How the transition to free farrowing systems might work

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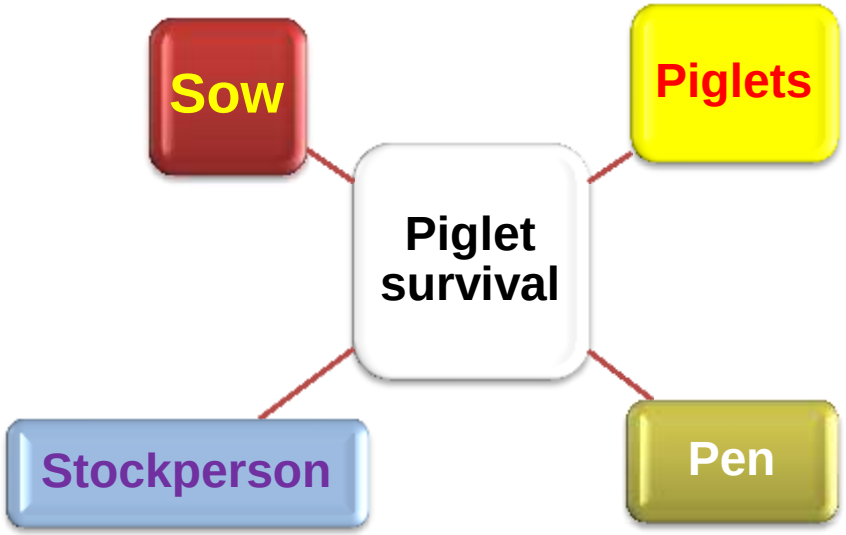
Free Farrowing Workshop Vienna 2011

- 32 experts from CH, CZ, DE, DK, NL, NO, SE, UK, AT
  - Discussed options, obstacles and questions regarding free farrowing systems
  - Piglet survival as key factor



Background

Crates predominant farrowing environment

- reduction of investment and labour costs
- acceptable piglet mortality although litter size increased
- robust to different staff, management and breeds

→ supported industrialisation of piglet production

Why free farrowing ?

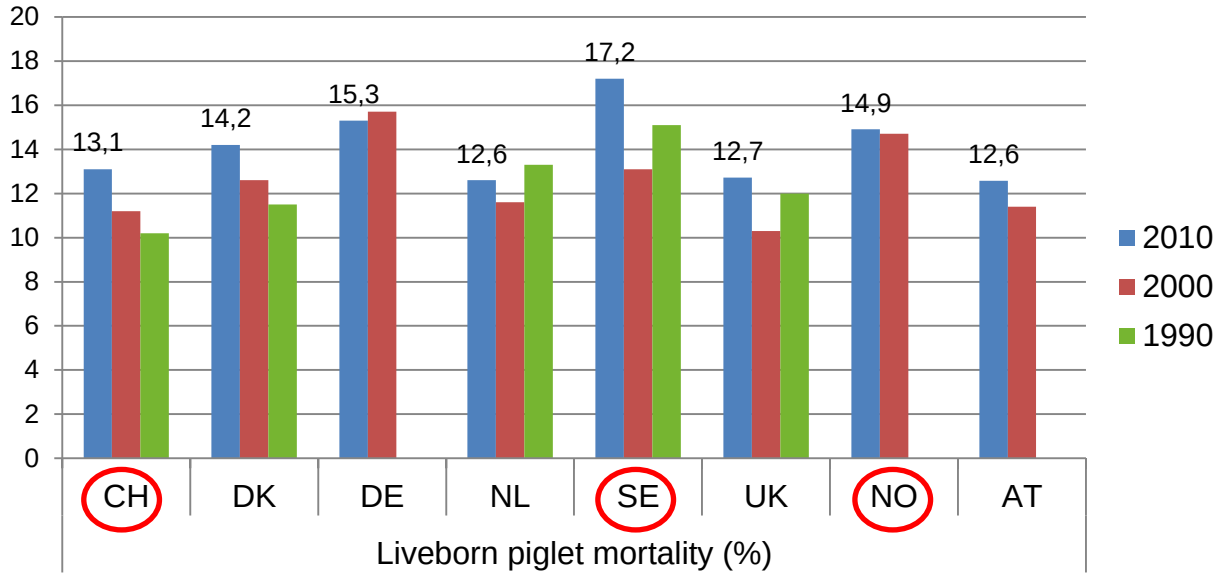
- Farrowing crate is a welfare issue for the sow
  - Restriction in movement
  - Restriction in nest building, eliminative behaviour, thermoregulation and contact to offspring
  - Higher risk for shoulder ulcers, teat lesions
    Verhovsek (2005), Baumgartner (2009), Bonde (2009)
- Piglet mortality remains a welfare & economic concern
  - Higher prevalence of piglet crushing
  - Challenges will increase with greater prolificacy of sows
- There is growing evidence that non-crate farrowing systems can deliver acceptable piglet survival whilst improving sow welfare (Spoolder et al. 2011)

Mortality: Free farrowing pen vs. crate

	Weber et al. (2007)	Pen size (m^2)	Losses	
			total	crushed
≤ 5 m^2	Blackshaw et al. (1994)	3.9	↗↗	↗↗
	Mardarowicz (2000)	4.4	→	no info
	Haus Düsse (1995-96)	4.6 4.4	↗ ↗	↗ ↗
	Kamphues (2004)	5.0	↗	↗
> 5 m^2	Stabenow (2001)	6.0	→	→
	Fritsche and Kempkens (1999)	6.5	↘	no info
	Arkenau et al. (1999)	7.0	→	↗
	Hessel et al. (2000)	7.0	→	↗
	Schmid and Weber (1992)	7.0	→	↗
	Weber and Schick (1996)	7.3 7.0	→ →	↗ ↗
	Cronin et al. (2000)	7.2	→	no info
	Anonymous (1999)	7.6 7.8	↘ → (↘)	no info
	Hofstetter (1998)	5.3 - 8.1	→ - ↗	↗
	Steiner (2001)	>6.5	↗	↗
	Weber et al. (2007) 482 / 173 farms	**5.1 - 12.2**	→	↗

↗ = increased / → = unchanged / ↘ = decreased in free farrowing

Liveborn piglet mortality



Range from 12,6 – 17,2

Legislation in Europe

- EU
  - Farrowing crate allowed (2008/120/EC)
  - Organic farming: Farrowing pen (7.5 m²) + outdoor run (2.5 m²) (EG 889/2008)
- CH, NOR, SE
  - Ban of farrowing crate, permission in exceptional cases (lameness, aggression)
- DK, NL, UK
  - market driven/voluntary development towards free farrowing

- Austria (1. THVO; since 03/2012)
  - As of 2033: Farrowing pen of ≥5.5 m² which allow sows to move around
  - Crating of sows during “critical period of piglets” allowed

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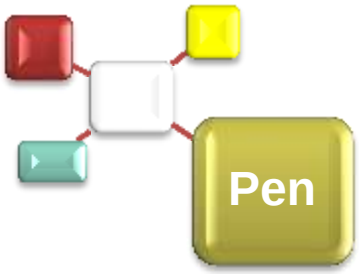
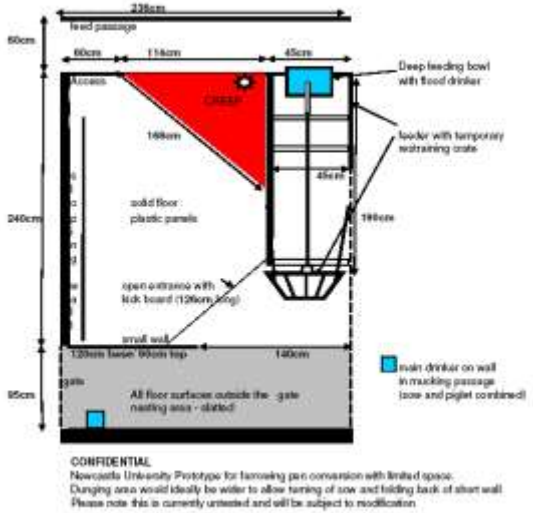
What makes a good farrowing pen?



- Good scientific agreement on the principles that make free farrowing systems work (see Baxter et al. 2011)
  - Adequate space (>7.0 m²) and dimensions
  - Functional areas (nest / dunging / creep)
  - Solid floor and sloping walls
  - Nesting material prefarrowing
  - Suitable climate



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- However, the robustness of systems has to be demonstrated in large scale studies (FFWV_2011)

Free farrowing pen - simple

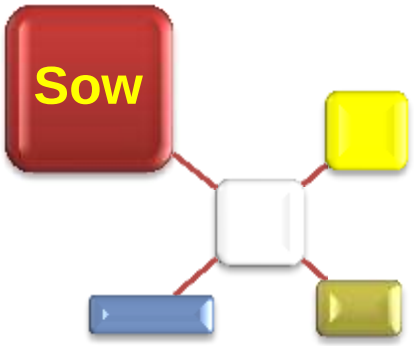
Free farrowing pen - designed

Pen with temporary crating

- Temporary crating may be an intermediate step towards free farrowing
  - Fixation of sow for 3-4 days after farrowing (Moustsen et al., 2012)

Pen with outdoor run

What makes a good mother?



Direct maternal effects

- Placental efficiency
- Udder quality (milk yield, number & accessability of teats) Visdal & Andersen, 2011
- Mobility, ‘fundament’
- Fitness, longevity
- …

Good maternal behaviour

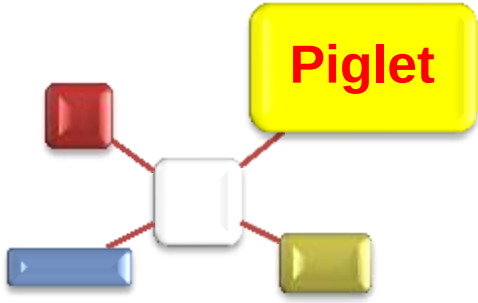
- Social competence and stress restistence Spoolder et al., 2012
- Adequate nest building activity Wechsler & Weber, 2007
- Lateral lying without posture changes during parturition Baxter *et al*., 2011
- Careful when lying down and changing lying posture Damm *et al*., 2005
- No fearfulness related to offspring (no savaging)
- Responsiveness to screams during crushing Illmann *et al*., 2007
- Passivity to a stockperson

Different sows for different farrowing systems?

Probably yes!

- Heritability for behavioural traits is low
  0.03 to 0.06 for crushing (Grandinson et al., 2002; Gäde et al., 2008)
- Farrowing crate ‘masks’ mothering ability
  more natural environment would makes ‘bad’ mothers more visible
- Estimation of genetic parameters under conditions
  in which animals will be kept (Roehe et al. 2009)
- Available data set is limited and data quality is expected to be poor

What makes a vital piglet / litter?



- ‘Optimal’ birth weight
- Low within litter birth weight variabilty
- High thermoregulative capacity
- Short time to suckle after birth
- High attendiveness to sow behaviour

Piglet survival factors
(Baxter et al.)

Survives Vs. Dies pre-weaning

Physiology

Higher Birth Weight (1520g)	Lower Birth Weight (1289g)	***
Higher 24h Weight (1628g)	Lower 24h Weight (1326g)	***
Higher Birth Temp (37.74ºC)	Lower Birth Temp (37.13 ºC)	***
Higher 2h Temp (38.00ºC)	Lower 2h Temp (37.57 ºC)	**
Higher 24h Temp (38.55ºC)	Lower 24h Temp (37.56 ºC)	***

Behaviour

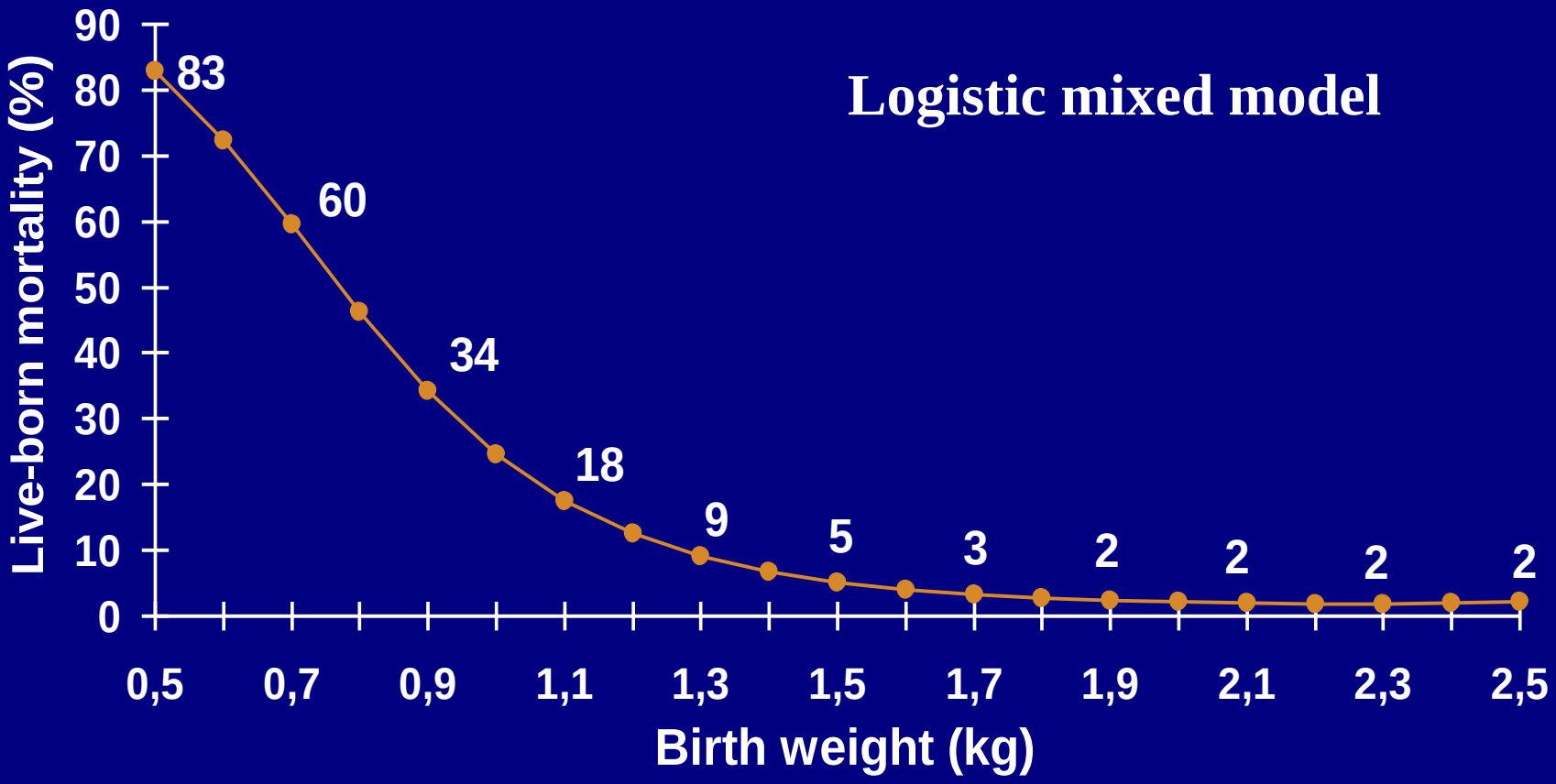
Quicker to udder (17mins)	Slower to udder (25mins)	*
Quicker to teat (24mins)	Slower to teat (38mins)	***
Quicker to suckle (33mins)	Slower to suckle (51mins)	***

Vigour

Higher vitality score (2.28)	*Lower vitality score (1.77)*	*
Higher rooting response (1.42m)	*Lower rooting response (0.47m)*	***

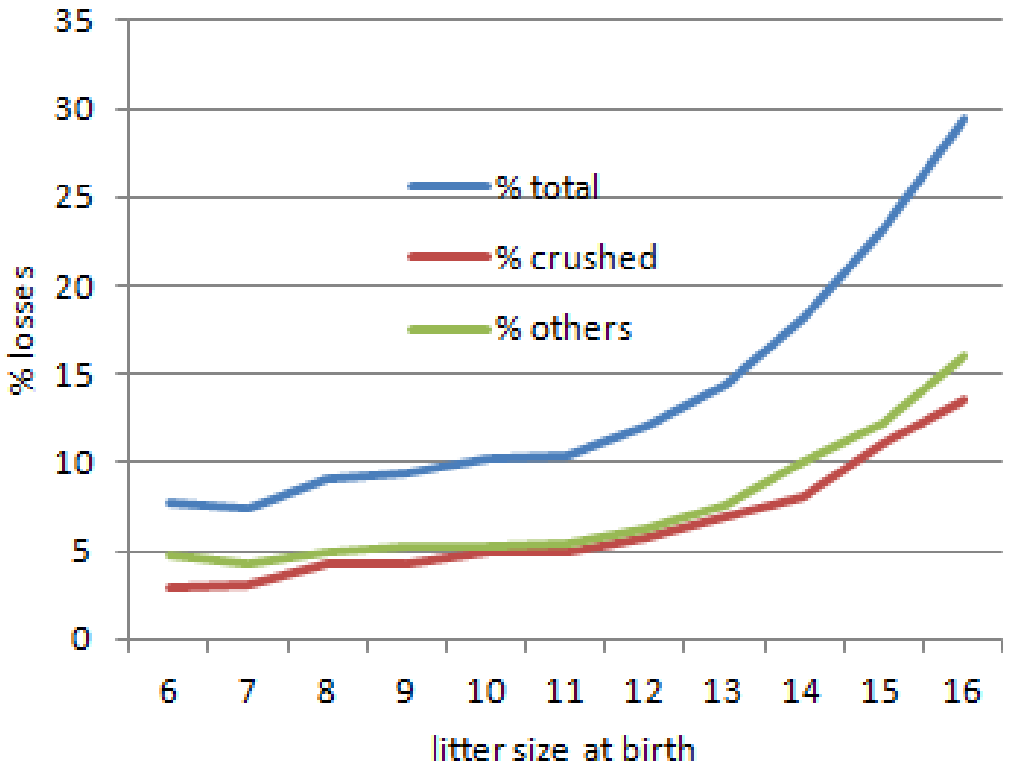
From Edwards, 2011

Risk of live-born mortality of piglets associated with birth weight



(Roehe & Kalm 2000)

Litter size and mortality



Weber et al., 2009

Large litters pose a major welfare problem and the welfare implications for both sow and piglets of strategies to manage these by differential weaning and fostering need to be evaluated (Spoolder et al., 2011)

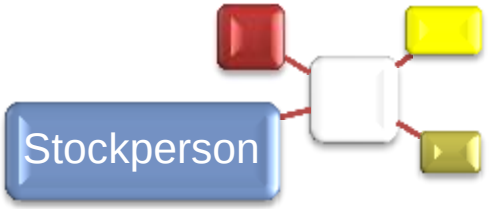
Different piglets for different farrowing systems?

Probably not !

- Determinants of survival not significantly different
  - Outdoor vs. indoor pen (Baxter et al., 2011)
  - Indoor pen vs. crate (Pedersen et al., 2011)

- Large litters more challenging in free farrowing systems compared to crates
  - Litter size negatively correlated with piglet survival traits
  - Litter quality instead of litter size as selection criteria (Brandt et al. 2012)
  - Piglets weaned per sow and year in breeding index ? (Knapp, 2011)

The human factor



- Most important factor !
- Empathy, knowledge, technical abilities (von Borell, 2012)
- Creative, innovative, motivated to work with animals (Spoolder, 2012)
- Change has to tackle farmer's attitudes & beliefs before it will take place in practice !
- Management has to be adapted
  - Farrowing, cross fostering

Conclusion

The transition from crates to free farrowing will be an evolutionary process, driven by some degree of ultimate urgency !

- Pen concepts robust ?
- Start selection for mothering abilities under free farrowing condition
- Improve piglet survival instead of further increase in litter size
- Change has to tackle farmer’s attitudes & beliefs before it will take place in practice
- Genetics, housing and management have to be adapted at the same time
- Transition takes time and costs money


Thank you for your attention