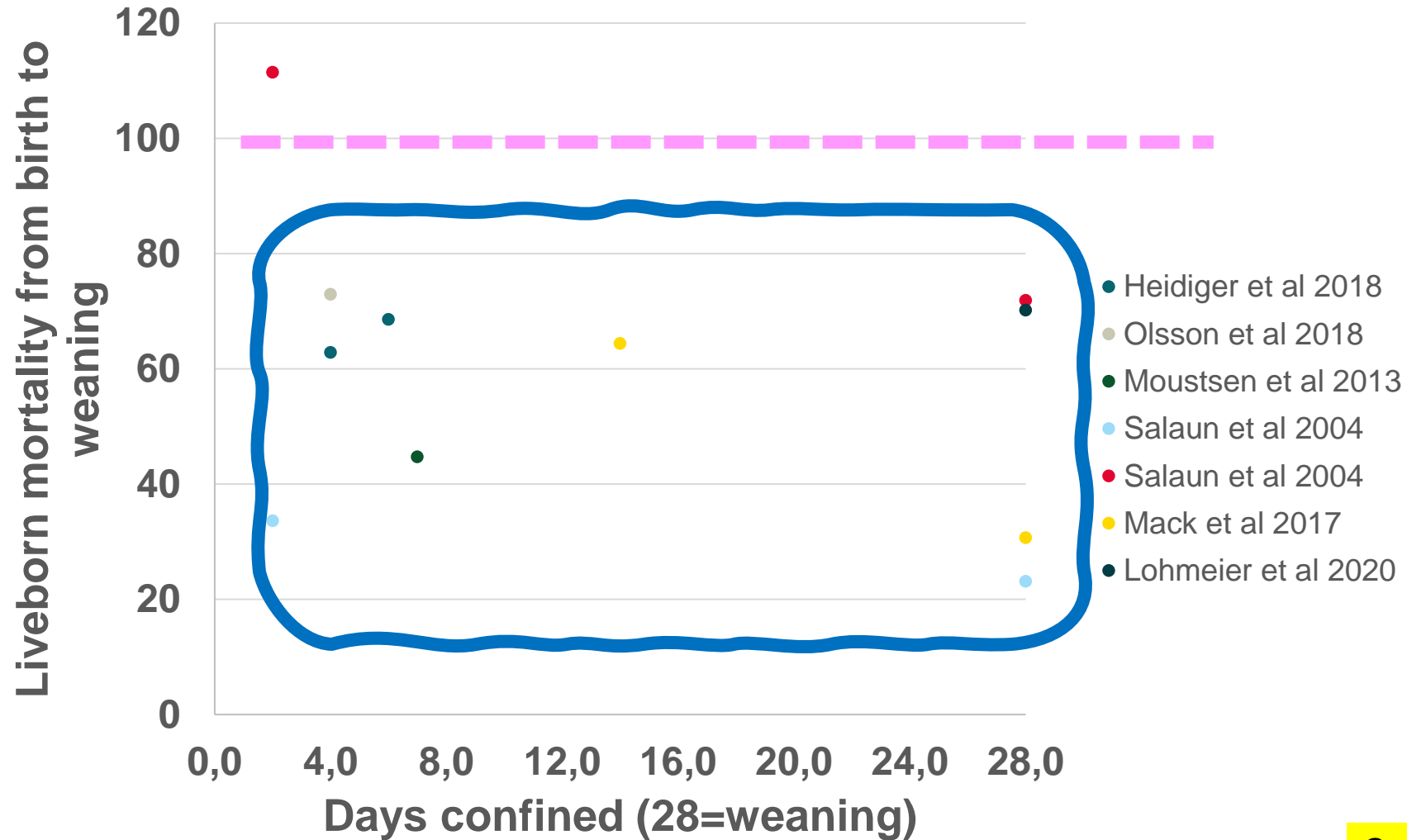
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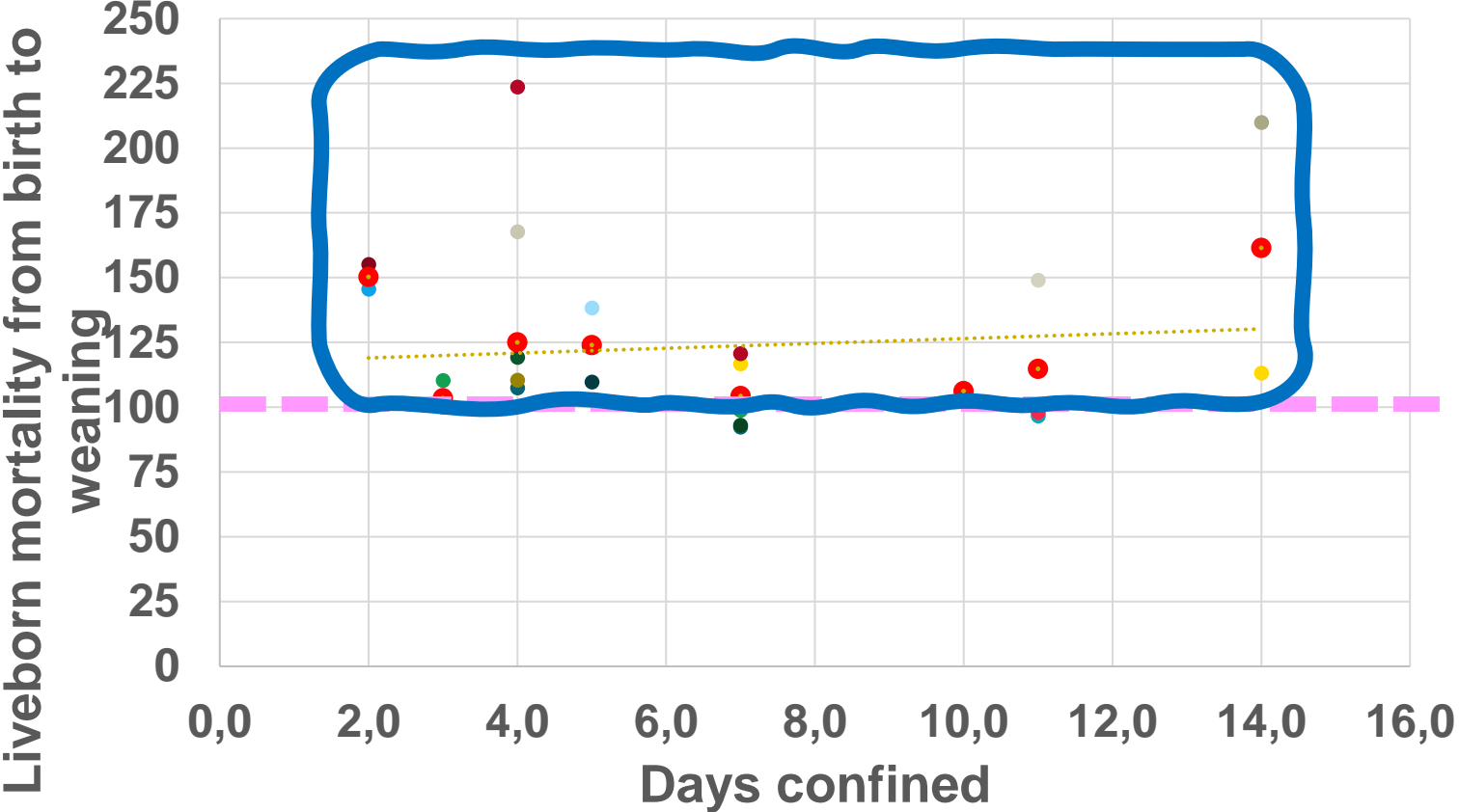
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Zero confinement (100) – or temporary confinement



Goumon et al., 2022

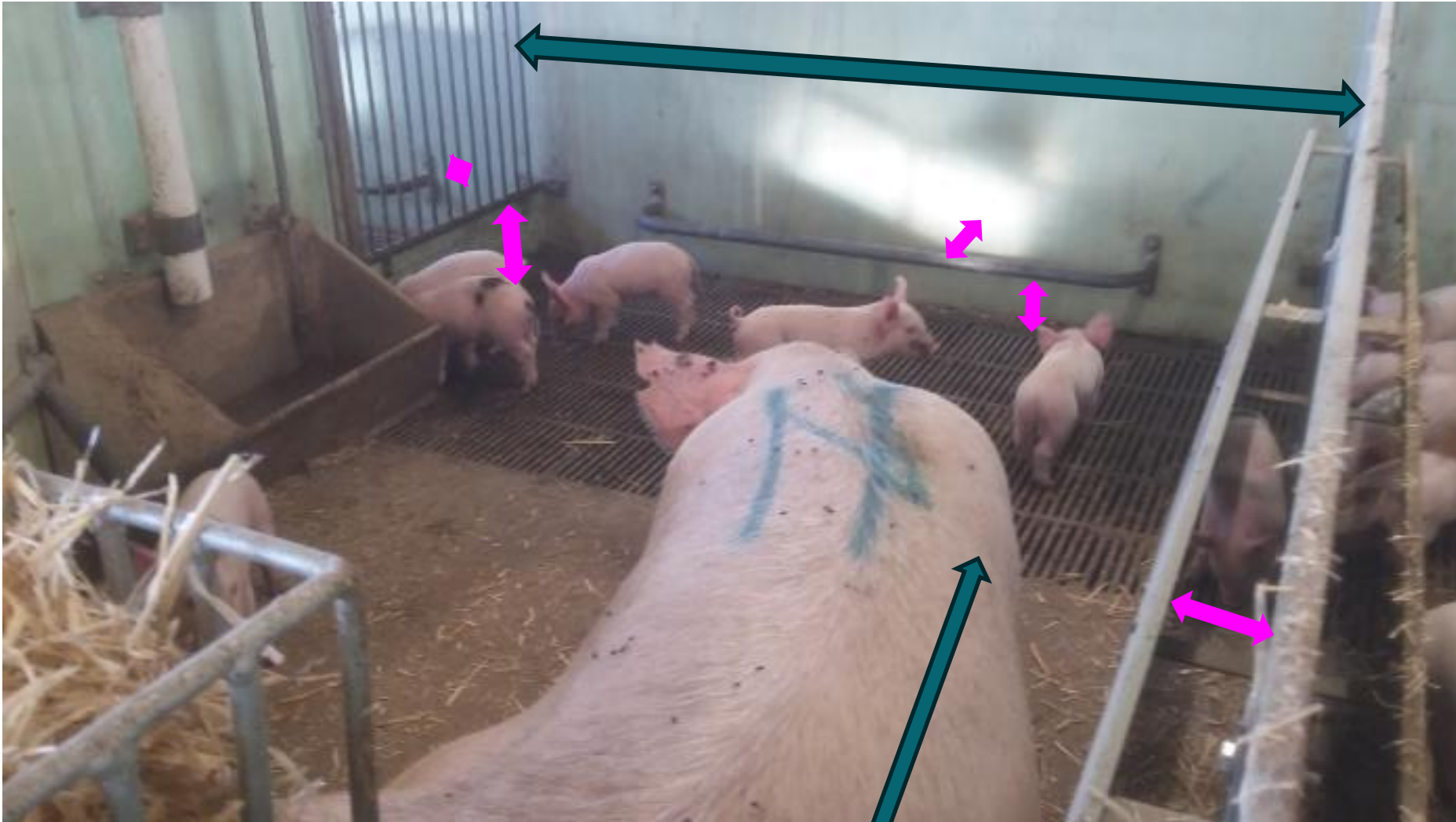
Permanent confinement (100) – or temporary confinement



- Ceballos et al 2021
- Chidgey et al 2015
- Chidgey et al 2016a
- Choi et al 2020
- Höbel et al 2018
- Lambertz et al 2015
- Loftus et al 2020
- Lohmeier et al 2020
- Lohmeier et al 2020
- Salaun et al 2004
- Salaun et al 2004
- Kinaine et al 2021
- Caille et al 2010
- Caille et al 2010
- Condous et al 2016
- King et al 2019a
- Caille et al 2010
- Caille et al 2010
- Gouman et al 2018
- Mack et al 2017
- Spindler et al 2018
- Singh et al 2017
- Moustsen et al 2013
- mean
- Lineær (mean)

Goumon et al., 2022

Dimensions – pen equipment



Sows:
Dunging
Lying
Thermoregulate
...

Piglets:
Shoulder width
Safety zones
.....

'Ideal' pen size – space for the sow

- Sows' dimensions
 - Minimum



- Planar width – turning space
 - Minimum
 - Ease of movement



Planar width of 153 cm
Planar area of 3.17 m²

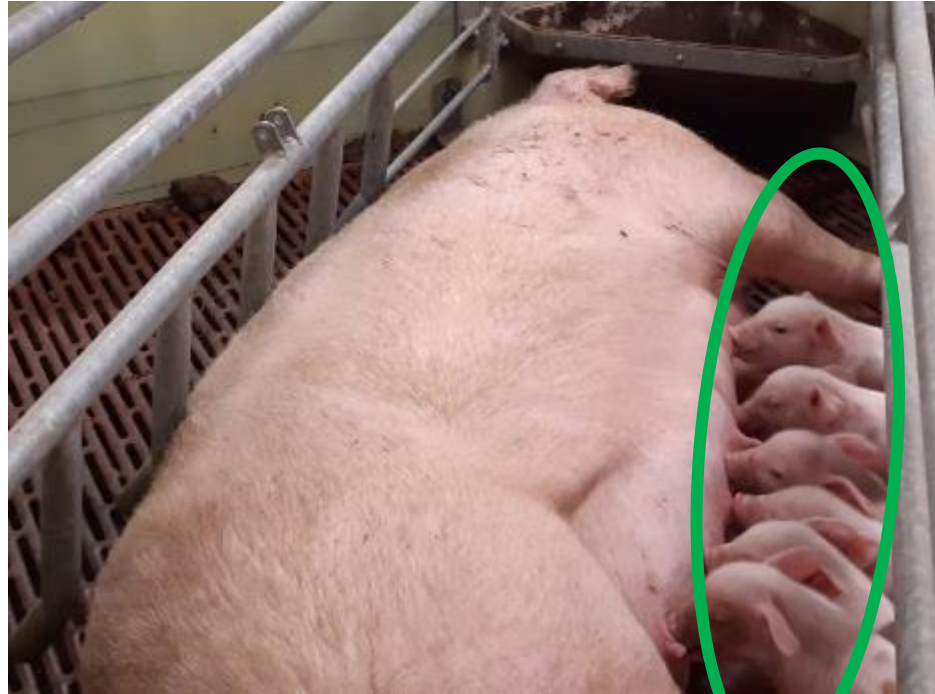
considered necessary to allow unobstructed turning for sows with the 95-percentile weight.

Needs further research

'Ideal' pen size - space for piglets

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

- Functional areas
- Piglet safety zones



Space – temporary confinement and loose



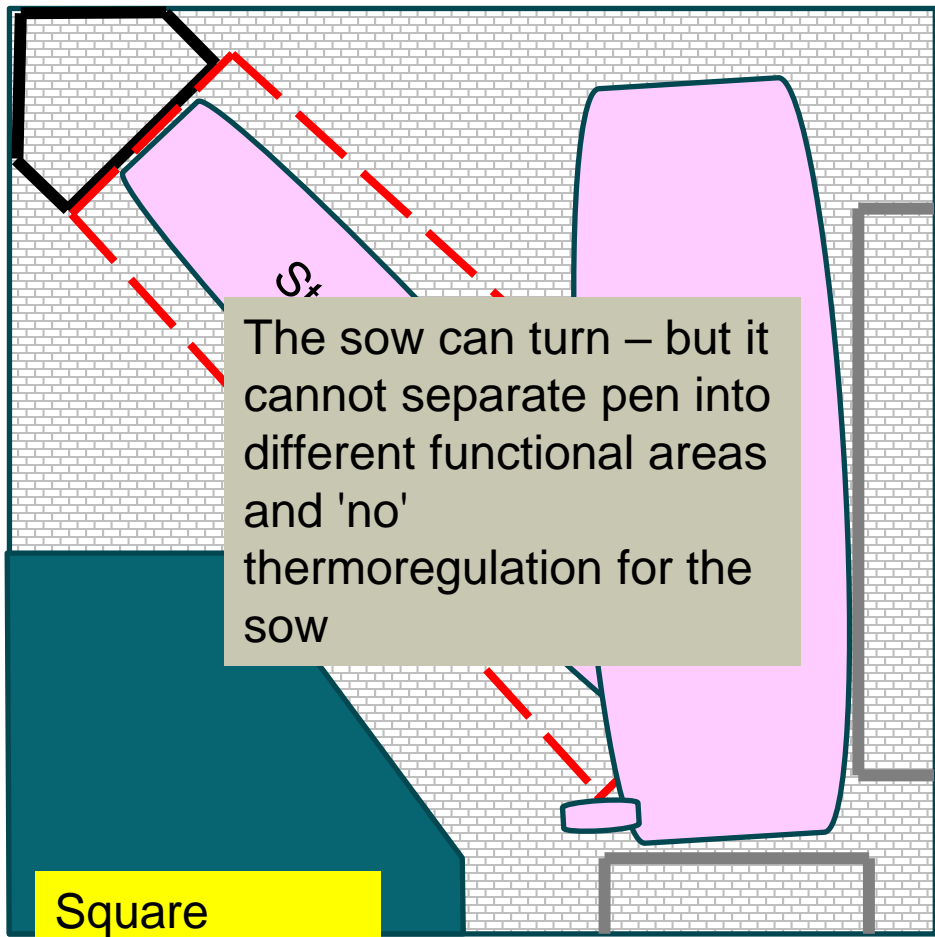
Decisions before building and running afterwards

- Key decisions
- Once you've build – conditions are given - live with it....and optimize within conditions
- Start with successful implementation
 - Include in design and thoughts:
 - What do pigs do
 - When do they do it
 - Why do they do it
 - How do they do it
 - ...



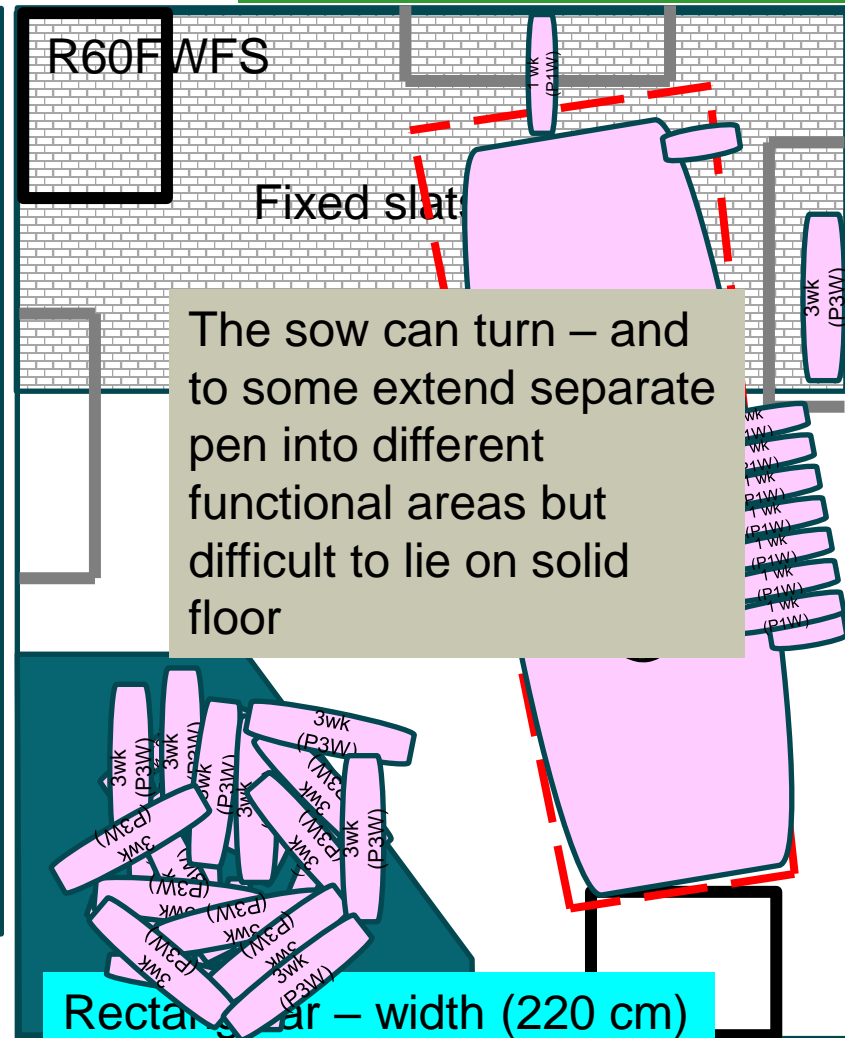
How different can 6 m²-pens be?

There will be standards or legislation
– do it clever and smart and the pigs will respond positively and the stockpeople



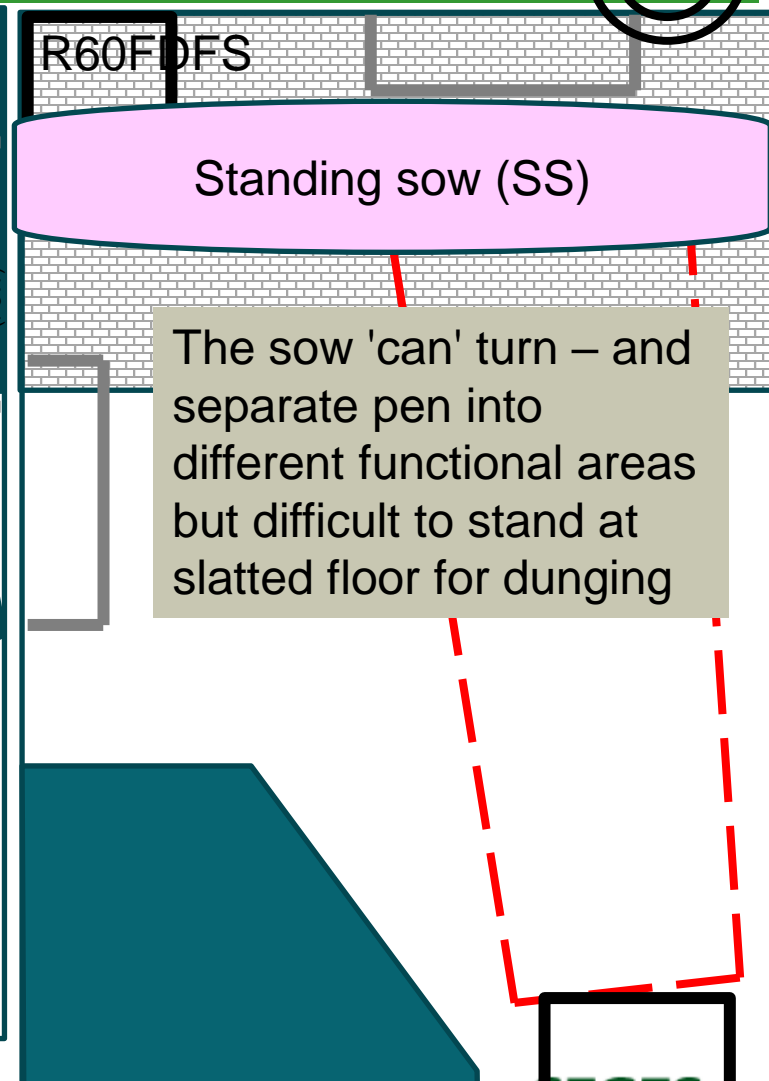
The sow can turn – but it cannot separate pen into different functional areas and 'no' thermoregulation for the sow

Square
S60 / 245*245



The sow can turn – and to some extent separate pen into different functional areas but difficult to lie on solid floor

Rectangular – width (220 cm)
273*220



The sow 'can' turn – and separate pen into different functional areas but difficult to stand at slatted floor for dunging

Rectangular – depth (300 cm)
300*200

From theory to 'practice'



Checklist before deciding space and dimensions....

30 questions related to pen design and which are important for:

- The sow – when loose or if/when temporary confined
- Neonatal piglets
- Caretakers / stockpeople
- Environment / clima

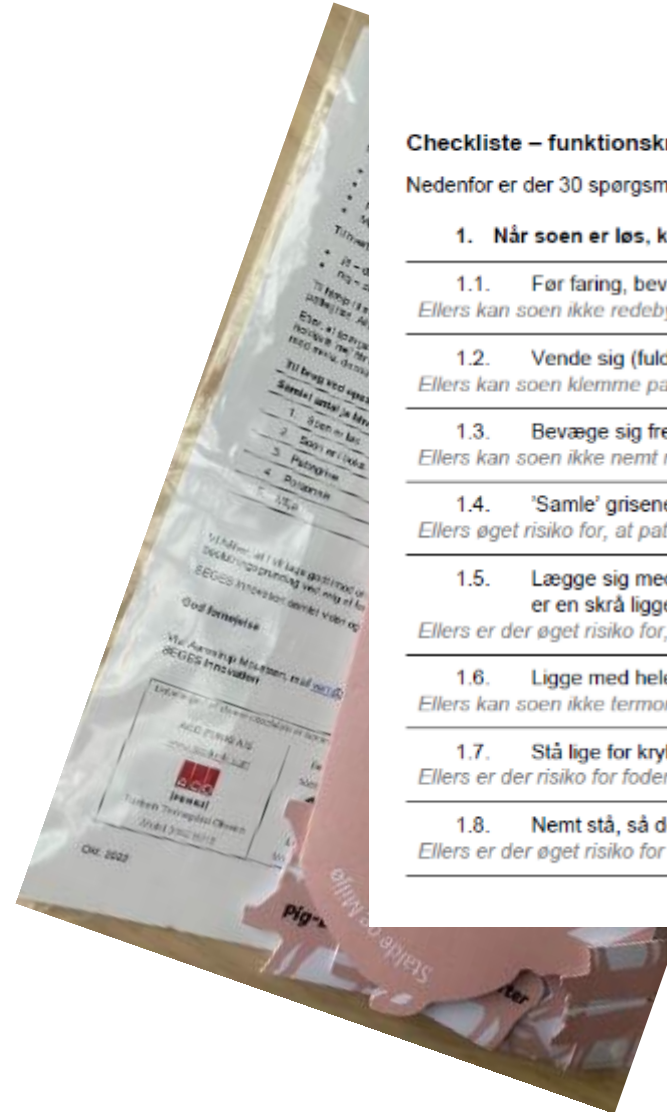
Each question can be answered:

- Yes – fulfilled in the pen
- No – the pen does not fulfill this

It comes with cardboard pigs:

- 1 so,
- 20 (\pm) app. 1-3 day old piglets
- 20 (\pm) app. three week old piglets

All cardboard pigs are in scale 1:10



Checkliste – funktionskrav – indretning af faresti til løse søer

Nedenfor er der 30 spørgsmål til sti-indretning (med tilhørende forklaring/udfyldning af spørgsmål)

	Ja	Nej
1. Når soen er løs, kan soen:		
1.1. Før faring, bevæge sig (tage nogle skridt) i stien <i>Ellers kan soen ikke redebygge, og det kan øge antal dødfødte</i>		
1.2. Vende sig (fuld længde)? <i>Ellers kan soen klemme pattegrise</i>		
1.3. Bevæge sig frem/tilbage – udover dens egen længde – når den skal lægge sig? <i>Ellers kan soen ikke nemt rejse og lægge sig, og det kan reducere mælkeproduktion</i>		
1.4. 'Samle' grisene, inden den (soen) lægger sig ned? <i>Ellers øget risiko for, at pattegrise klemmes</i>		
1.5. Lægge sig med støtte – dvs. er der mindst en og gerne flere stisider, hvor der fx er en skrå liggevæg og ikke en friholderbøjle? <i>Ellers er der øget risiko for, at der klemmes pattegrise</i>		
1.6. Ligge med hele kroppen både på det faste gulv og på spallegulv? <i>Ellers kan soen ikke termoregulere</i>		
1.7. Stå lige for krybben? <i>Ellers er der risiko for foder- og vandspild</i>		
1.8. Nemt stå, så den undgår at gøde på det faste gulv? <i>Ellers er der øget risiko for dårlig hygiejne</i>		
I alt: Løs so		

Checklist before deciding space and dimensions....

Overview of how well pen designs fulfill		Responses:	
Total number of yes and no's	Number of questions	yes	no
1. Sow is loose	8		
2. Sow is confined	5		
3. Piglets	8		
4. Stockpeople	7		
5. Environment	2		
total	30		

Compare eg.

- What is the impact of space allowance?
- Do some brands/pen equipment fulfill more criteria than others?
- Where do you get the most value for money?

SEGES Innovation - Gris

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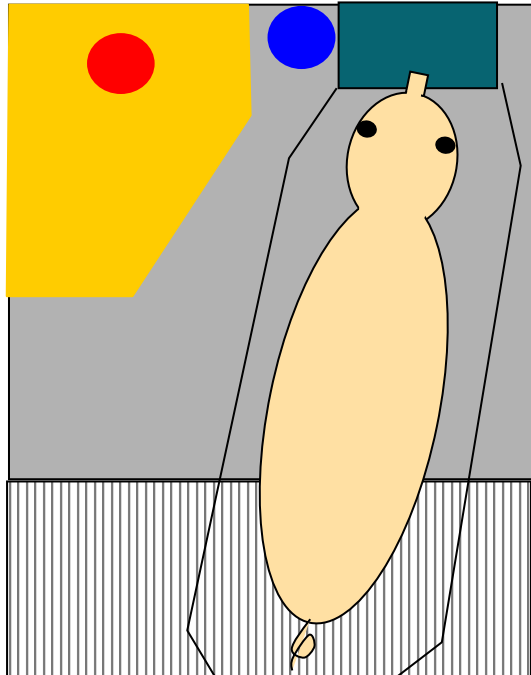
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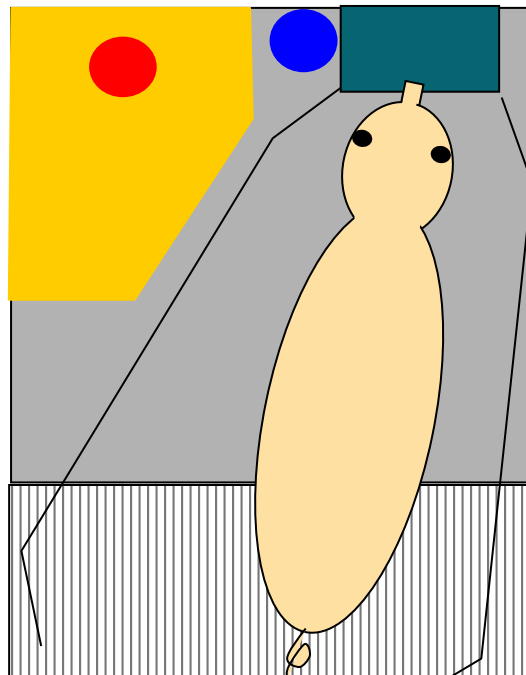
Can we prepare pens with crates?

The answer is 'no'

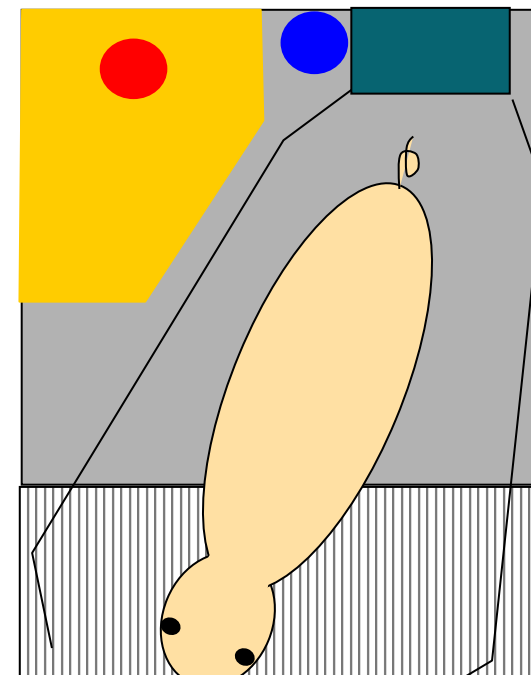
While the crate is **closed**, the sow eats and defaecates in the same position.



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 and flooring for crates and for pens

Pen dimensions – welfare ‘versus’ environment

Equal sided pen – fully drained:

The solution is under the floor

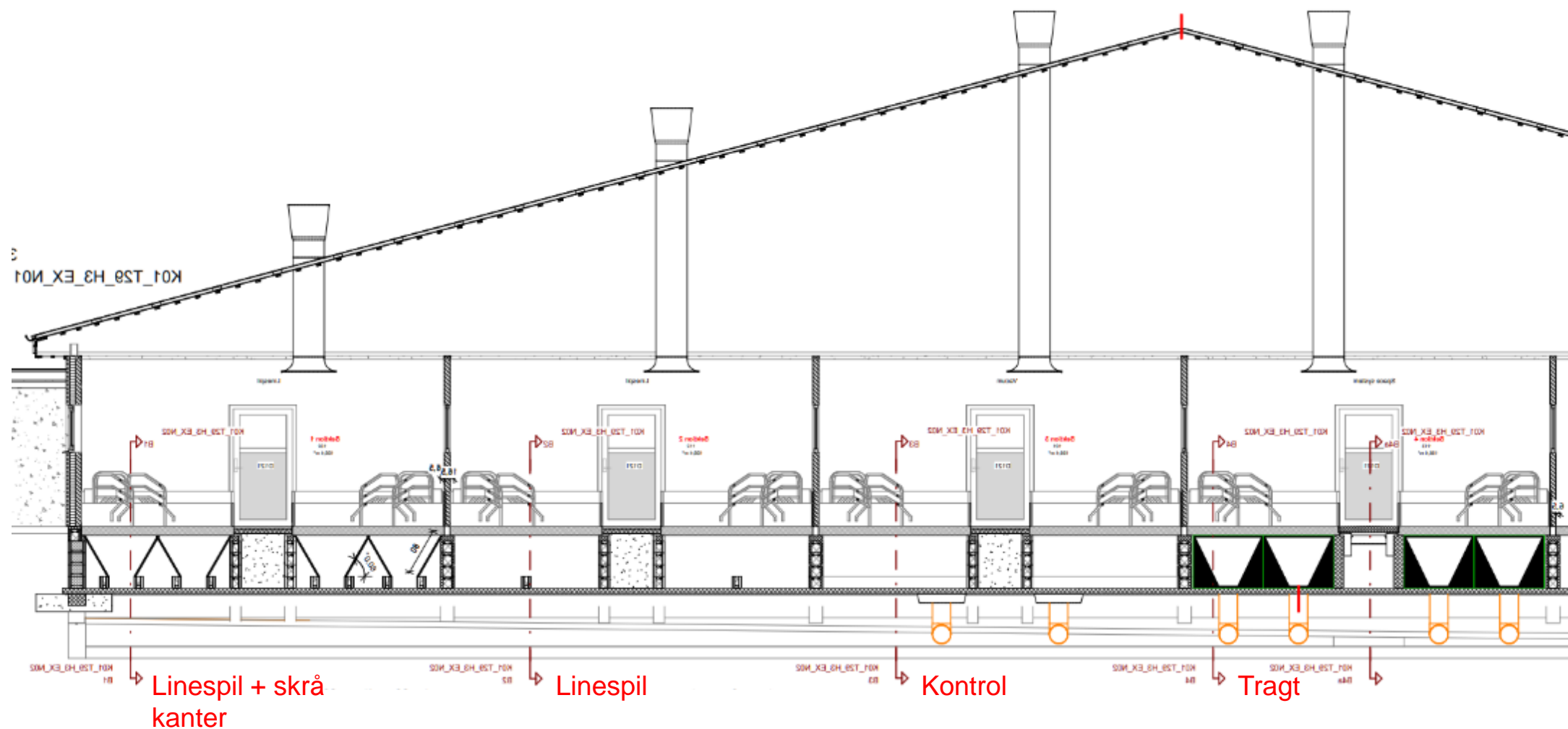


Rectangular pen – possible to have partly solid floor

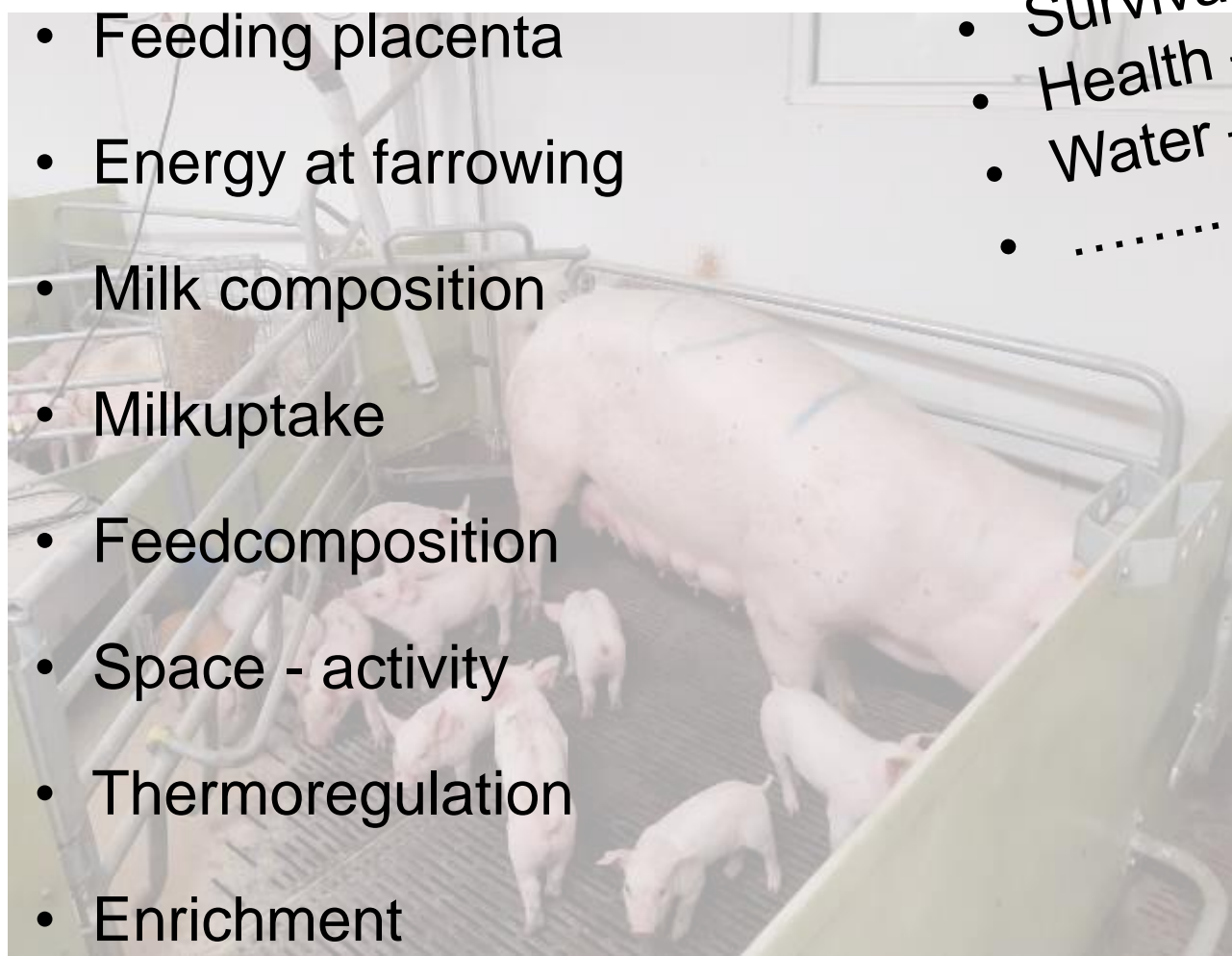
Solution *above* the floor



SOWEMIS – gudp - Tværsnit af stalden



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Questions



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