

Sow or piglet – who ensures a high milk yield?

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Svineafgiftsfonden



QUIZ

How much milk can a sow potentially produce?

- a) 15 kg a day
- b) 20 kg a day
- c) 25 kg a day



How much milk can a sow potentially produce?

- The best 2% pigs (day 2 to 28)
 - 450 gram daily gain
 - 1.8 kg milk per day
- → 14 pigs x 1.8 kg milk = **25 kg** milk a day
- → **160 kg** on day 28

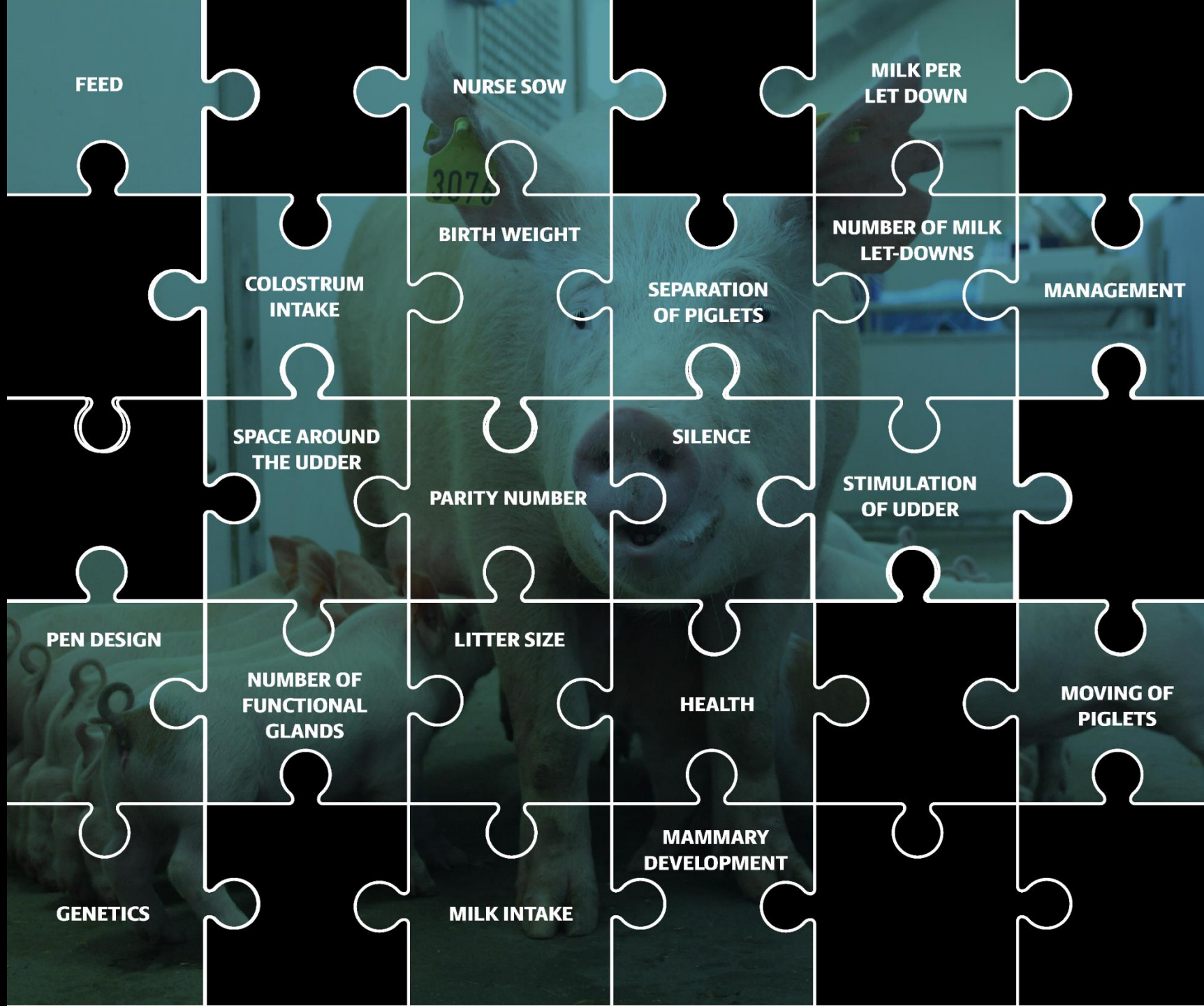
The recipe for a high-producing sow

1. Healthy sows
2. A sow with many functional teats
3. The right conditions (space around the udder)
4. High litter size
5. Large and viable pigs at birth
6. A well-nourished sow in perfect condition

So we get

- Optimal stimulation of the udder
- As many milk letdowns as possible



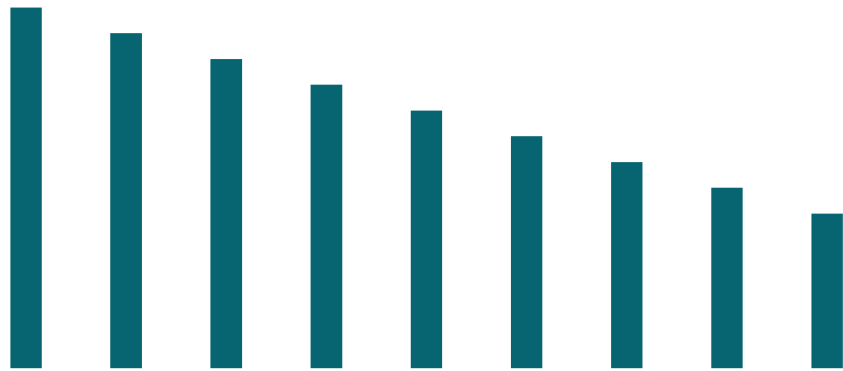


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Sow milk production is controlled by several factors

Potential
(25 kg/day)

Milk yield, kg/day



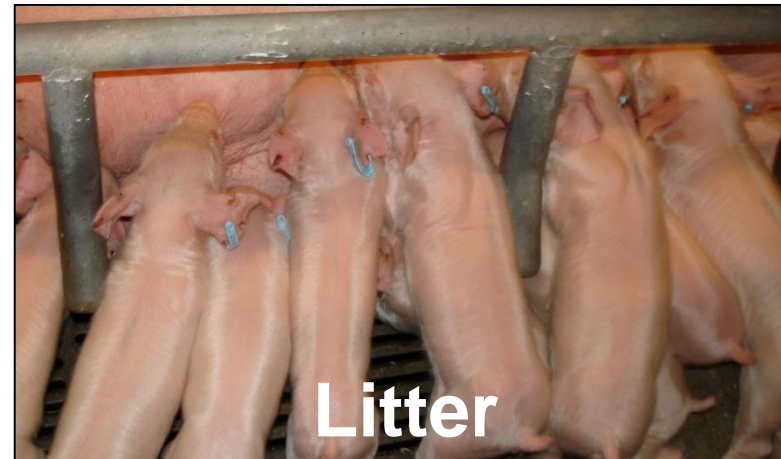
Factors affecting the milk yield



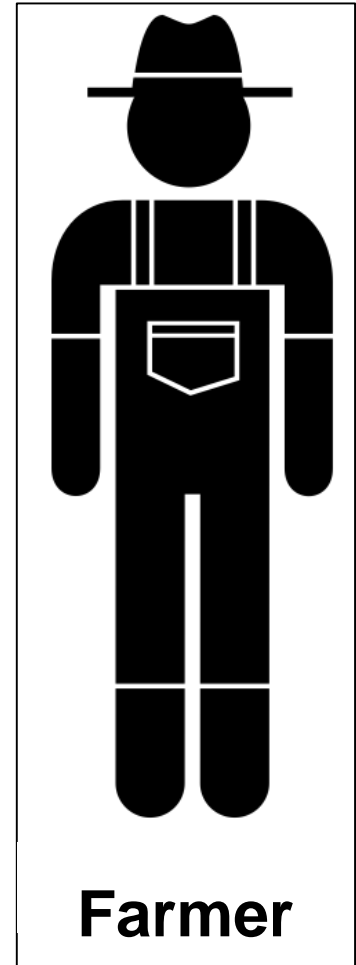
Sow



Pig



Litter

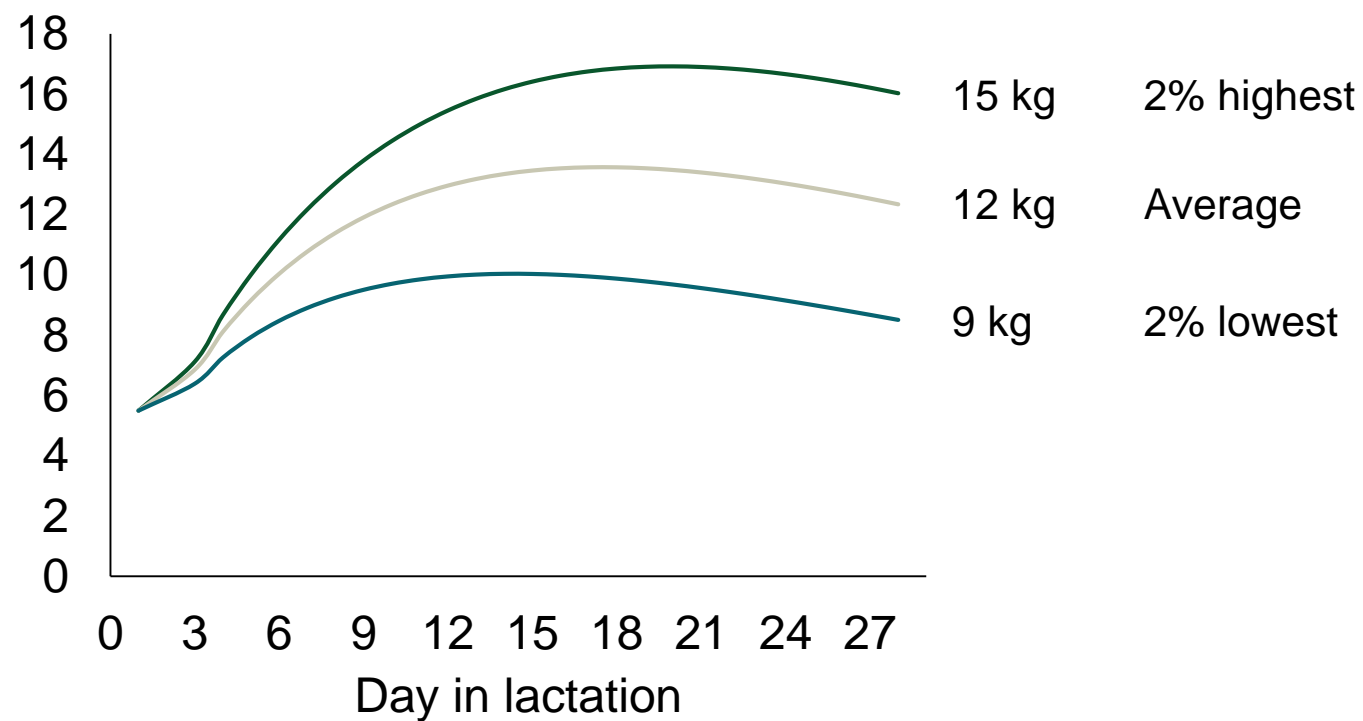


Farmer

Created by Marcelo Novia
and Arloenl Evinniev
from Noun Project

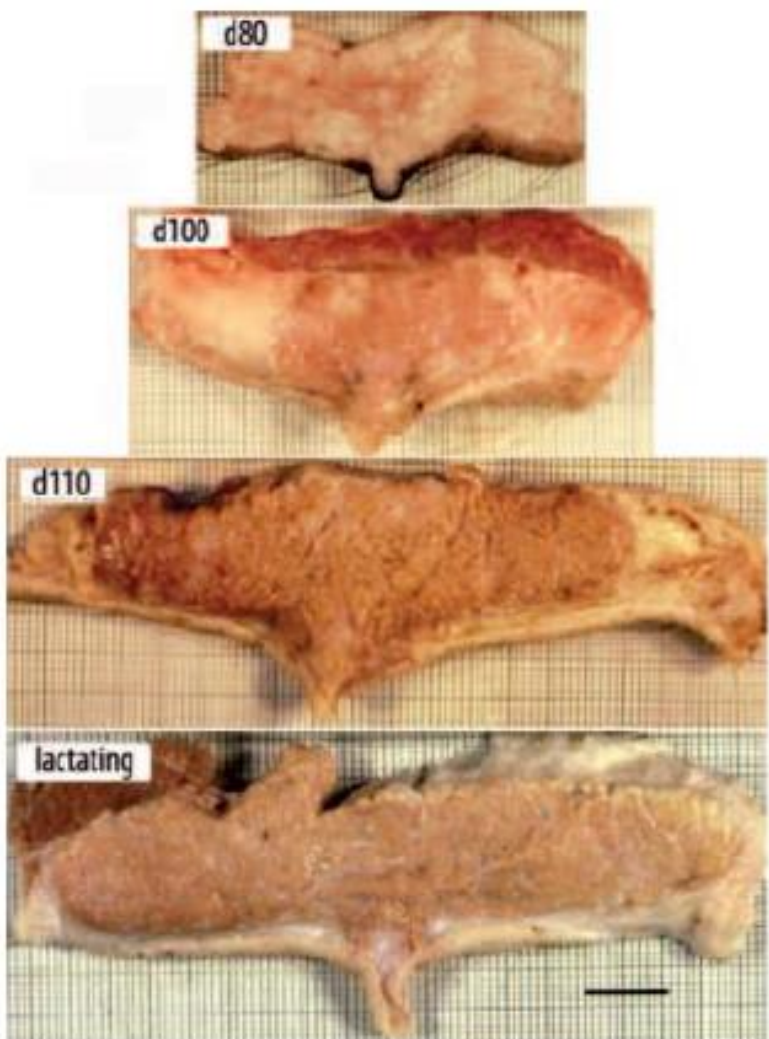
The variation observed in sows' milk yield is great

Sows' daily milk yield, kg per day



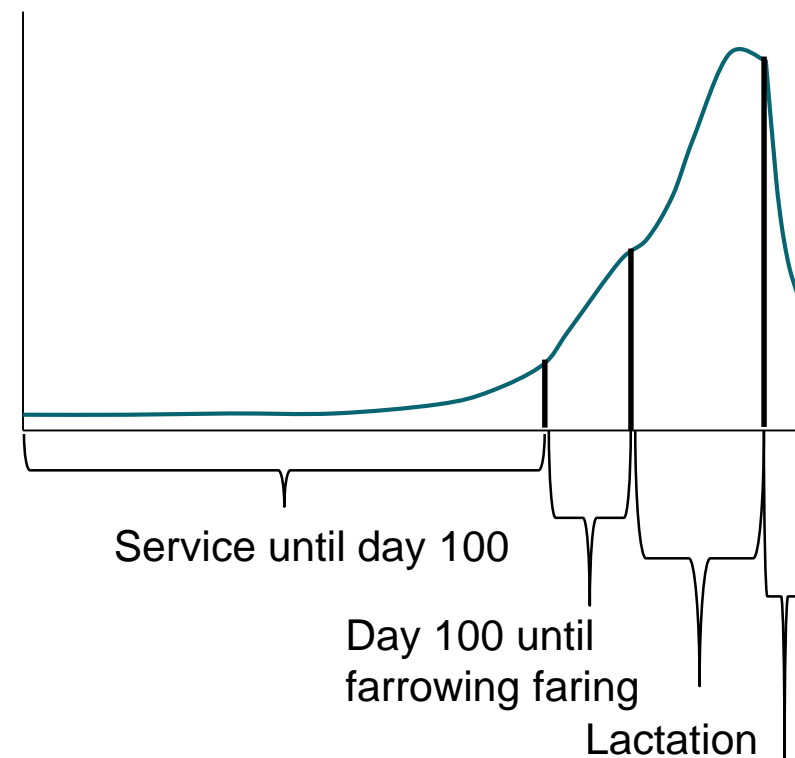
Mammary development during a reproductive cycle

Cross section of a mammary gland



Hurley et al., 1997

Amount of mammary tissue in a cycle



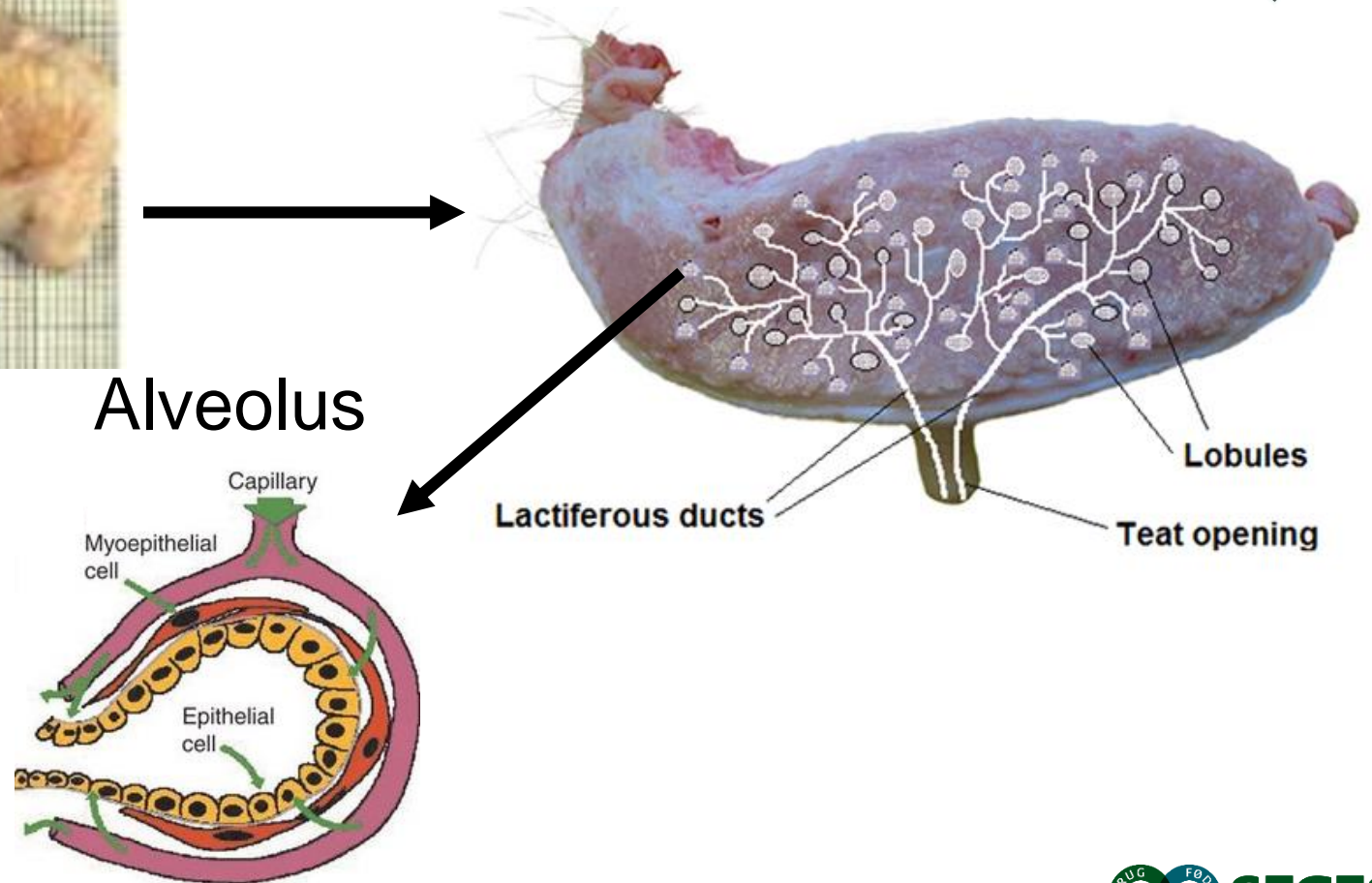
The week after weaning

Modified from:
Nielsen et al., 2002
Kim et al., 1999
Ford et al., 2004



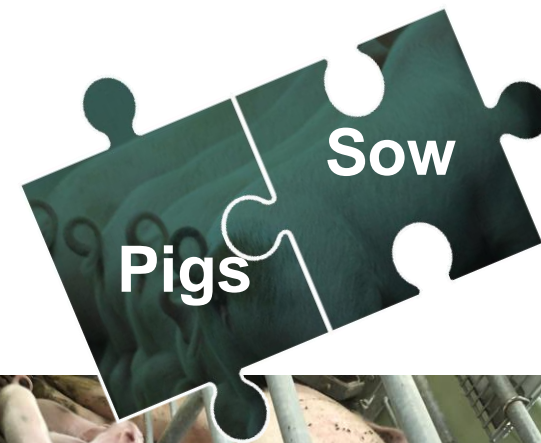
Mammary gland structure

Udder development



The sow's role as milk producer

- During parturition → free bar
- After parturition → cyclic milk letdown
- Cooperation between sow and piglets
 - Piglets gather around the udder
 - Udder stimulation
 - Release of oxytocin to blood
 - Sow releases milk
 - Pigs stimulate the udder
- The cyclic milk letdown ensures milk for all pigs



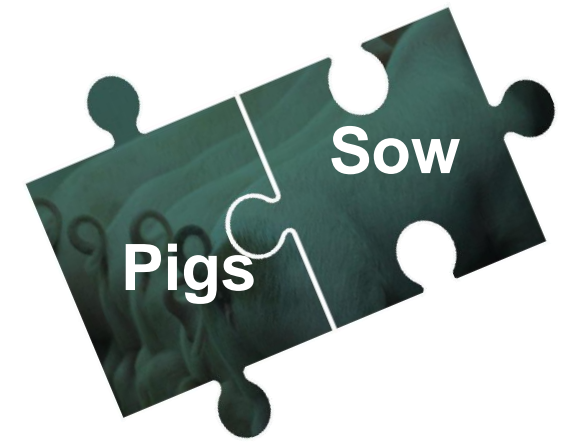
QUIZ

How long does a milk letdown take?

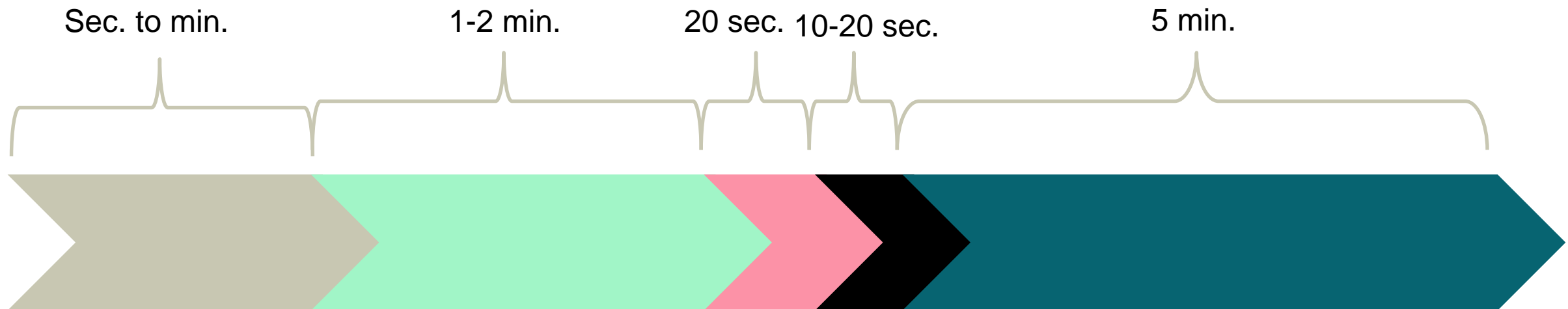
- a) 30-50 sec.
- b) 10-20 sec.
- c) 1-10 sec.



Timeline for successful milk letdown



1. Initiation
2. Pre-massage
3. Ready for milk
4. Milk letdown / suckling
5. Post-massage



How long does a milk letdown take?



13

Piglets function as individual milking machines

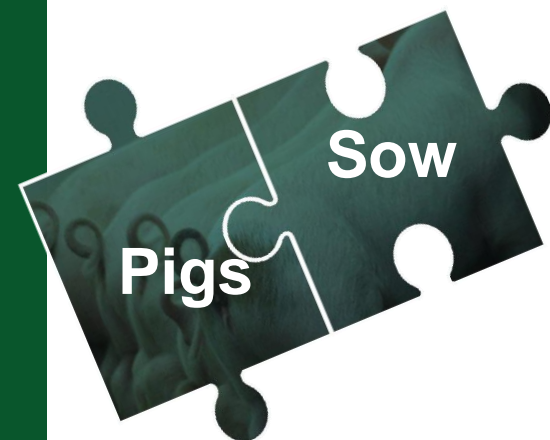
- Calves' milk intake (ad libitum, 42 kg)
- Cows' yield (2 times a day)
- Cows' yield (4 times a day)

8 kg per day

34 kg per day

42 kg per day

+24%



QUIZ

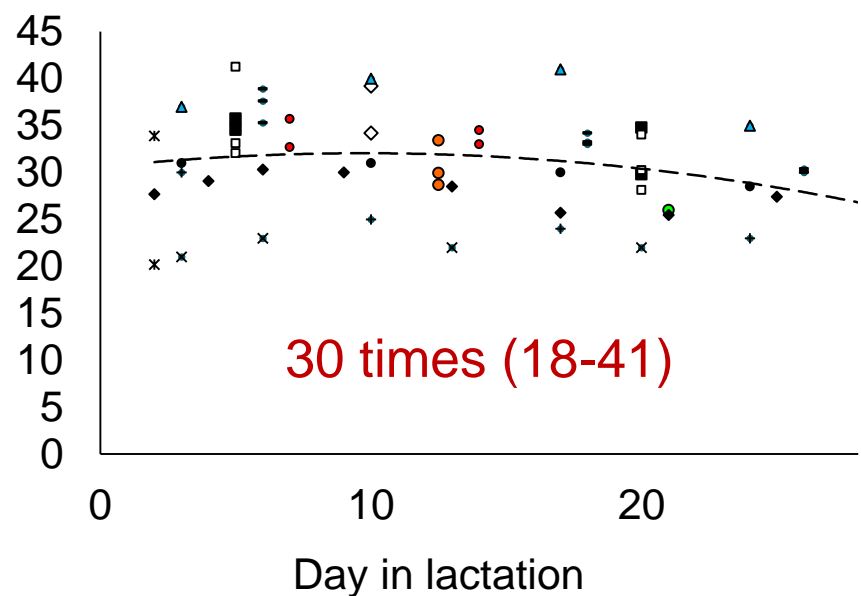
How many times a day do the piglets drink from the sow?

- a) 20 times (1-hour and 12-minutes interval)
- b) 30 times (48-minutes interval)
- c) 40 times (36-minutes interval)

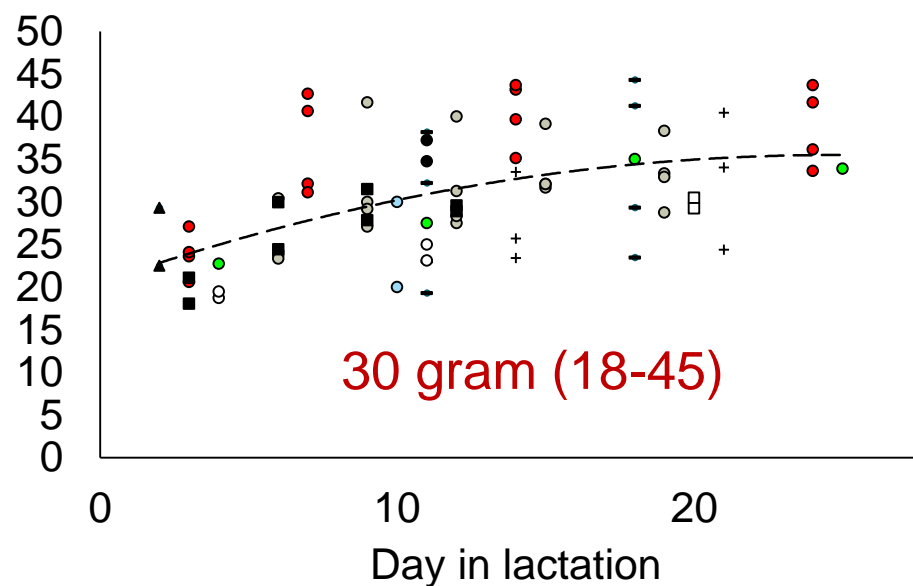


On average, pigs drink 30 gram of milk 30 times a day

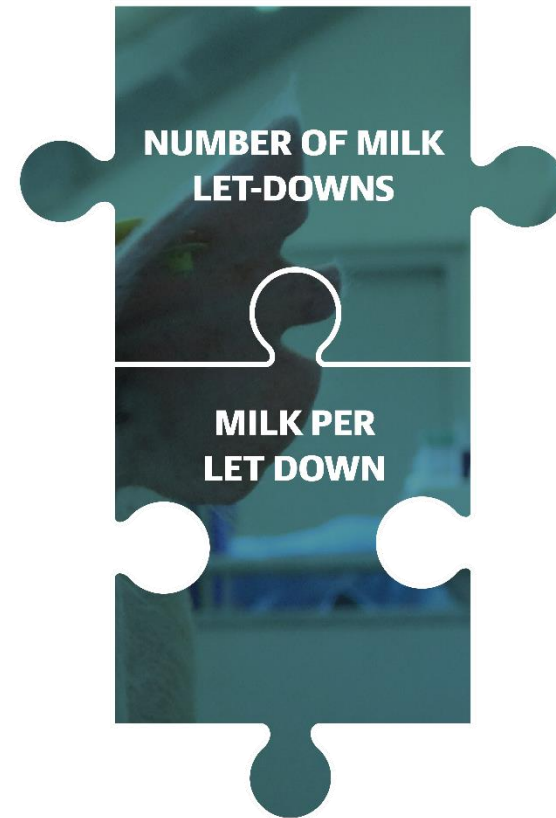
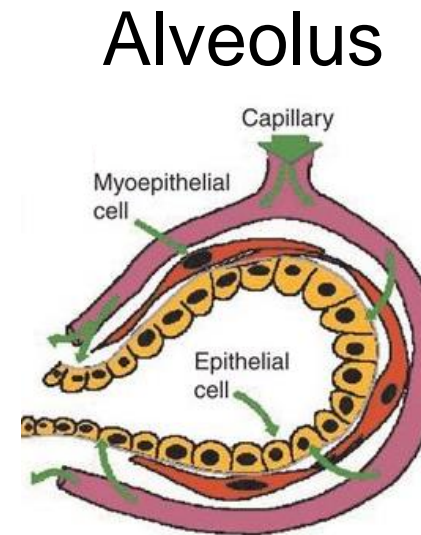
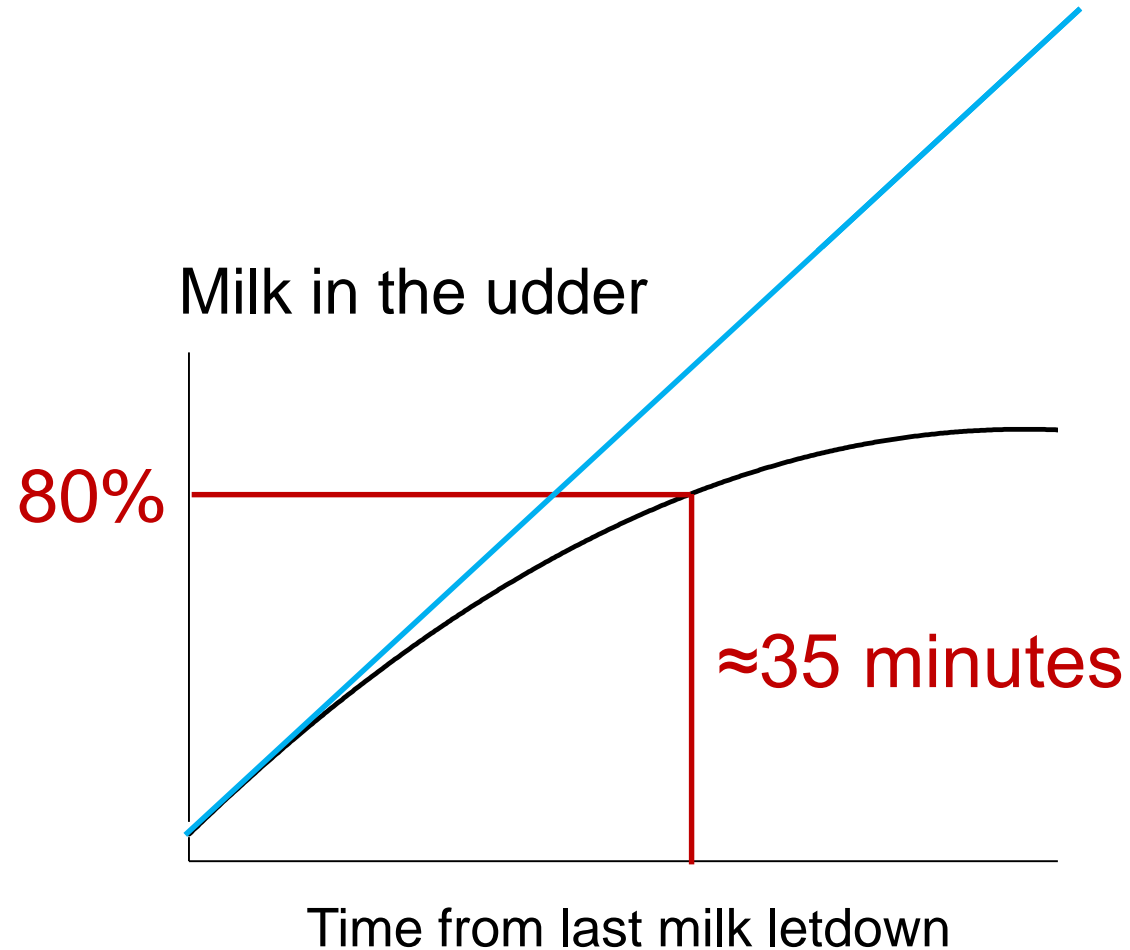
Number of milk letdowns per day



Milk per letdown, gram

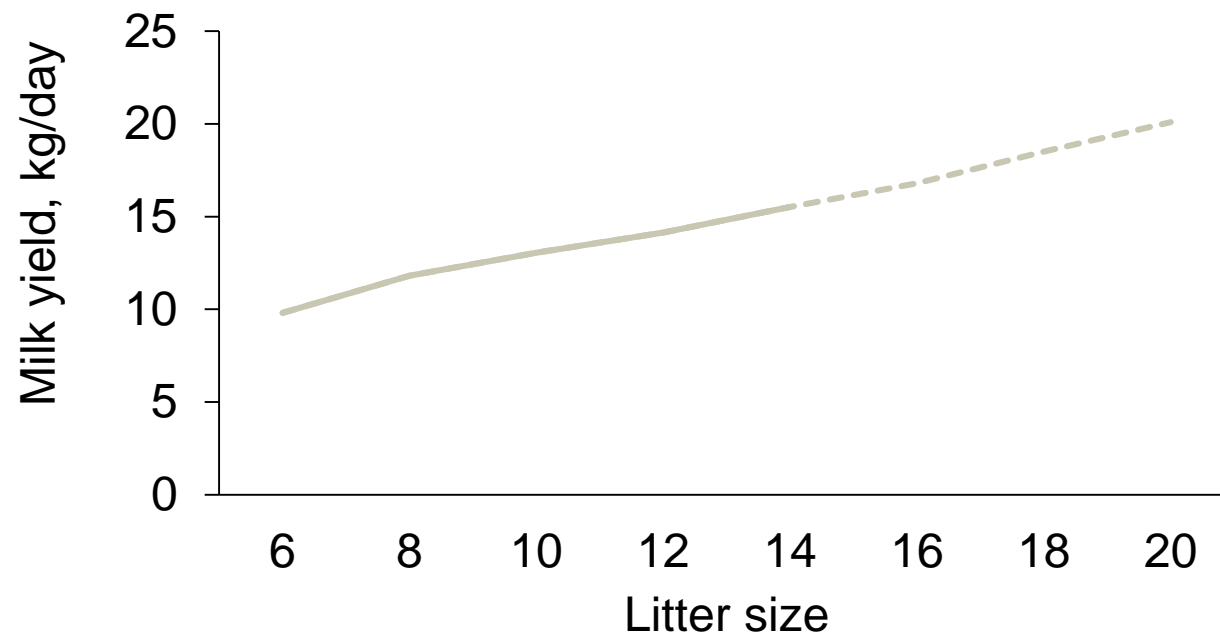


The udder is 80% full after 35 minutes



The most important factor for the milk yield is.....

Number of functional teats and the litter size

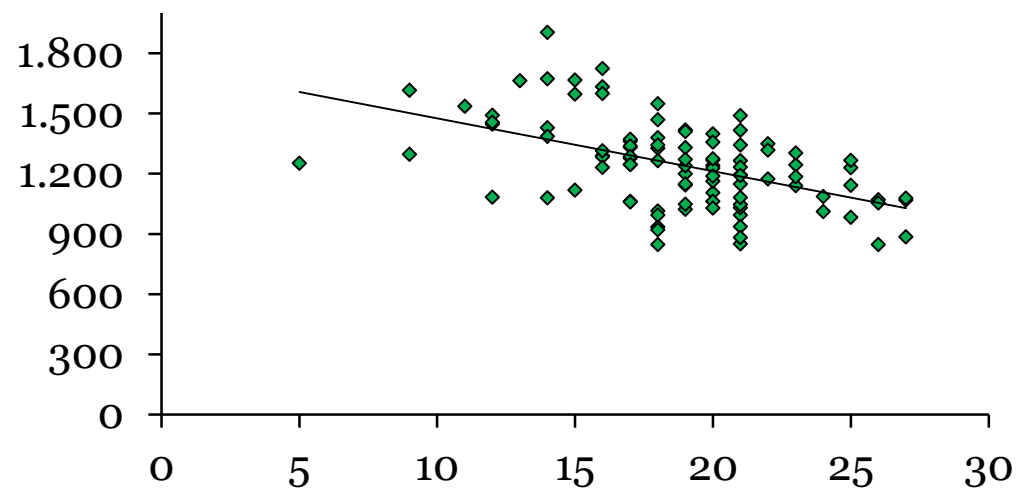


Modified from Auldist et al. 1998



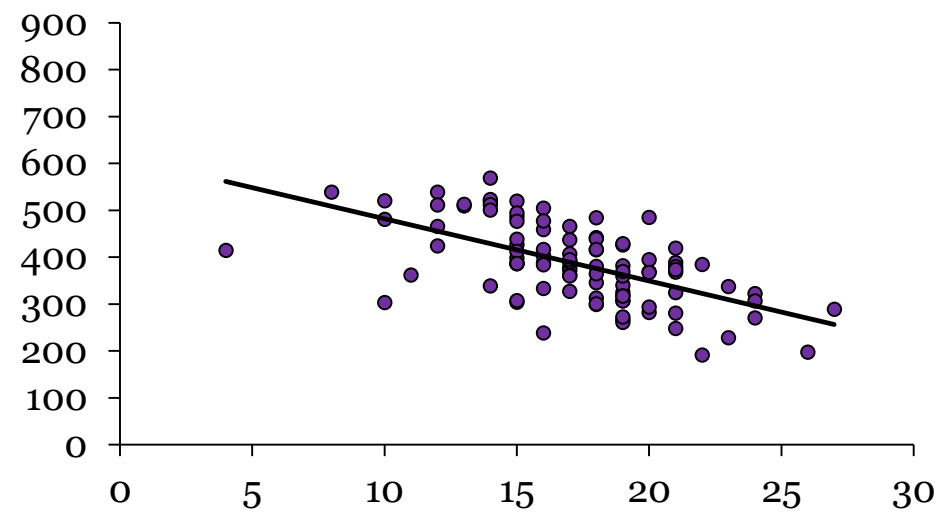
Piglet birth weight and colostrum intake decrease with increasing litter size

Birth weight, gram

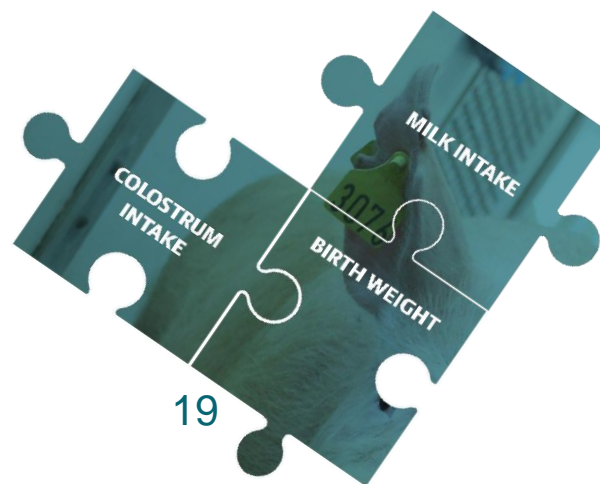


Total born

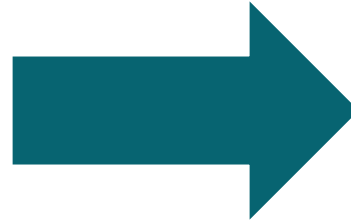
Colostrum intake, gram/pig



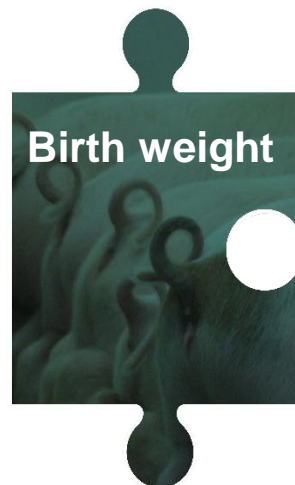
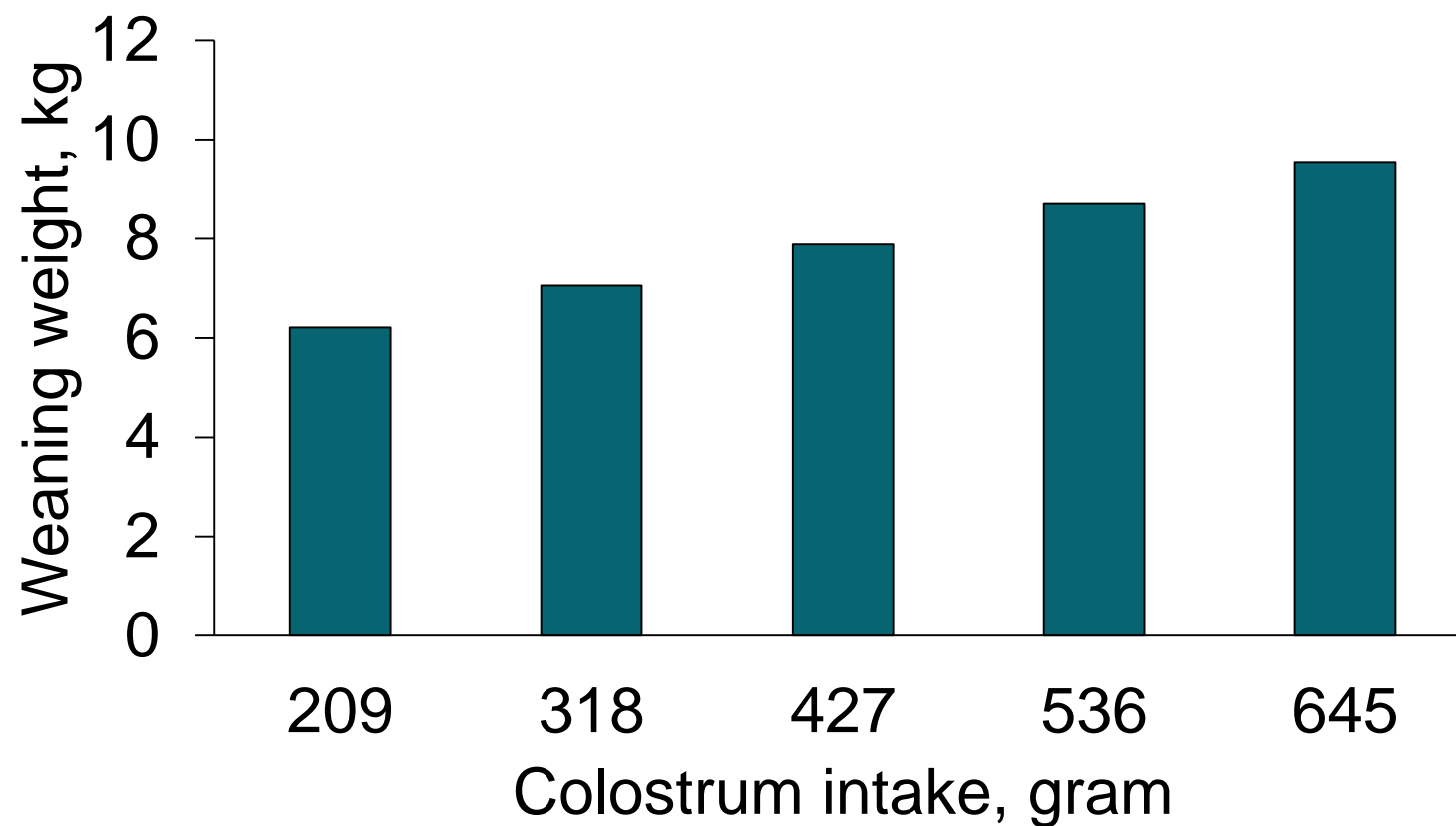
Liveborn



From litter to pig

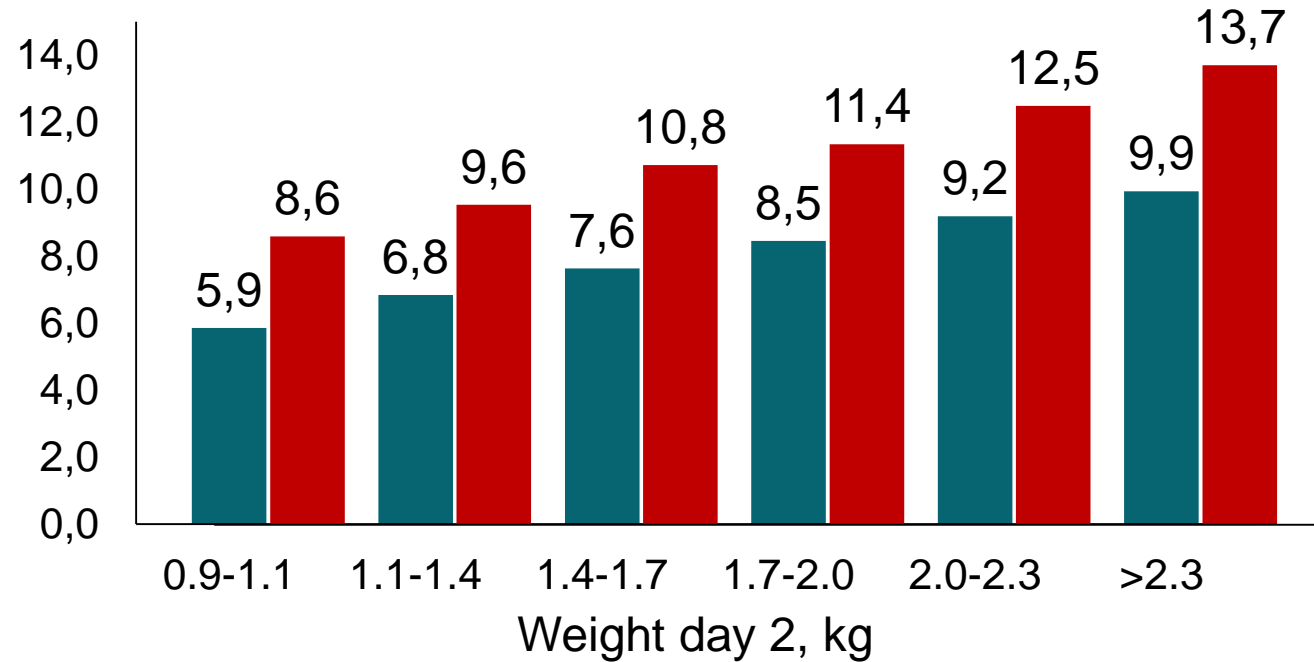


The influence of colostrum intake



Pig size → milk intake → weaning weight

Weight day 28, kg

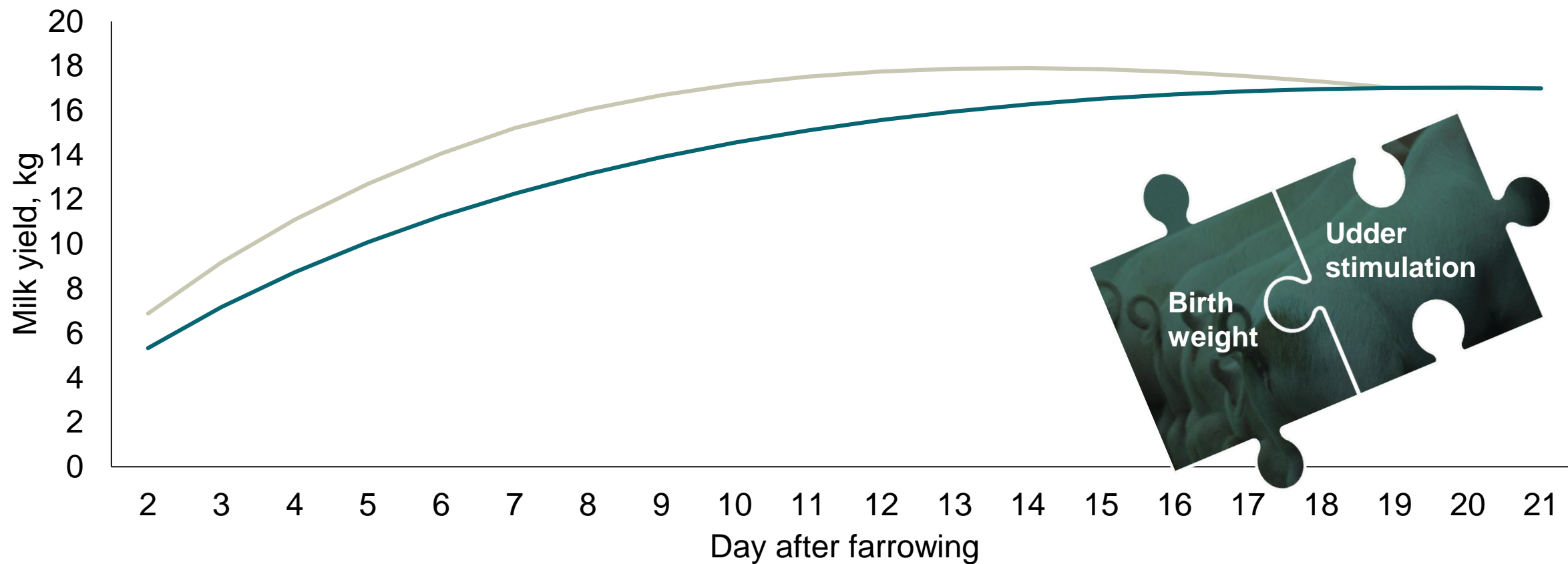


2% fastest growing pigs



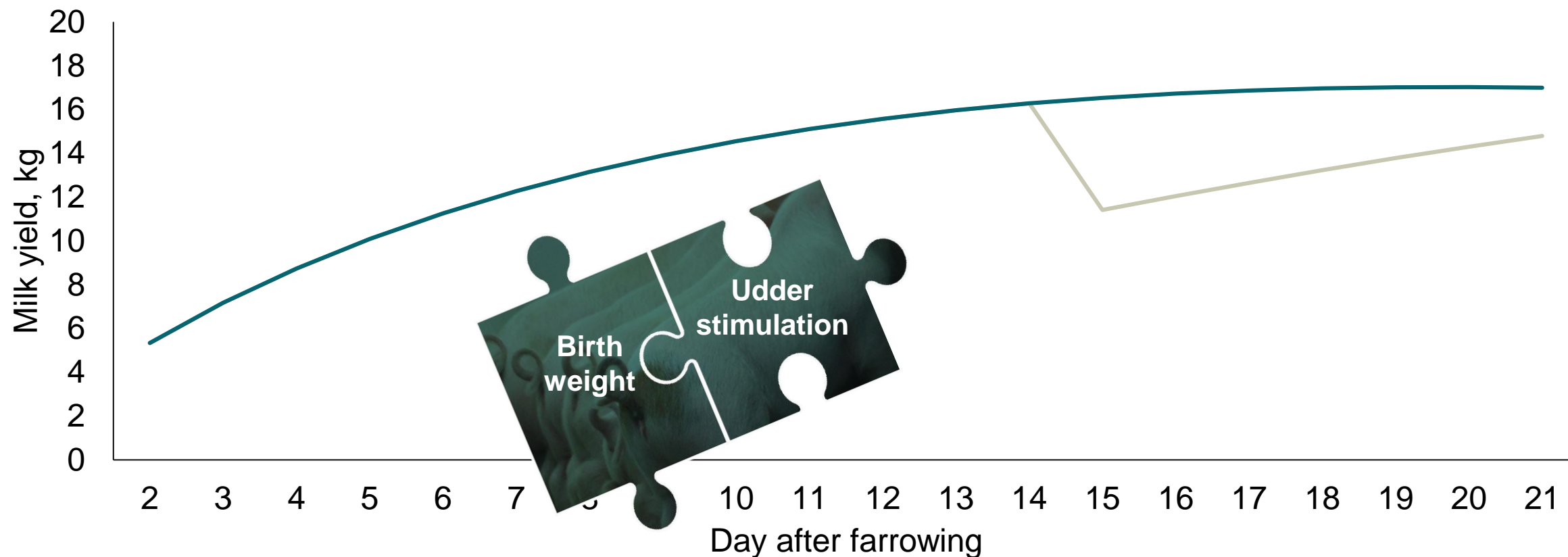
Piglets' size is crucial for milk yield

The milk yield increases by 26% when sows are standardized with big pigs



Milk yield drops when sows are used as nurse sows

The milk yield drops by 22% when sows get newborn pigs after 14 days

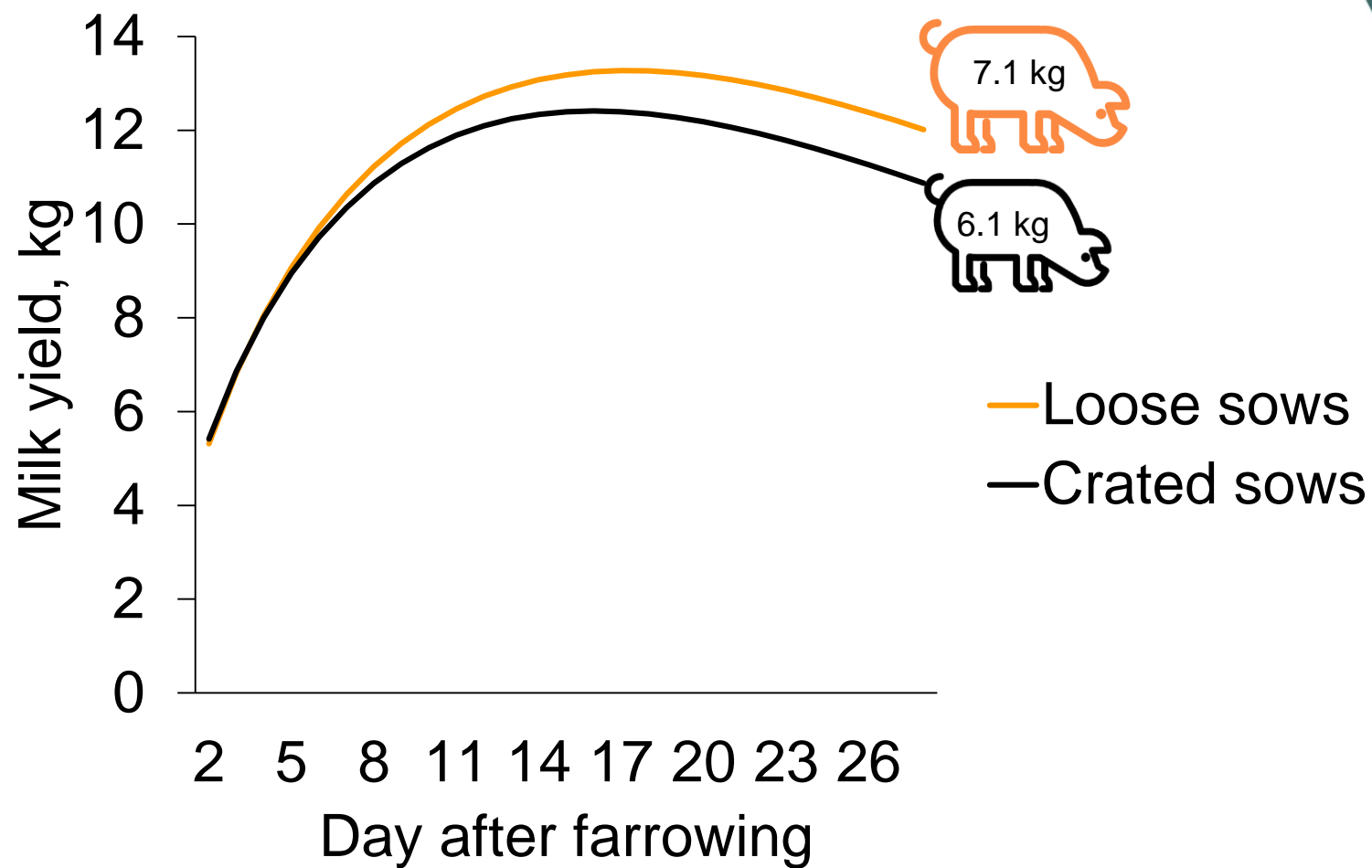


The space around the udder is crucial

- Pen design
- Crates
- Space from sow to wall
- Loose vs. crate

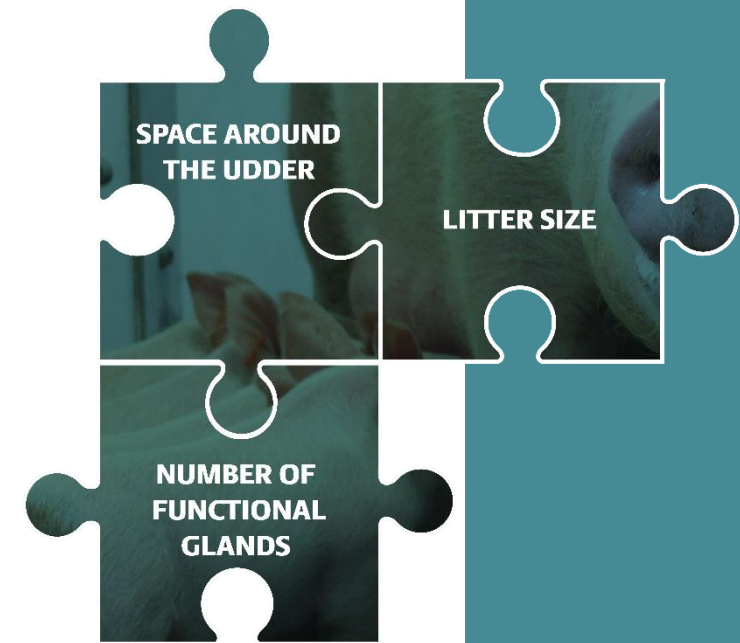


Pigs from loose sows are bigger at weaning



More teats are not enough...

- 50% of sows have 14 teats or more
- 10% of sows have 16 teats
- There is a need for space



Report no. 1113



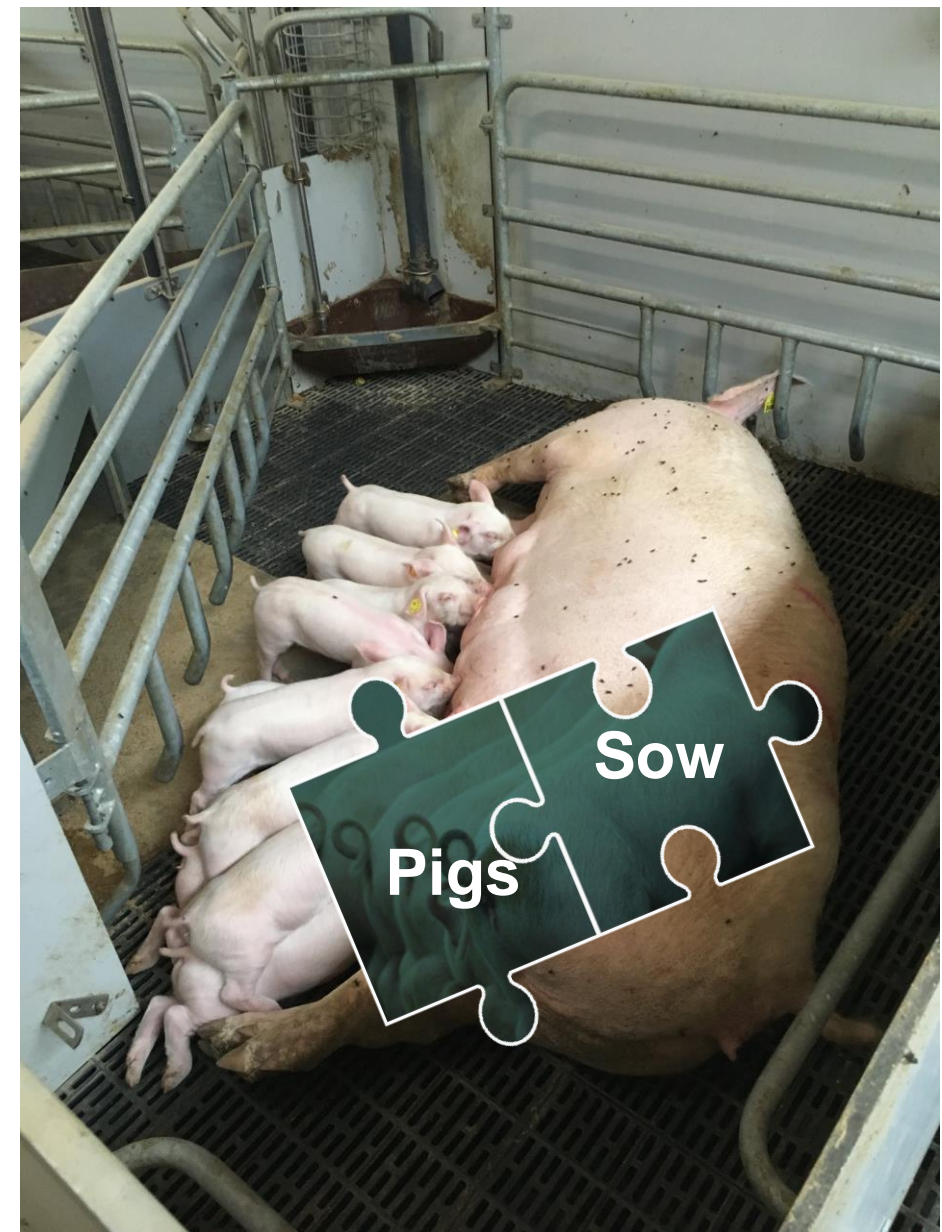
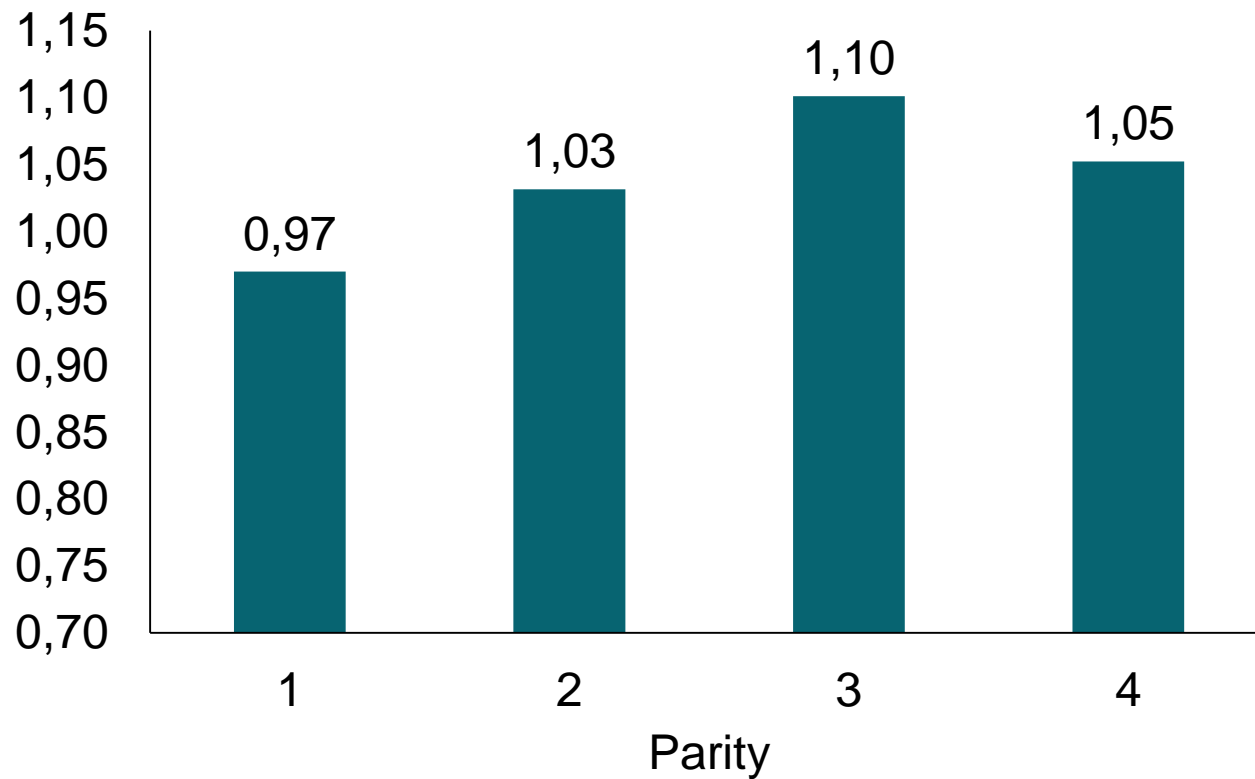
Non-use of teats in 1st lactation will reduce yield in next lactation

- Taped teats in 1st lactation
- Pigs that suckled previously covered teats weighed $\frac{1}{2}$ kg less at weaning
- Flemming Thorup previously found that sows' future performance is not affected by having been unused previously



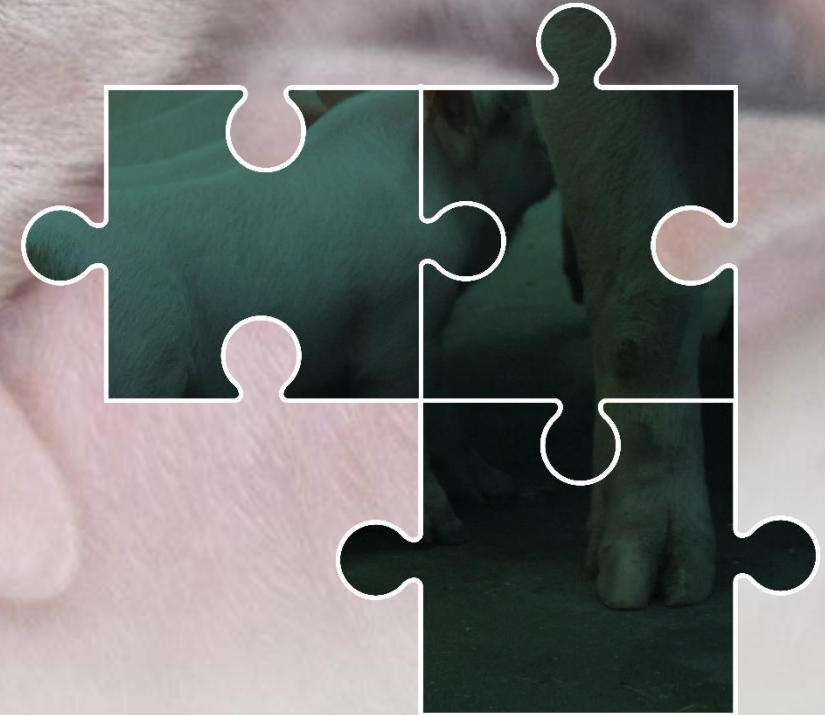
Milk yield according to parity

Milk yield, kg/gland/day



NEW project: All glands produce milk

1. Is the sow to blame when a gland stops producing?
 - Udder development over 4 parities
2. Or is the pig to blame?
3. Is it possible to boost gilts' udder?



Our everyday routines affect the milk yield

- Litter standardization
 - Separation of pigs and sow – lost milk letdown
 - Moving and mixing of pigs
 - New teat order --> lost milk letdown



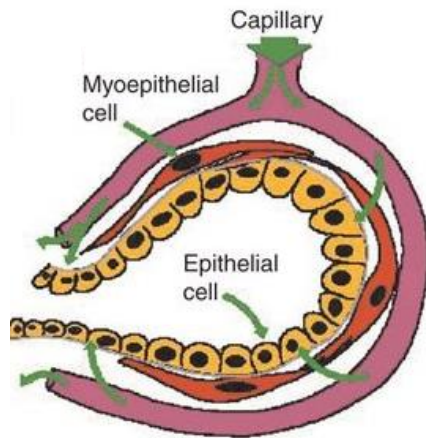
Our everyday routines affect the milk yield

- Moving pigs (later than 2 days after farrowing):
 - New teat order --> lost milk letdown
 - A moved pig weighs 300-900 gram less at weaning
 - Piglets in the new litter weigh 140 gram less at weaning



Pigs in the creep area

- Example from real life:
 - Pigs and sow are separated for 6 hours a day
- Separated 25% of the day
- Potentially 25% of milk intake
- Sow's udder is not stimulated and emptied
 - → Udder development?



Pigs in the creep area

- Example from real life
- Pigs and sows
- Separated 25% of the
- Potentially 25% of n
- Sow's udder is not s
- → Udder develop

**SEPARATION
OF PIGLETS**

**NUMBER OF MILK
LET-DOWNS**

SILENCE

**STIMULATION
OF UDDER**





The importance of feeding

Feeding according to yield...

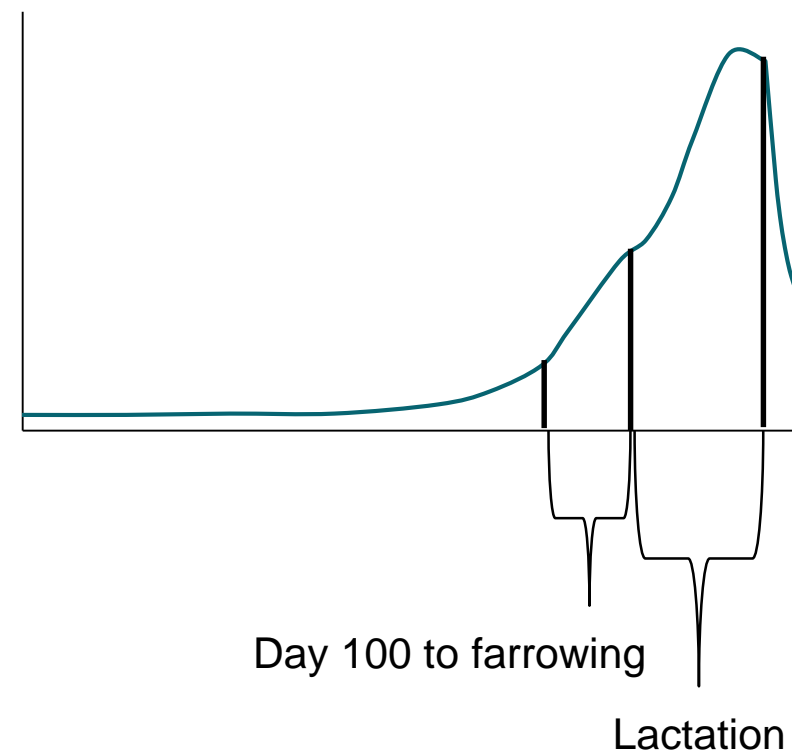
Gestating sows are resilient

- Gestating sows
 - Development of udder tissue is of very high priority
 - BUT gestating sows should not be on a diet



Feeding

Amount of udder tissue



Modified from:
Nielsen et al., 2002
Kim et al., 1999
Ford et al., 2004

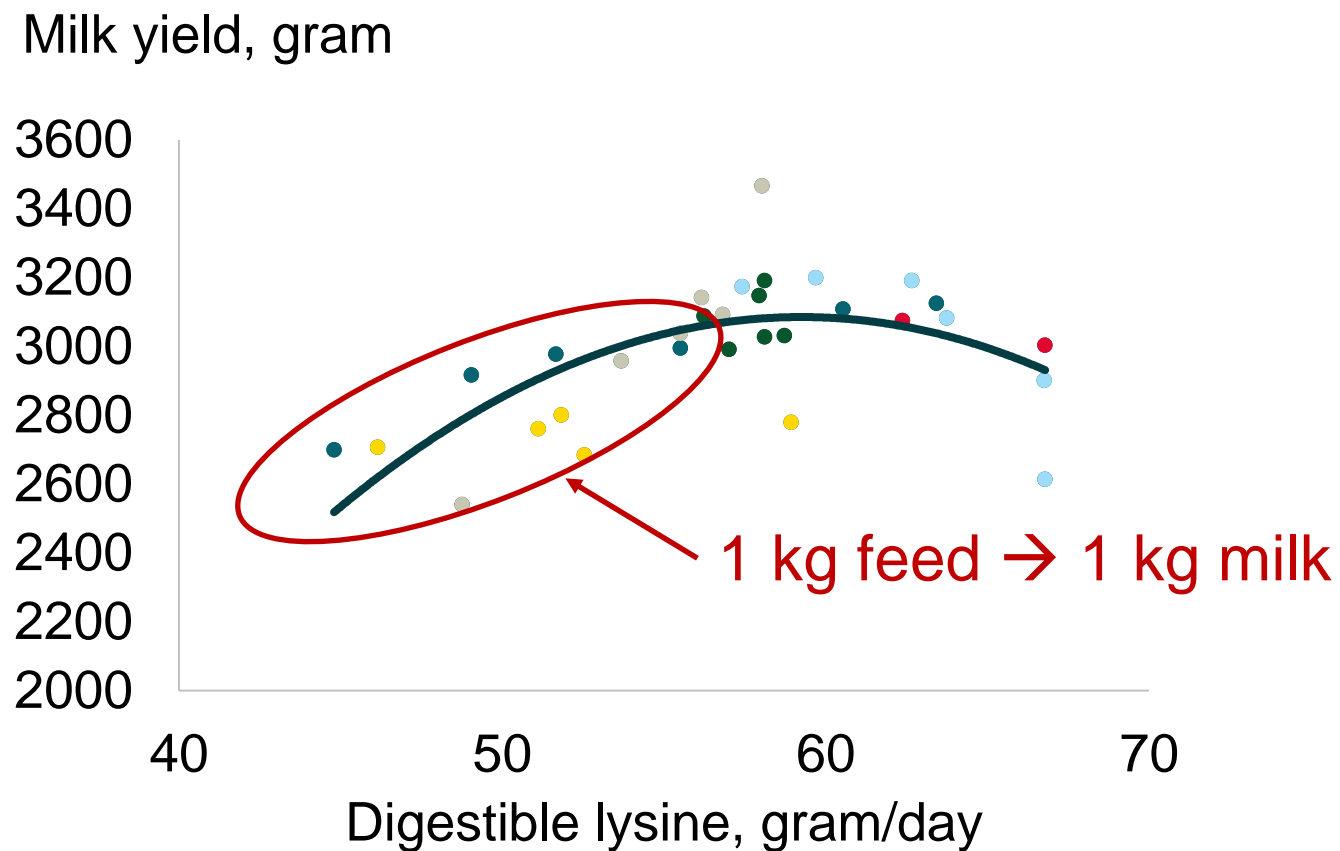
QUIZ

How much does the milk yield increase for each additional kg of feed consumed by the sow?

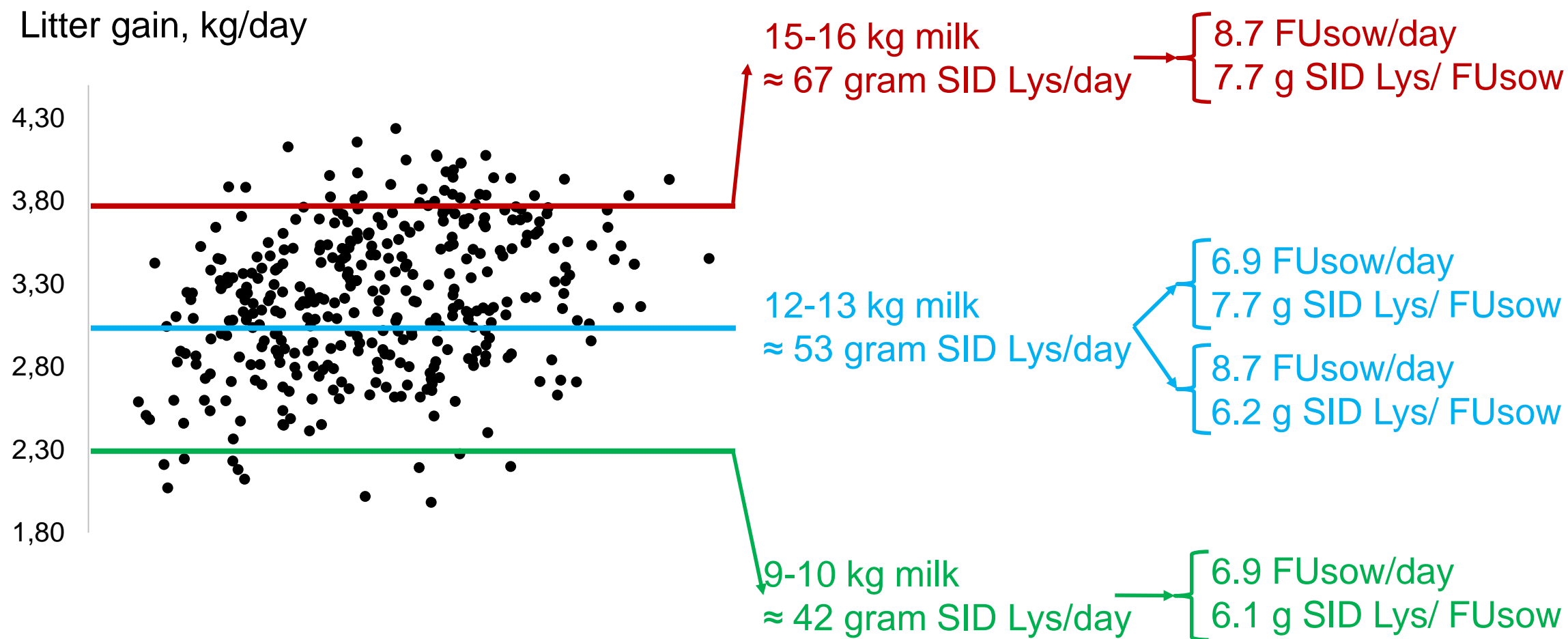
- a) No change
- b) Approximately 1 kg
- c) Approximately 2 kg

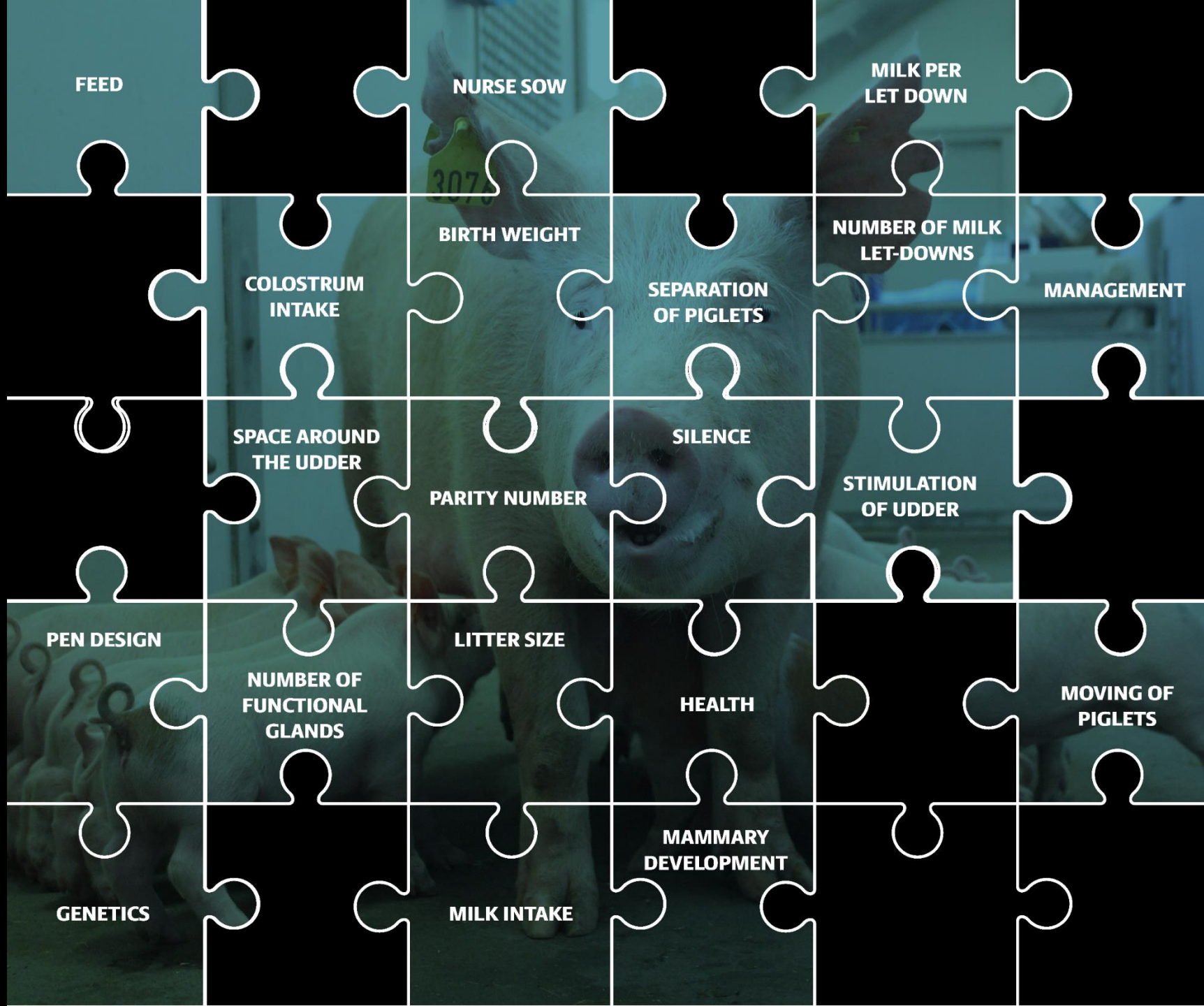


Feeding according to yield in lactation



Feeding according to yield in lactation – lysine as example





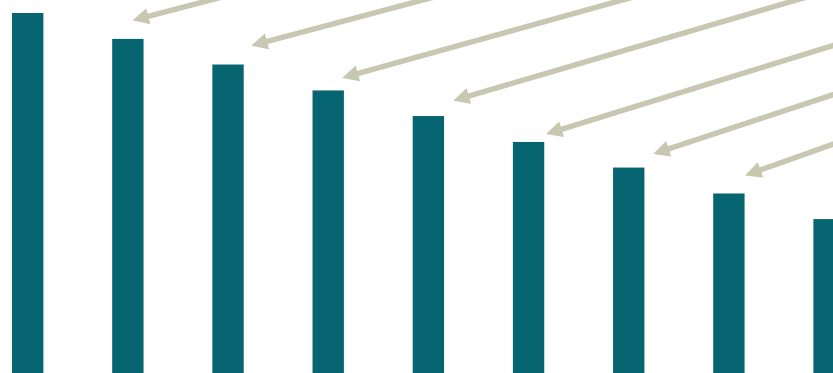
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Take home messages

- A sow has the potential to produce 25 kg milk!
- We just need to know the pitfalls
 - Eliminate pitfalls (if possible)
 - Feed the sow according to the conditions (realistic)

Potential
(25 kg/day)

Milk yield, kg/day



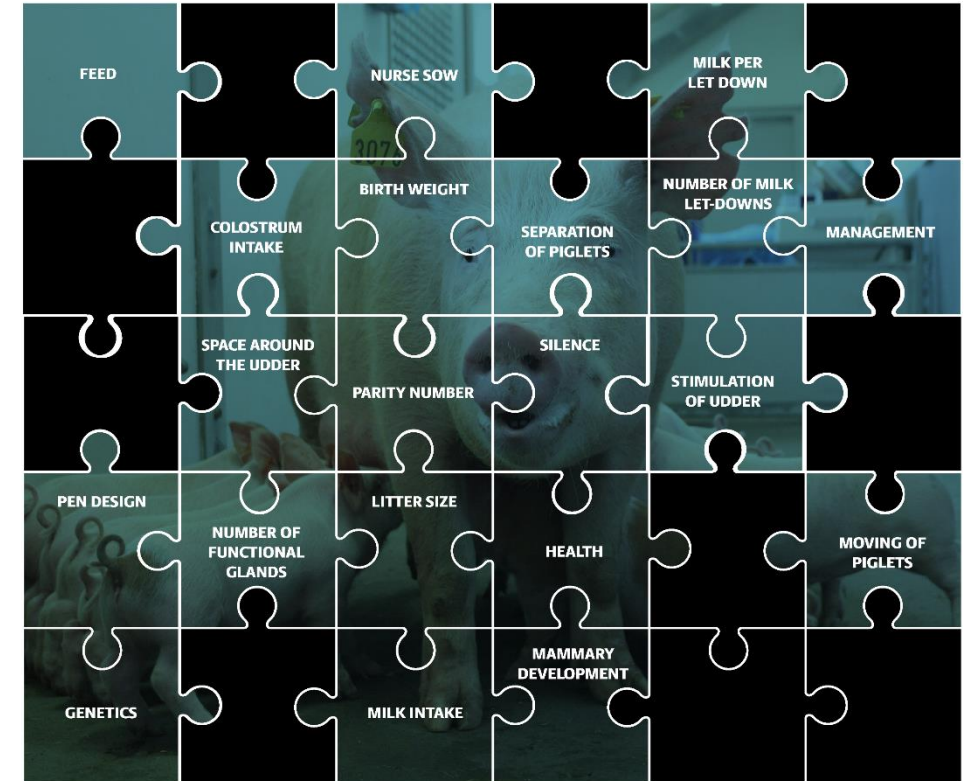
Factors affecting the milk yield

Limitations:

- Birth weight
- Colostrum
- Number of glands
- Pen design
- Moving pigs
- Feeding
- Hygiene
- Disease
- Etc.

What can you go home and do something about...

- ✓ Routines and management
 - ✓ Ensure a high colostrum intake for all pigs
 - ✓ Count and use the teats
 - ✓ Gilts should have 14+ teats
 - ✓ Minimize moving piglets around
 - ✓ Spend time on litter equalization
 - ✓ Reduce the time you separate sow and pigs
 - ✓ Ensure space around the sow
 - ✓ Silence in the farrowing unit
- ✓ Feeding
 - ✓ Feed above maintenance in late gestation
 - ✓ Adjust feeding according to yield



Focus on all the pieces of the puzzle



Time for questions

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