SEGES Innovation P/S

Delegation Spanish pig farming
22nd November 2023

SEGES Innovation

SEGES Innovation P/S

Private, independent, nonprofit research and innovation organization

- In total 530 employees

<u>Livestock (Cattle, Pigs, Poultry, Horses):</u>

- ≈ 100 employees
- of which approximately 40 employees work with pig-subjects

- Mainly financed by Danish pig farmers (production levies)

- Responsible for research and development programmes and knowledge transfer to the Danish pig industry

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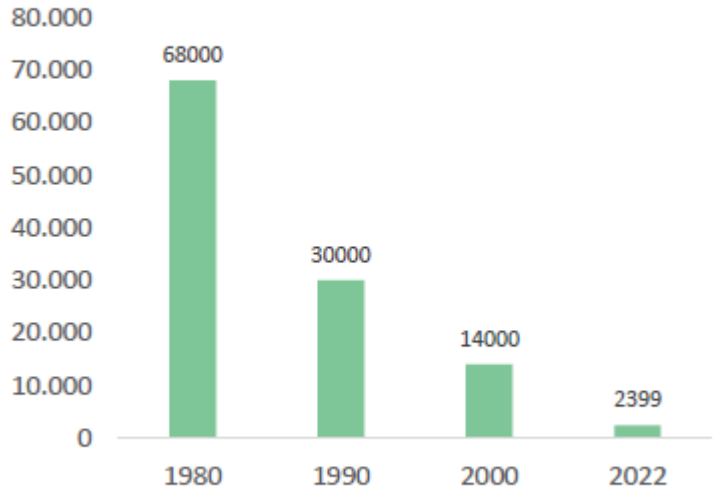
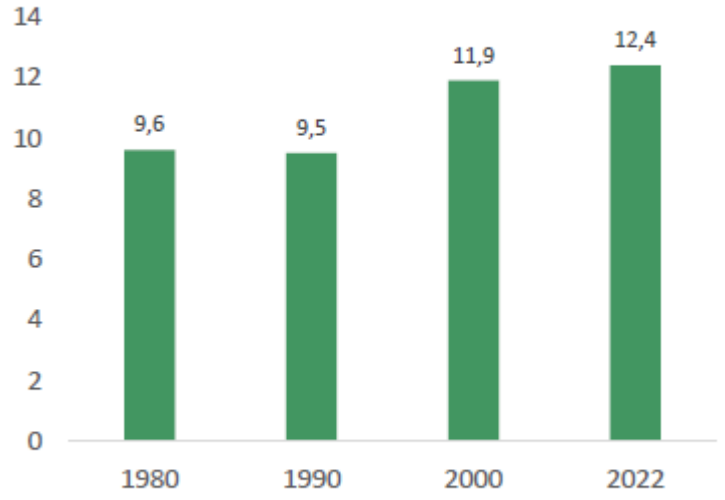
Danish pig production

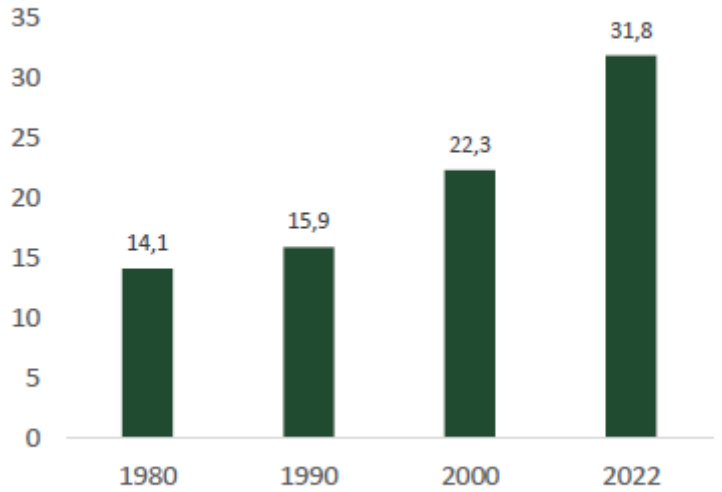
Number of producers



Pig population



Produced number of pigs



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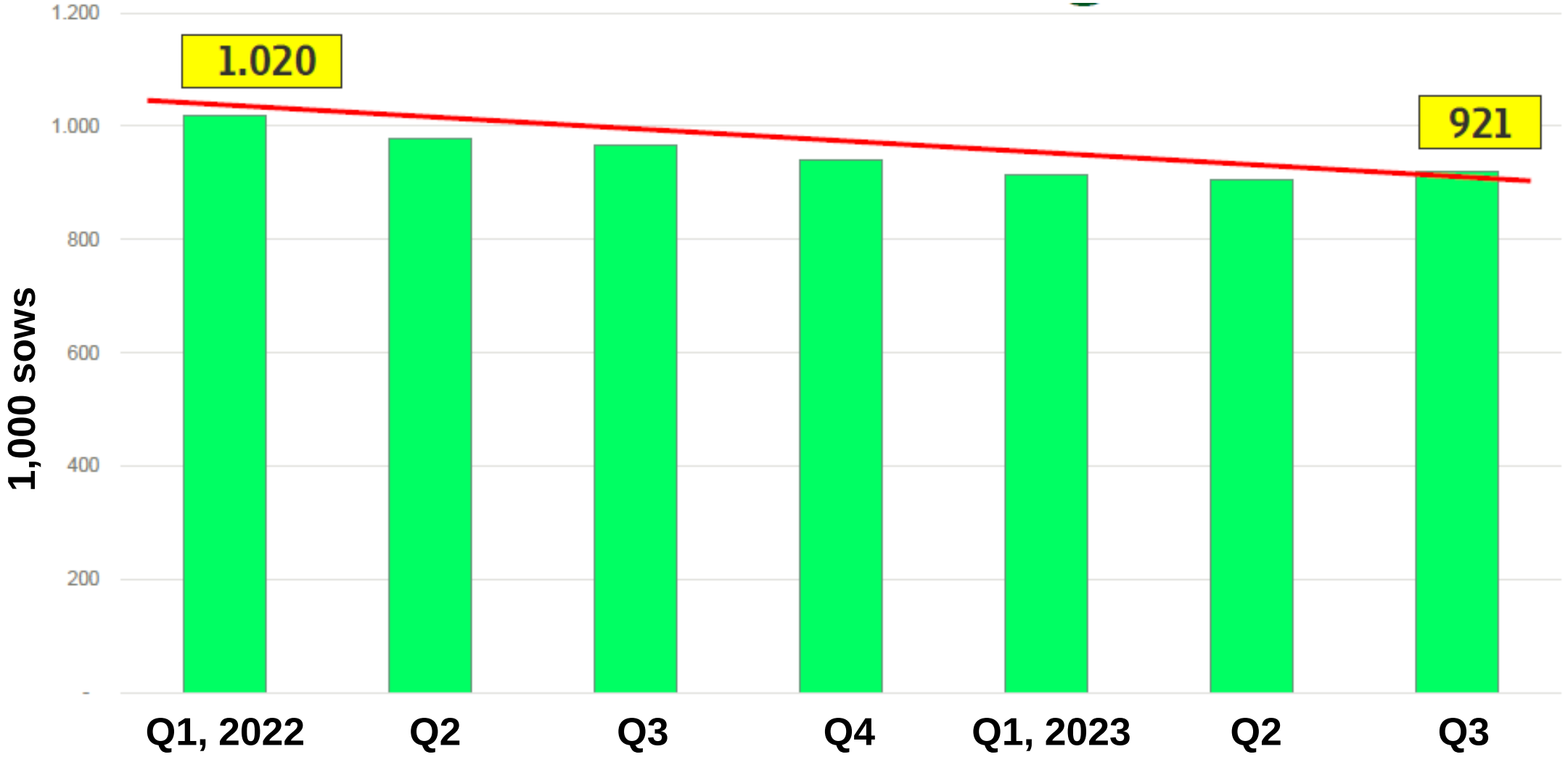
Number of sows – 1,000 – quarterly count



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SEGES - Research facilities

Research station Grønhøj

- Weaners
- Finishers
- Digestability (ileal and fecal)
- Environemental and climatid impact

- **Commercial herds**
  - Sows
  - Neonatal piglets
  - Weaners
  - Finishers

SEGES INNOVATION

Projects 2023

Sow survival

- Sow mortality – causes and correlations
- Legs and hooves
- Gilt management

Piglet survivability

- Survival of the small piglets
- Heat mats for newborn
- Strategic farrowing surveillance

Nutrition and feeding

- Nutrient need and recommendations
- Supply of amino acids
- Feed evaluation – digestability facilities

Health

- PRRS reduction and surveillance
- Transport of pigs with hearnia lesions

Housing

- Loose housing after weaning – space requirement and use of confinement
- Loose lactation – space requirement and less nursesows
- Future housing of finishers – no tail docking, solid floor and sustainability

Reduction of emissions

- Technology to reduce emissions from barn and storage
- Manure handling – frequent emptying

See all projects (in Danish): https://projekt.seges.dk/svineafgiftsfonden/svineafgiftsfonden-2023

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Projects 2023

SEGES Insight

- Piglet mortality
- Sow mortality

Education

- Pig Academy for teachers – agricultural colleges
- Online courses

Partnership with advisors

- UVS
- Vet-agro

Economics

- Listing prices for weaners
- Economic analysis – impact calculations
- Structural development

SEGES Innovation Pigs

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Research and development

Initiatives and plans

Improving pig welfare on farm

Chefforsker, PhD, Vivi Aarestrup Moustsen,
SEGES Innovation,
Honorary associate professor in animal husbandry, pigs, University of Copenhagen

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

Environmental / climatic influence

Economic potential

Long term investment and daily management

Social responsibility

Including pig welfare

SEGES Innovation - Pig

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

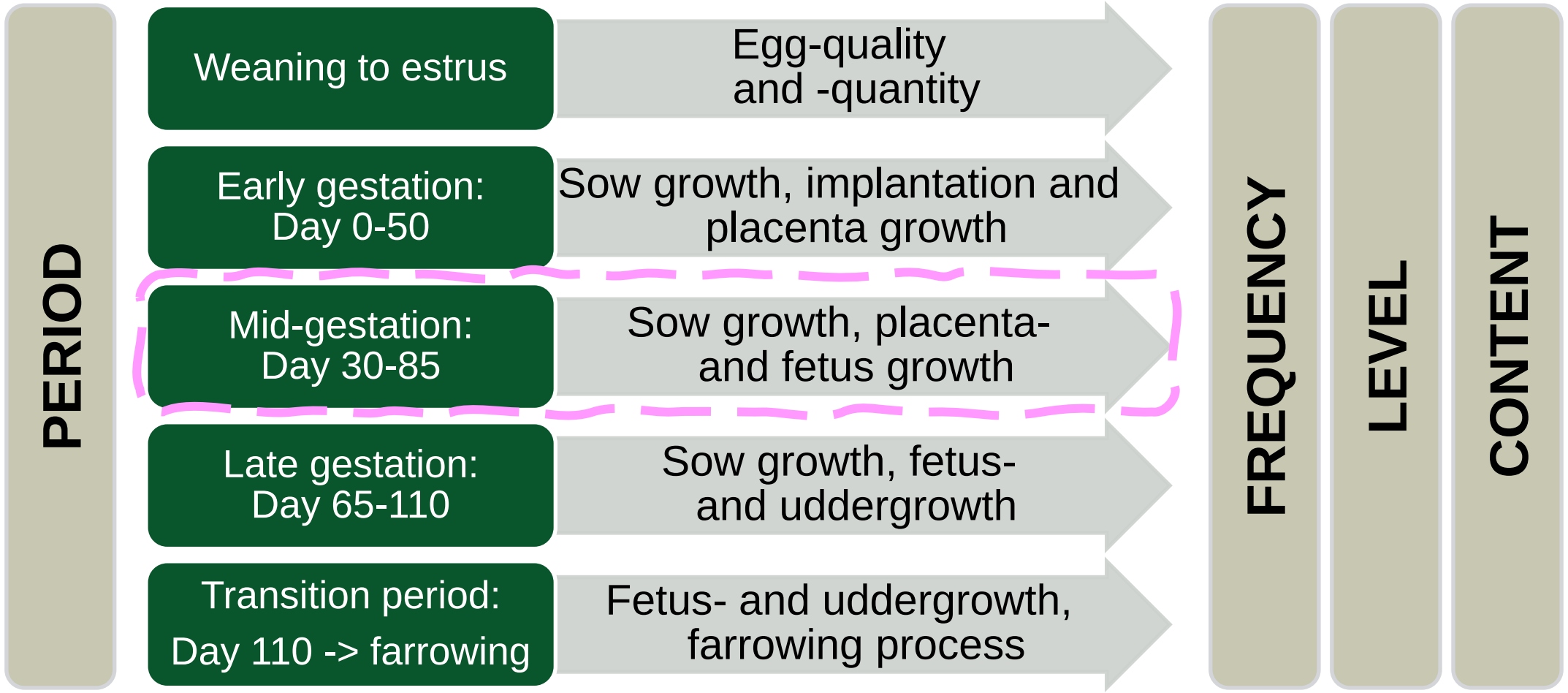
- Survival
- Health – PRRS
- Water – quantity, availability, quality
- ……..

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

SEGES INNOVATION

Feeding – it is not just feeding....

Sows are high producing, and we request a lot of them -> that sets high standards for our management of the sows



Pig Research Summit - THINK Piglet 2023 (tilmeld.dk)

SEGES Innovation - Pig

- Feeding placenta
- Energy at farrowing
- Milk composition
- Milkuptake
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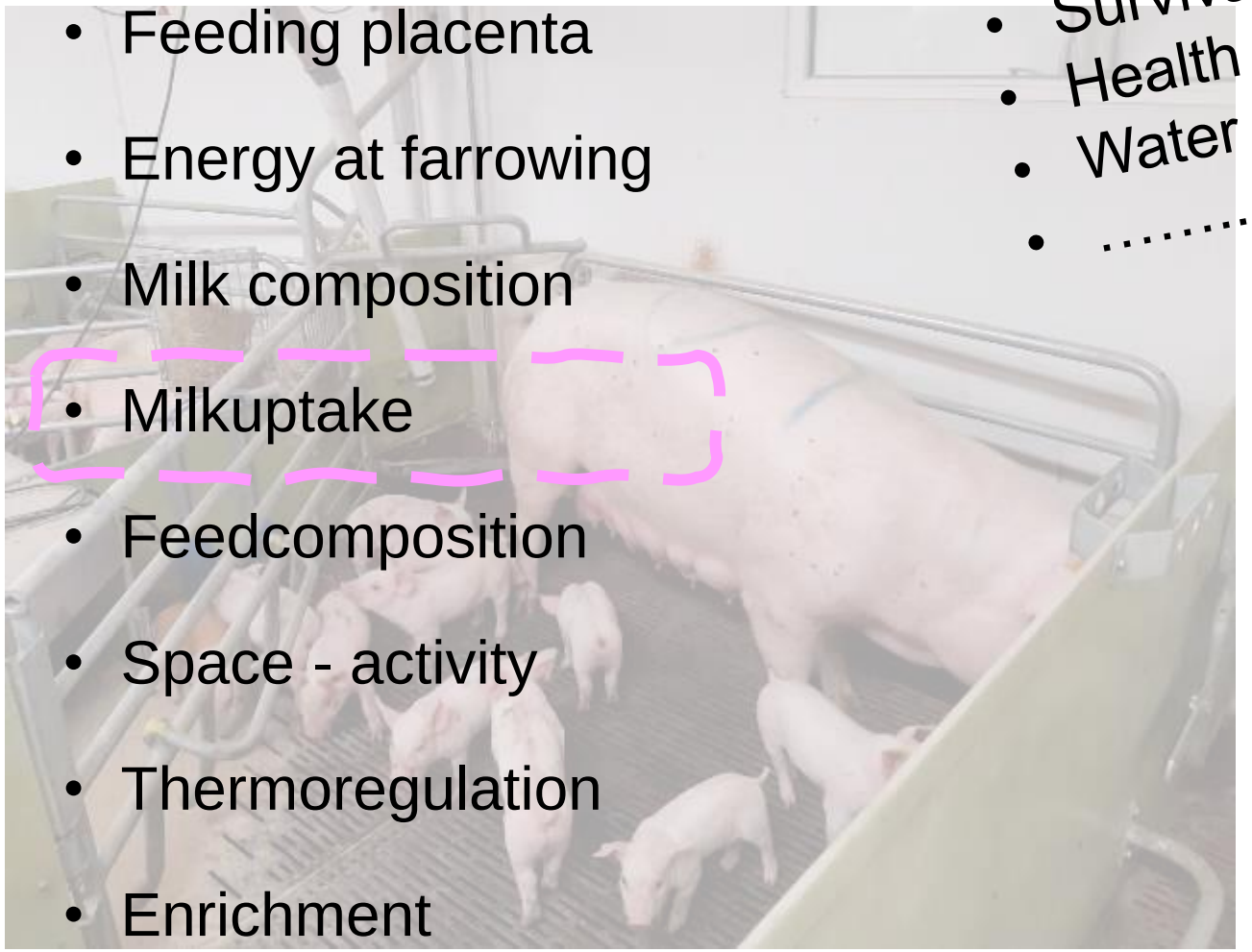
- ….



- Survival
- Health – PRRS
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- ……..

- No castration / no pain
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Early use of milk-cup?

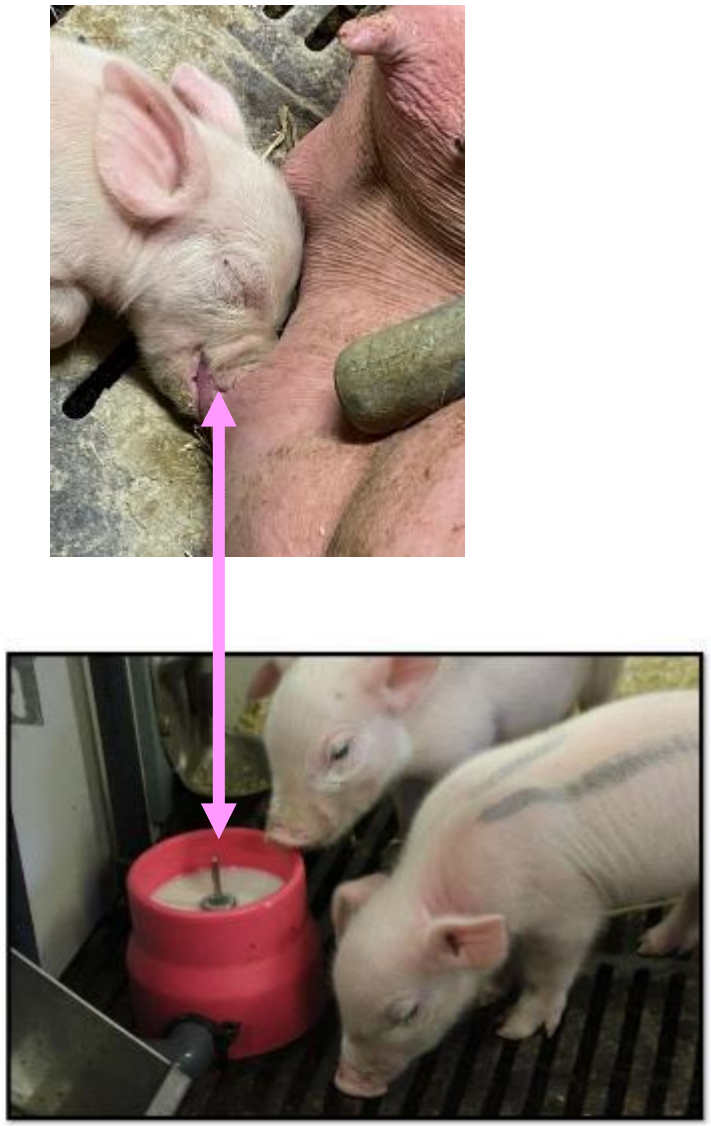

Figure 6 A milk cup was placed inside each farrowing pen. To release milk, the vertical tap needs to be pushed either to the side or downwards. (Photo: Giulia Ciarcelluti).

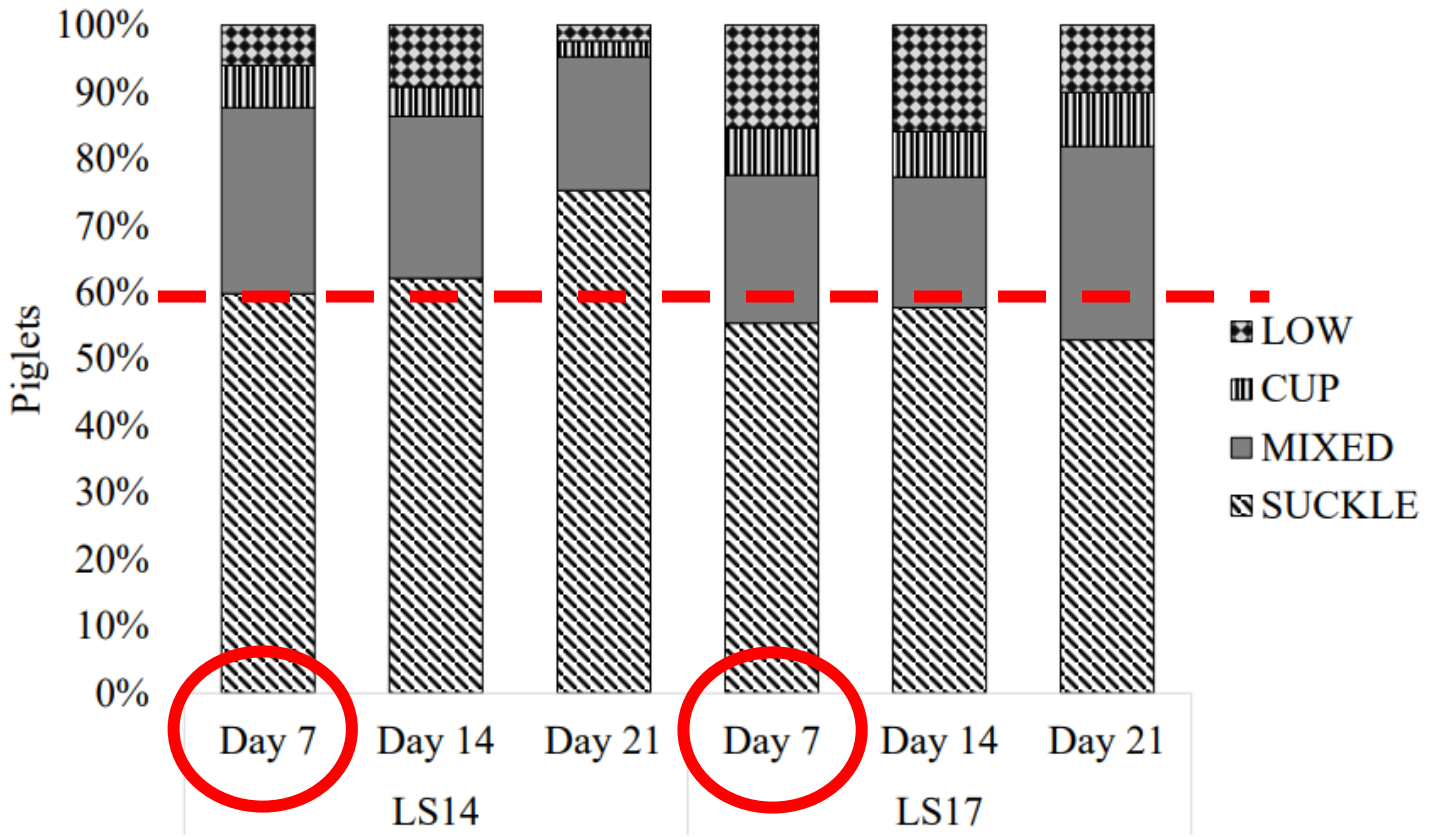

Figure 9 Percentage of piglets in each category of Nutrition Source (NS) on days 7, 14 and 21 according to the standardised litter size on day 1 of either 14 piglets (LS14) or 17 piglets (LS17). (Reproduced from paper IV).

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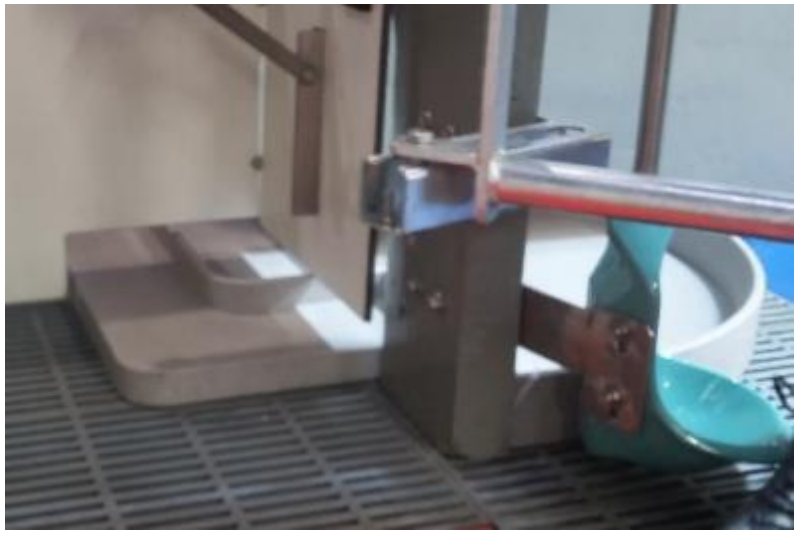
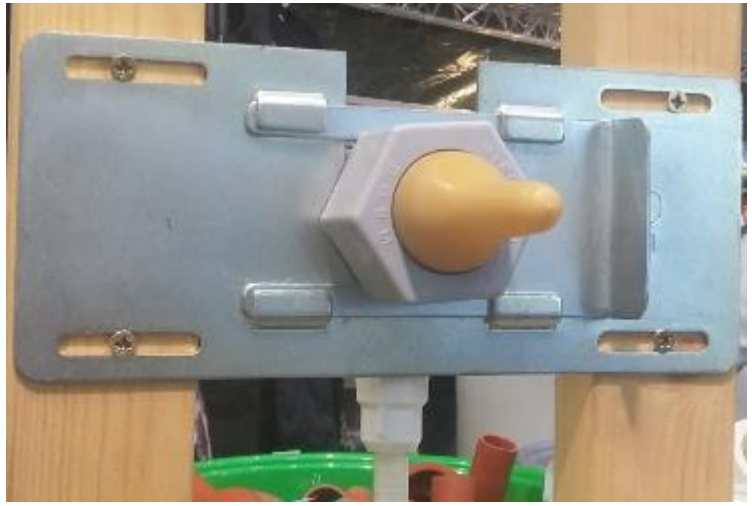
PhD Cecilie Kobek-Kjeldager, AU

How do we increase/improve early use of cup?
How can we use piglet instincts?





'Pattinator' in initial trial

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

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Large litters – no nurse sows

SEGES INNOVATION

[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

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Milk teats in incubators – six piglets together

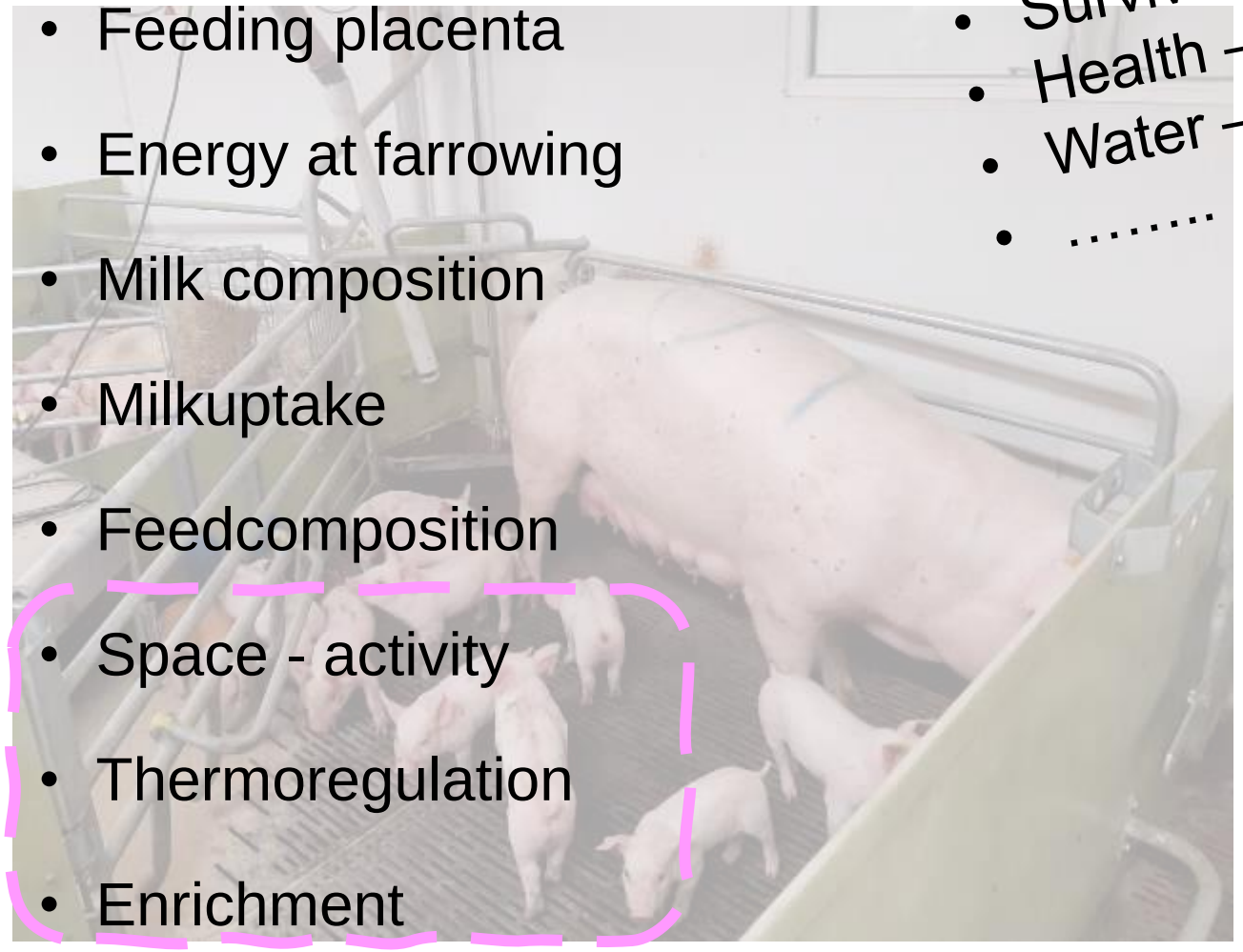
Trial – 44-76 hours

One enclosure, six piglets

Six teats and one PigLET Starter

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
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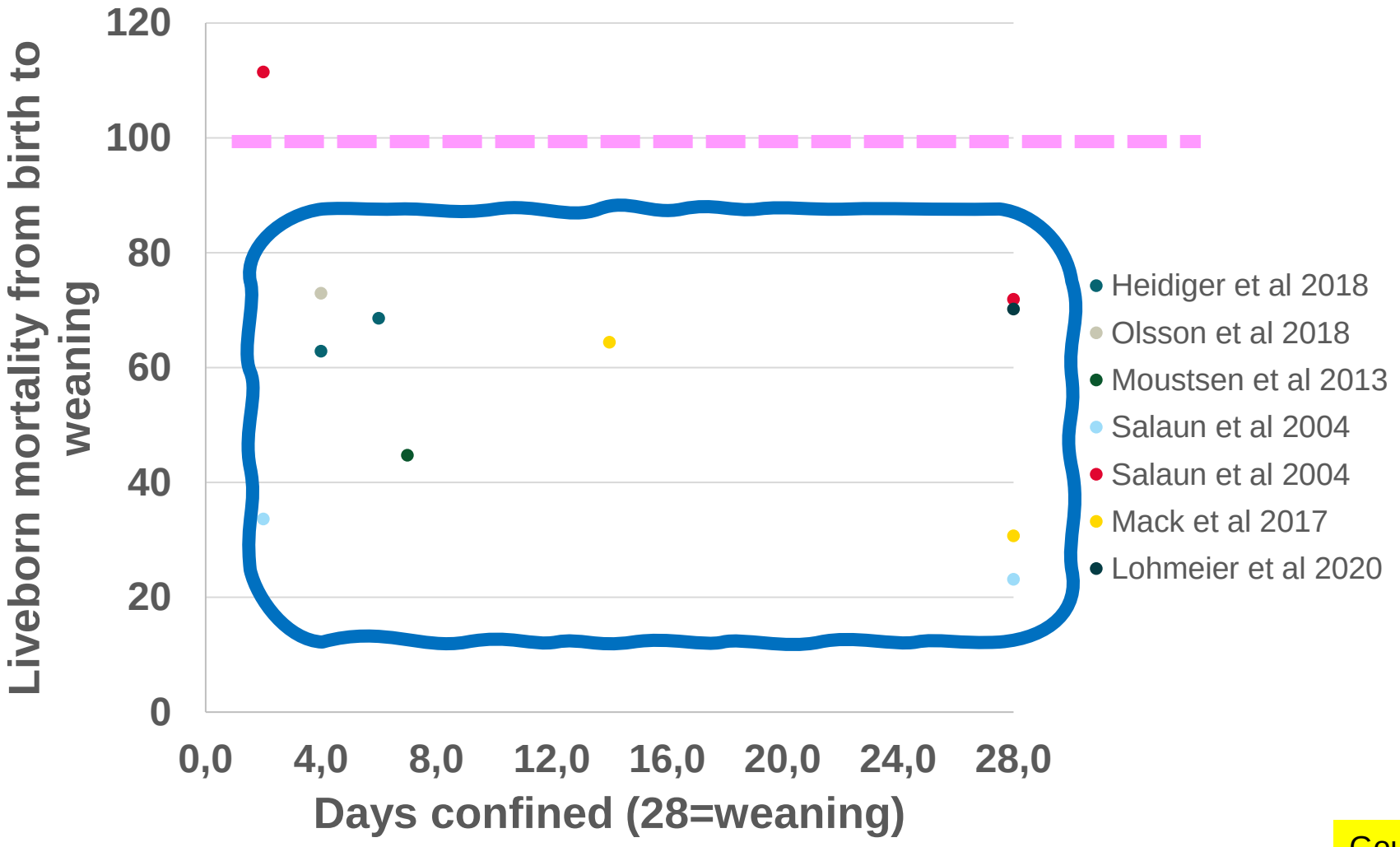
- ……

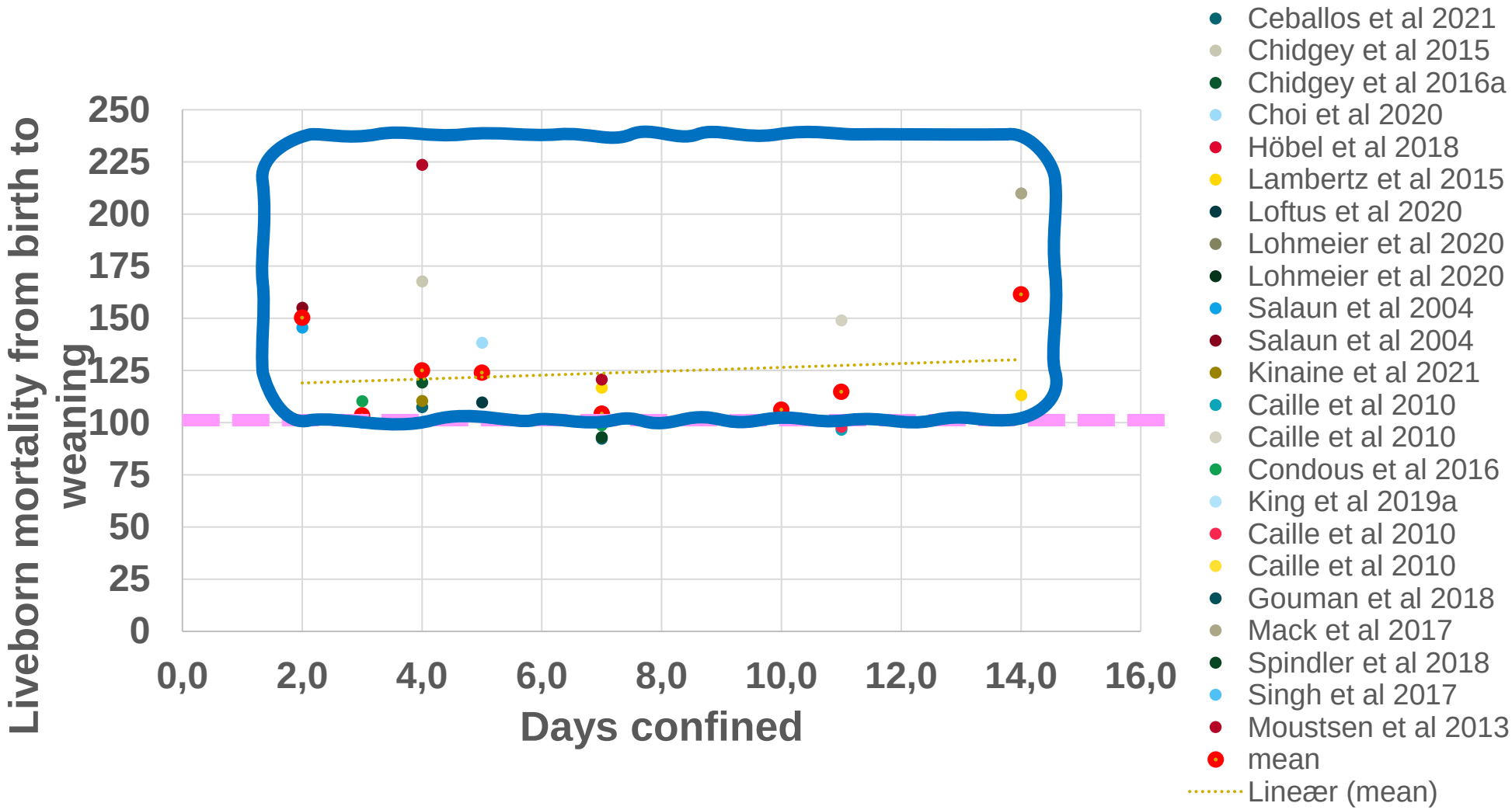
Zero confinement (100) – or temporary confinement



Goumon et al., 2022

SEGES INNOVATION

Permanent confinement (100) – or temporary confinement



Goumon et al., 2022

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Loose sows – size of farrowing pens

- Shall the farrowing pen be 5.5 / 6.0 / 6.5 / 7.0 / 7.8 m^2?
- Equalsided or rectangular?
- If rectangular – which dimensions – depth and width?
- Flooring?
  - Impact of pen dimensions on dimensions and placement of slatted floor?
- Irreversible decision

It is VERY difficult

But we must try and solve it

Otherwise a lot of ‘useless’/unsuitable pens will be constructed – and that no good for anyone

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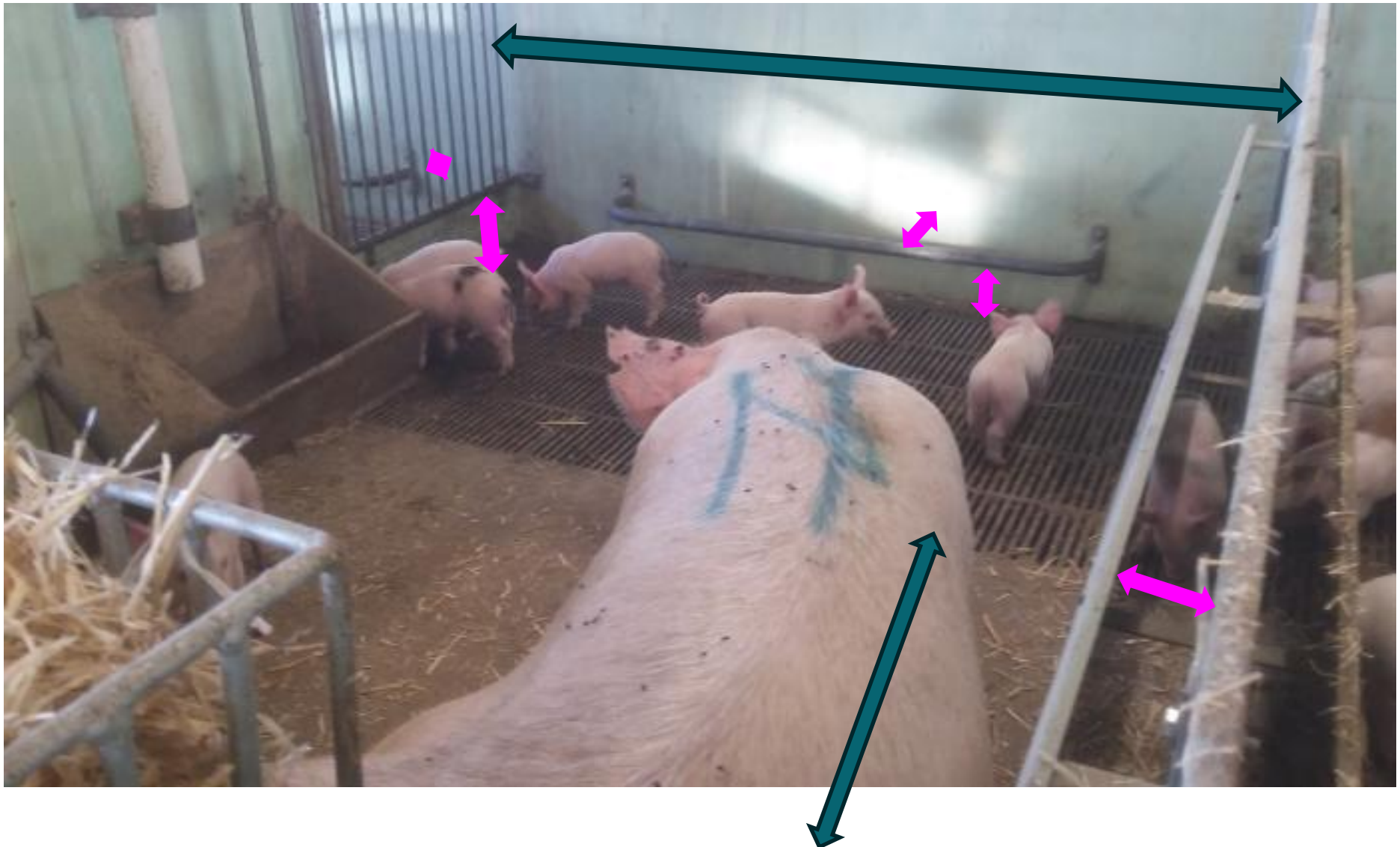
Dimensions – pen equipment



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 m^2

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

Needs further research

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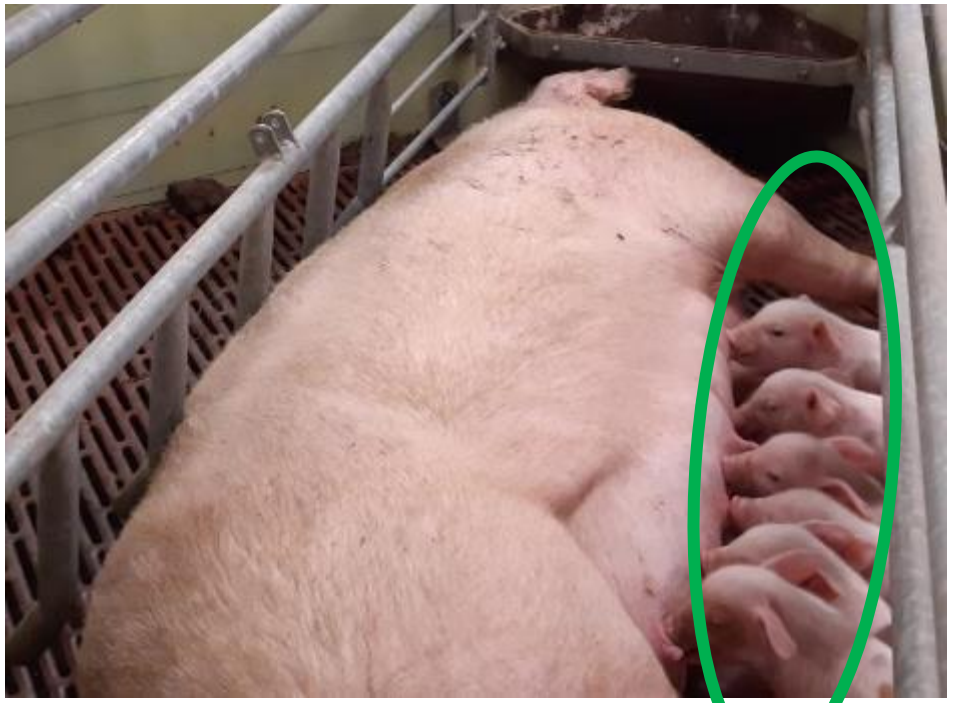
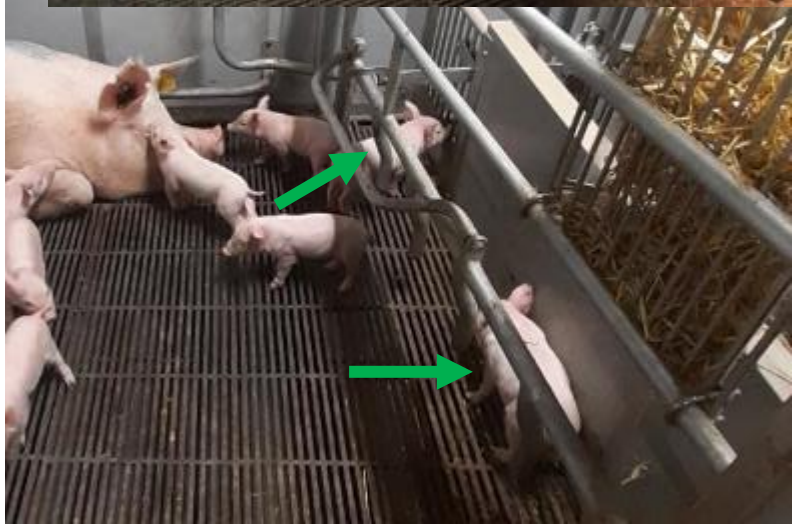
‘Ideal’ pen size - space for piglets

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

- Functional areas
- Piglet safety zones

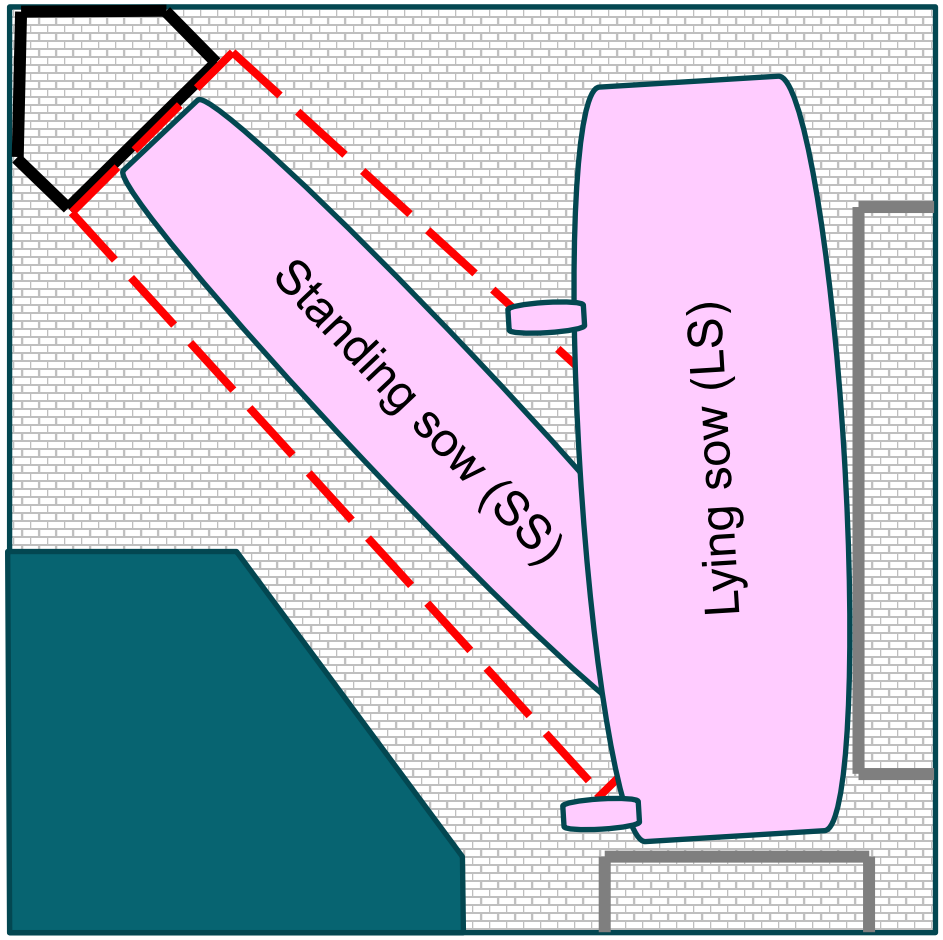




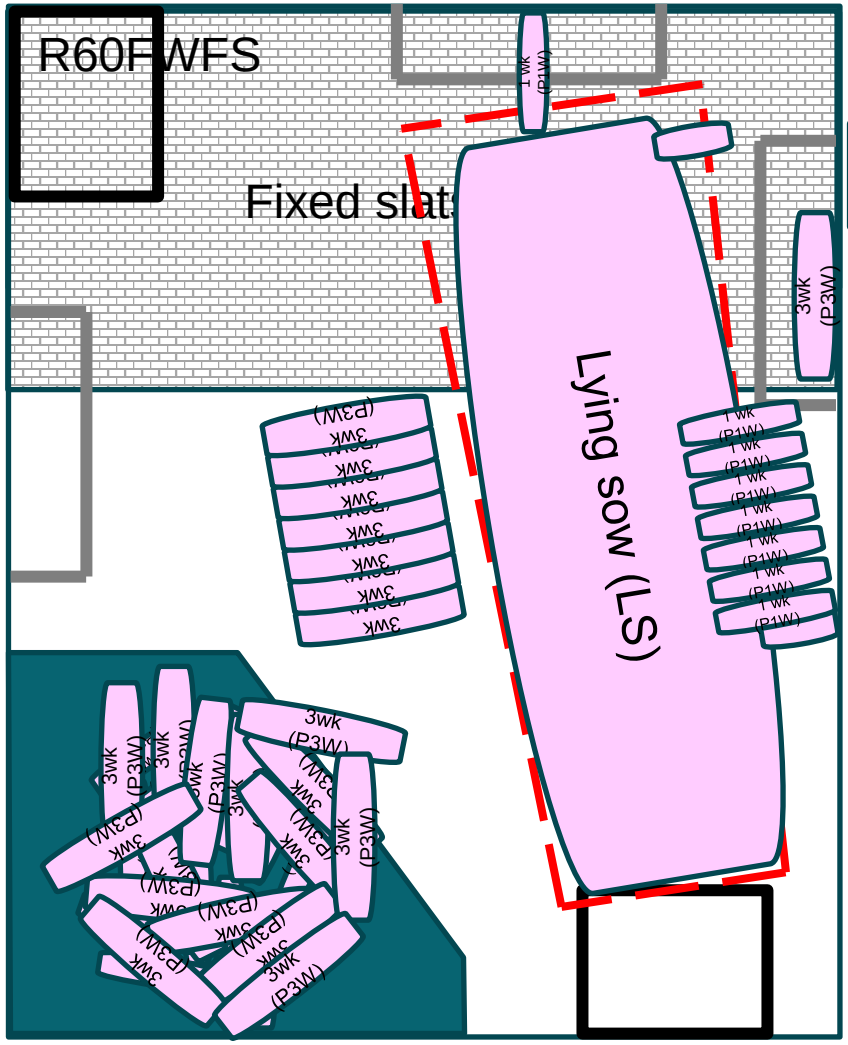
Space – temporary confinement and loose

29

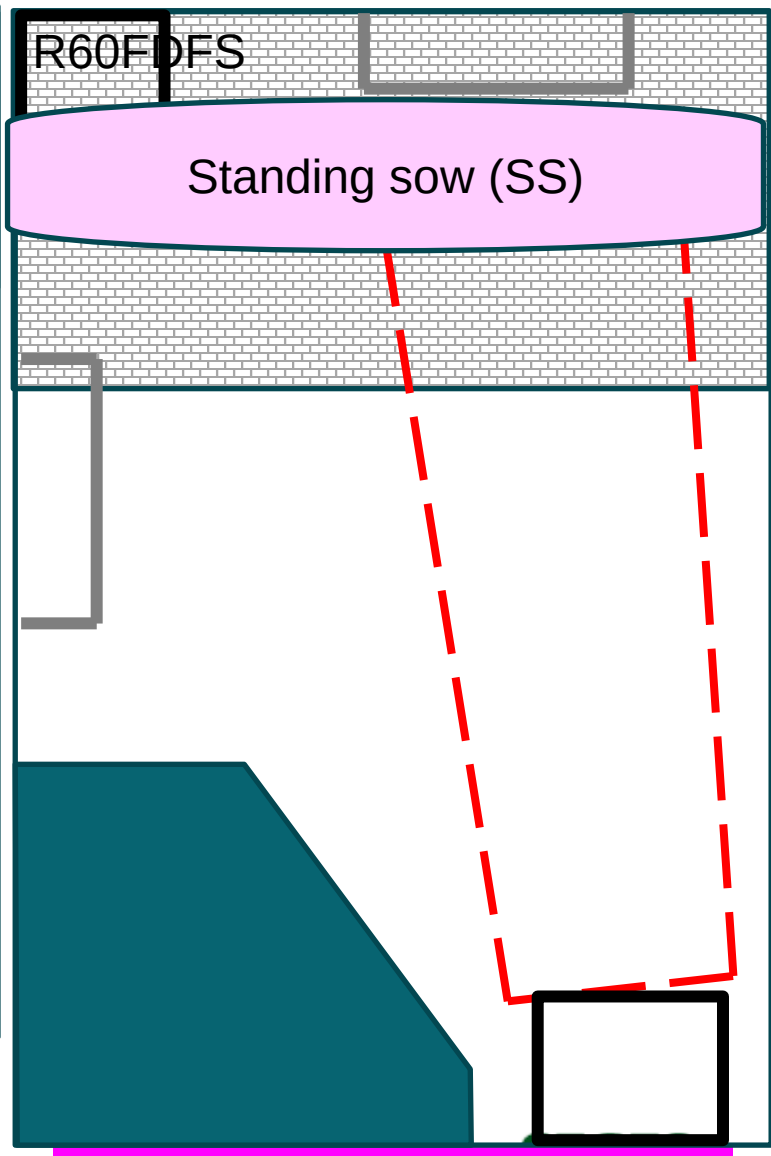
How different can 6 m^2-pens be?



Square
S60 / 245*245



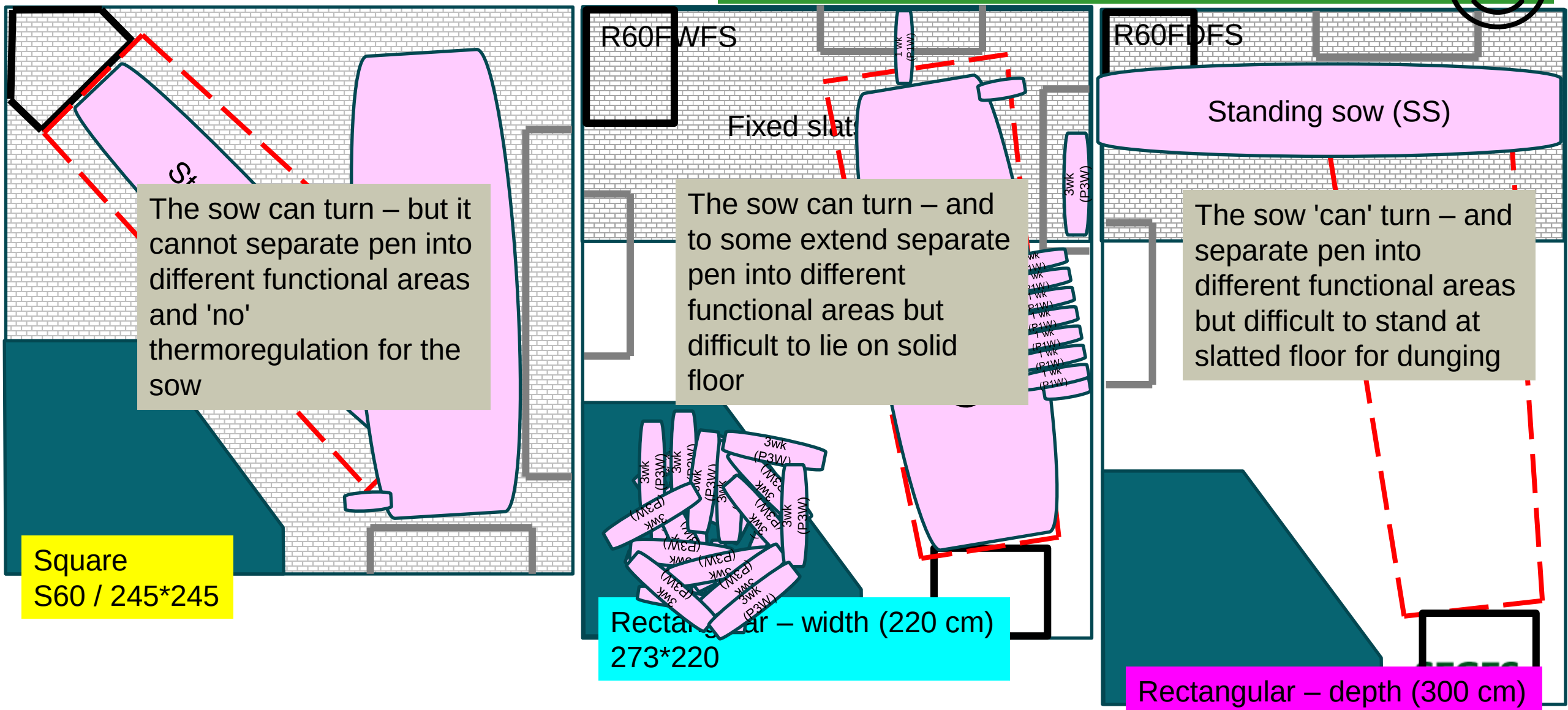
Rectangular – width (220 cm)
273*220



Rectangular – depth (300 cm)
300*200

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



From theory to ‘practice’

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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

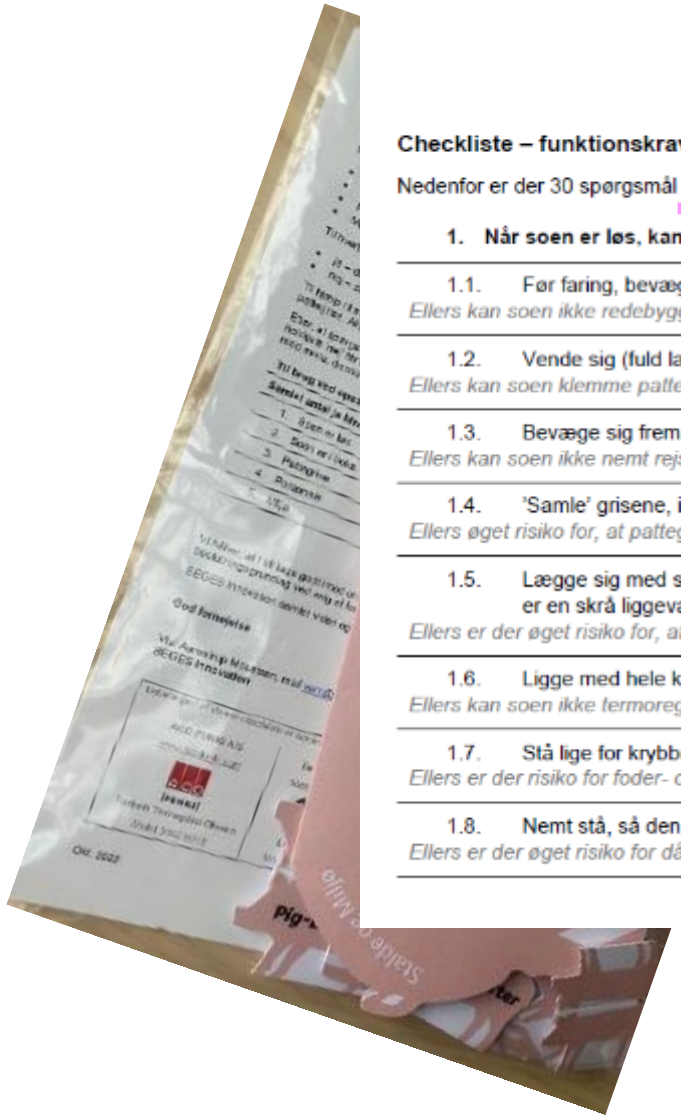
Each question can be answered:

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

It comes with cardboard pigs:

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

All cardboard pigs are in scale 1:10



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Checkliste – funktionskrav – indretning af faresti til løse søer

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

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

SEGES INNOVATION

Checklist before deciding space and dimensions….

SEGES INNOVATION

Checkliste – funktionskrav – indretning af farest

Nedenfor er der 30 spørgsmål til sti-indretning *(med tilhø*

1. N[ø]r soen er løs, kan soen:

1.1. Før faring, bevæge sig (tage nogle skridt) i
Ellers kan soen ikke redebygge, og det kan øge antal d

1.2. Vende sig (fuld længde)?
Ellers kan soen klemme pattegrise

1.3. Bevæge sig frem/tilbage – udover dens ege
Ellers kan soen ikke nemt rejse og lægge sig, og det ka

1.4. 'Samle' grisene, inden den (soen) lægger s
Ellers øget risiko for, at pattegrise klemmes

1.5. Lægge sig med støtte – dvs. er der mindst
er en skrå liggevæg og ikke en friholderbøjl
Ellers er der øget risiko for, at der klemmes pattegrise

1.6. Ligge med hele kroppen både på det faste
Ellers kan soen ikke termoregulere

1.7. Stå lige for krybben?
Ellers er der risiko for foder- og vandspild

1.8. Nemt stå, så den undgår at gøde på det fas
Ellers er der øget risiko for dårlig hygiejne

2. N[ø]r soen er i boks:

2.1. Er der mindst 20 cm bag soen
Ellers kan pattegrisene have svært ved at blive født, og

2.2. Er mindst 125 cm (dvs. soens dybde (fra ry
længde)) fra indvendig i boks til begge stisi
kan die på begge sider
Ellers kan pattegrisene ikke optage tilstrækkelig råmæll
af dehydrering, sult eller infektion

2.3. Er der kun plads til at grisene kan die på de
Ellers kan pattegrisene ikke optage tilstrækkelig råmæll
af dehydrering, sult eller infektion

2.4. Kan soen tildeles redebygningsmateriale p
Ellers kan soen ikke redebygge, og det kan øge antal d

2.5. Kan redebygningsmateriale fastholdes – er
rækkevidde, så soen har adgang til det kon
Ellers kan soen ikke redebygge, og det kan øge antal d

3. Pattegrise

3.1. Bliver pattegrisene fa
Ellers er der øget risiko for, at pa

3.2. Er der 1,4-1,5 m² fas
gulv – også når de e
Der er dels lovkrav om, at alle pa
mindst er det vigtigt for at reduce
kan dø af kulde

3.3. Er der 1,6-1,7 m² fas
gulv – også når de e
Med stigende kuldstørrelse og pa
grise i stien, da der ellers skal væ
ammesøer.

3.4. Er der plads til patteg
er der 125 cm – så s
plads til, at en patteg
Det er en forudsætning for en høj
sene har nem adgang til soens y

3.5. Når soen lægger sig
For at reducere risiko for [illegible]
som soen skal bruge

3.6. Når soen lægger sig
Med stigende kuldstørrelse og pa
grise i stien, da der ellers skal væ
ammesøer.

3.7. Er der et område, hv
soen kan nå det?
Med stigende kuldstørrelse og pa
grise i stien, da der ellers skal væ
ammesøer. En forudsætning for

3.8. Er der et område me
gelse?
Der er lovkrav om, at alle pattegr

I alt: So i boks

4. Personale	**Ja**	**Nej**
4.1. Er det let at holde stien ren? *Hvis der er delvist fast gulv – kan det fx skrabes fra gangen?*		
4.2. Er det let at 'fange' en pattegris og komme rundt om soen for at få fat i grise, når *soen er i boks*? *Det er vigtigt, at der ikke er steder, hvor grisen kan gemme sig, eller inventar, som skal åbnes/lukkes for at komme rundt i stien, når personalet fx samler pattegrisene i hule ved kastration og andre rutiner.*		
4.3. Er det let at 'fange' en pattegris – og komme rundt om soen for at få fat i grise, når *soen er løs*? *Det er vigtigt, at der ikke er steder, hvor grisen kan gemme sig, eller inventar, som skal åbnes/lukkes for at komme rundt i stien, når personalet fx samler pattegrisene i hule ved kastration og andre rutiner.*		
4.4. Er det nemt at tilse og tømme krybben uden at gå ind i soens område? *For blandt andet at spare tid og reducere risiko for spredning af smitte er det en fordel, hvis krybben kan tilses fra gangen eller i det mindste tilses og tømmes uden at gå ind i soens område. Derved undgås det at bruge tid på at åbne og lukke låger mm.*		
4.5. Kan foder justeres fra gangen? *For blandt andet at spare tid og reducere risiko for spredning af smitte er det en fordel, hvis foder kan justeres fra gangen*		
4.6. Hvor let er det at sætte soen i boks? *Da de fleste/alle søer sættes i boks, er det vigtigt, at det er nemt at gøre (uden tunge løft og, at inventardele, som skal bruges, er ved hånden)*		
4.7. Er personalet beskyttet/adskilt fra soen, når soen sættes i boks? *Kan fx farevingen kan bruges som beskyttelse for personalet – dvs., at vingen er mellem personale og so, når soen sættes i boks*		
I alt: Personale		

5. Miljø	**Ja**	**Nej**
5.1. Begrænser det faste gulv gylleoverfladen? *Farestier til løse søer er større end kassestier og har dermed alt andet lige en større gylleoverflade per so, hvilket øger ammoniak-emission, medmindre, at der er delvist fast gulv i farestien og deraf følgende reduceret kumme og gylleoverflade.*		
5.2. Er der risiko for gødning på det faste gulv? *I stier med delvist fast gulv er det vigtigt for at sikre lave emissioner, at det faste gulv er rent og tørt. Derfor er dimensioner på og placering af spaltegulvsområde*		
I alt: Miljø		

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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?

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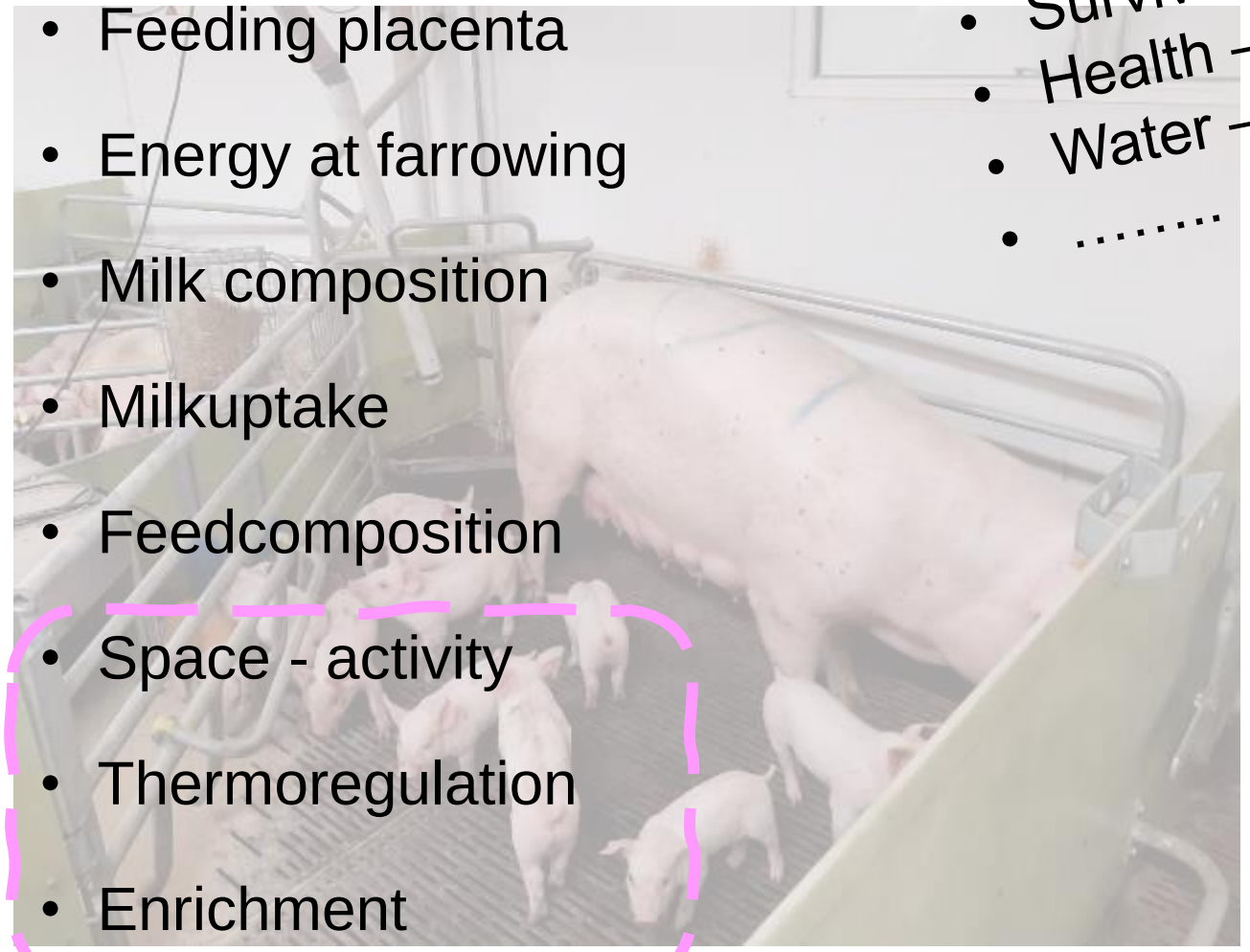
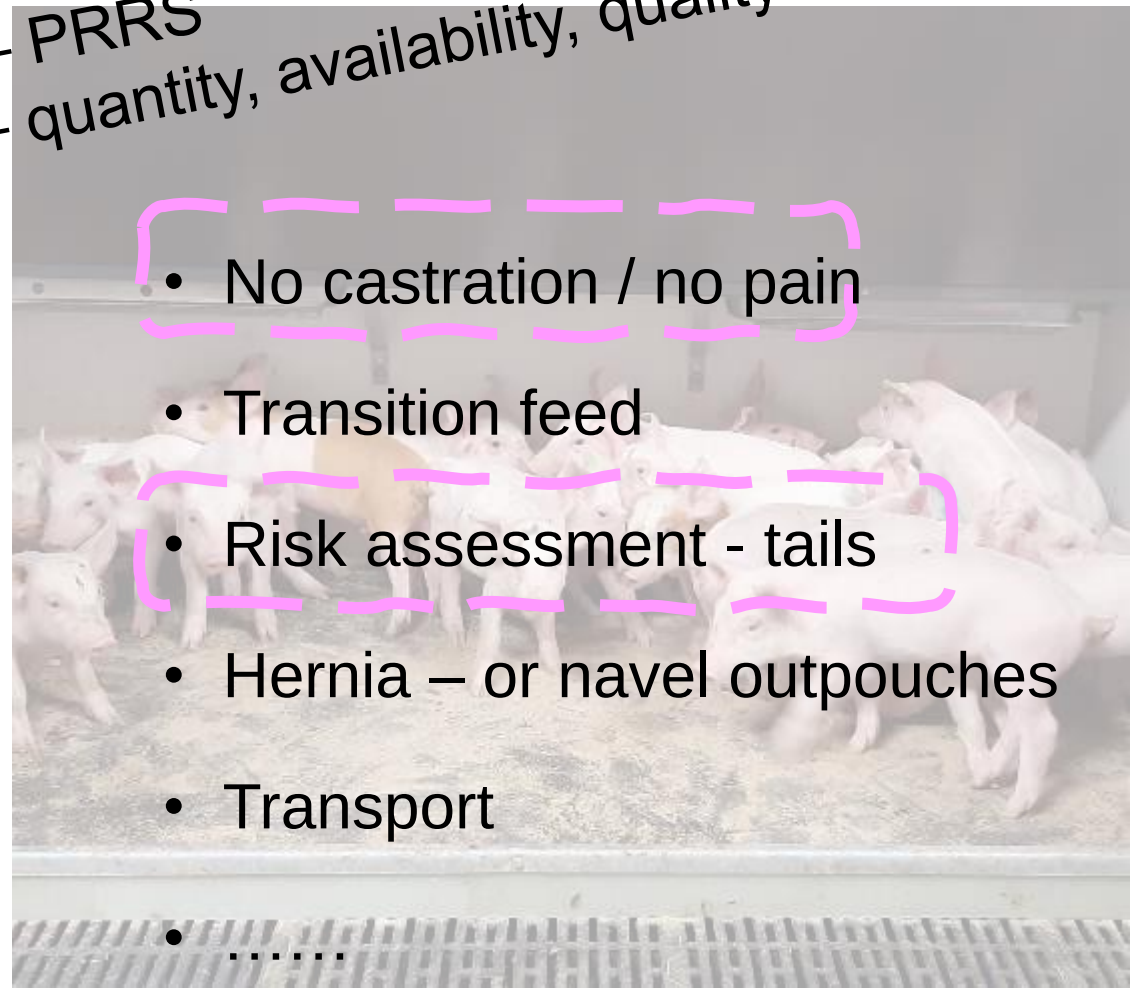
SEGES Innovation – PIG – we continue in 2024 and …..

- 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
- ……

HORIZON-CL6-2023-GOVERNANCE-01 - WelFarmers

- Evaluation summary report: 15/15
- 18 partnere
- Eight countries
  - Portugal, Spain, Italy, France, Rumania, Ireland, Finland, Denmark
- Four innovation themes
  - WP2 – Loose lactating sows(SEGES Innovation WP-leader)
  - WP3 – Entire males/no pain castration
  - WP4 – Pigs with non-docked tails
  - WP5 – Space and flooring (solid/drained floor) – weaners and growers

Spanish partners
- Association-National De Productores de Ganado Porcino (ANPROGAPOR)
- Universidad De Murcia
- 333 Corporate 1998

SEGES INNOVATION

HORIZON-CL6-2023-GOVERNANCE-01 - WelFarmers

- ***first*** **step**
  - 8 RNs composed by pig farmers and their associations, actors and …
  - 4 European TGs
- ***second*** **step**
  - collecting, discussing, and prioritizing the most urgent innovation needs and solutions for pig farmers in relation to the four innovation themes from the pig farmers' organizations partners
- ***third*** **step**
  - collecting the most up-to-date data and detailed good practices, innovations, and tools, applied in real farms, in collaboration between the farmers' organizations and research institutions
- ***fourth*** **step**
  - analyze, evaluate, select and validating the best of the good practices, including innovations and tools, collected in the third step.
- ***fifth*** **step**
  - establishing an exchange platform (i.e. Pig Welfare Knowledge Hub) on those welfare issues, practices, and tools and to disseminate practical advising and references to farmers

SEGES INNOVATION

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
- ……


Questions

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