

Ensuring proper feed and **water** in loose-housing of pigs



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SUPPORTED BY

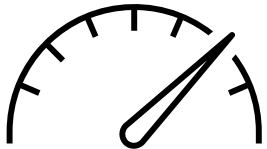
Danish Pig Levy Fund

Water – clean and in abundance

– a prerequisite for high productivity and welfare



- How much water does pigs and specially the lactating sows **need**?
 - If insufficient water supply:
 - Dehydration, reduced growth, dark urine, hard faeces, tail biting, aggression, mortality and reduced milk yield



- Using water as **indicator** of sow condition *and performance*?
 - A realtime and individual sow level



- Water **supply** in the stable
 - Can all pigs drink at the same time?
 - Increased herd size -> increase in water supplied?
 - Increased productivity -> increased in water supplied?

Water is important!





- Sows
 - The body is approx. 50% water
 - If the sow loses 10% of the body water, it is fatal.
- Sow milk
 - Approx. 80% water.
- Good idea to know how much water the sow normally drinks
 - Identification of changes
- SEGES has collected data
 - Herd 1 with dry feed (employee clinical assessment)
 - Herd 2 with wet feed
 - Herd 3 with dry feed (veterinarian clinical assessment / Aarhus University)



How much water does the lactating sow need?

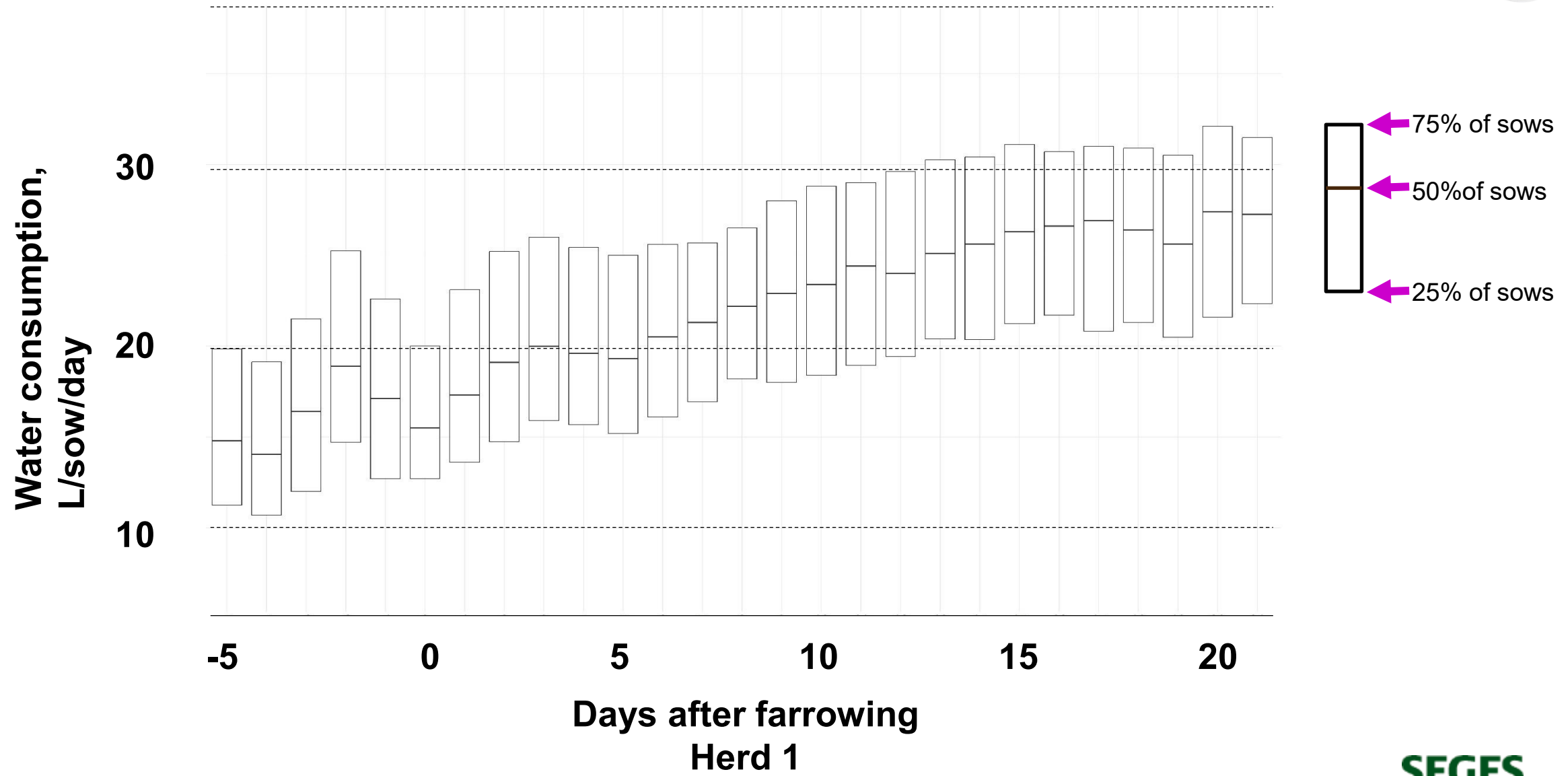


		Day 4	Day 11	Day 18
	Water intake			
	Drinking water	17.6	24.2	26.0
	Water from feed	0.44	0.67	0.87
	Water from metabolic processes	1.86	1.86	1.86
	Total intake	19.9	26.7	28.8
	Water excretion			
	Deposited	-	-	-
	Respiration	2.5	2.5	2.5
	Skin	1.1	1.1	1.1
	Milk	6.5	10.7	12.2
	Urine	8.8	11.1	10.8
	Faeces	0.9	1.3	2.1
	Total excretion	19.9	26.7	28.7
	Drinking water : milk	2.7	2.3	2.1

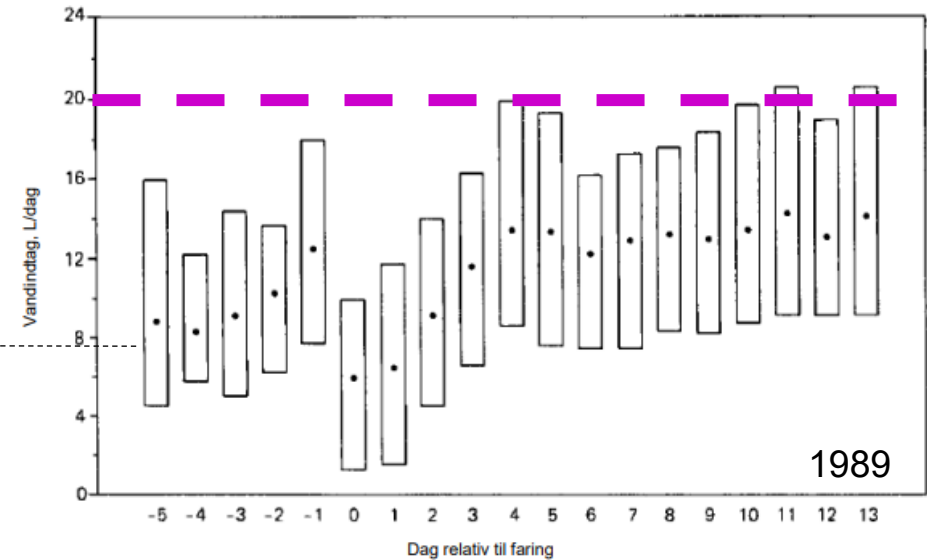
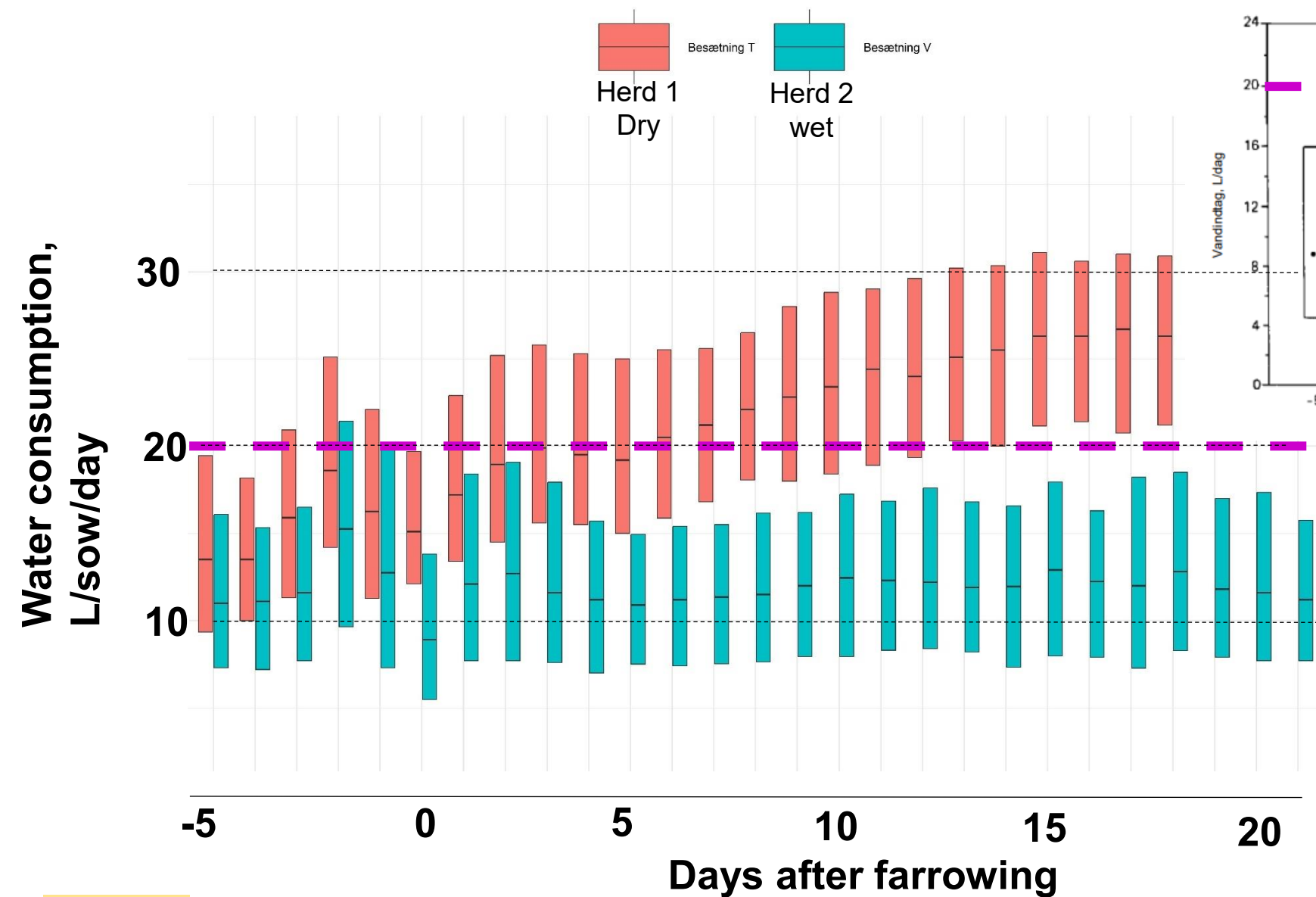
More inf:

[Review: Højproduktive søers forbrug og behov for vand \(landbrugsinfo.dk\)](#)

How much water did the sows drink in the herd with dry feed?

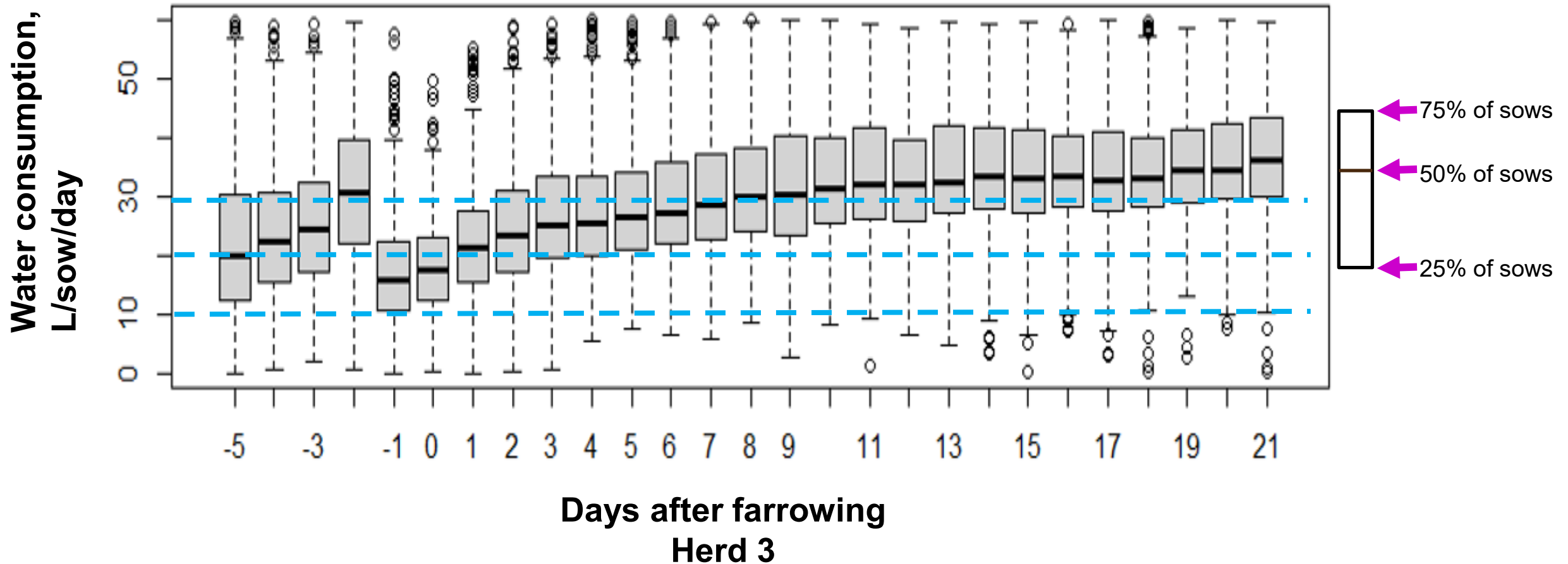


Water consumption day -5 till day 21 (dry and wet feed)

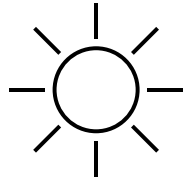


- Same curve
- Higher level
- is the capacity OK?

How much water did the sows drink in the herd with dry feed?



Water consumption in relation to outside temperature



Summer:

- Day temperature over 10°C;



Shift:

- Day temperature varying < & > 10°C

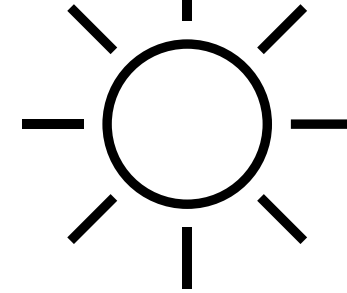


Winter:

- Day temperature under 10°C



Higher water consumption+10°C





Farrowing duration

- Feeding: 7 and 14 o'clock
- Littersize
 - Born alive:
 - Median: 19; P25: 17; P75: 21
 - Stillborn:
 - Median: 1; P25: 0; P75: 2

Farrowing duration (h)

Birth of First Piglet	Number of farrowings	Median	P25	P75
Morning (6-8)	16	6.6	5.2	8.2
Day (8-13)	60	6.6	4.3	8.9
Afternoon (13-15)	40	4.8	3.7	5.7
Night (15-6)	84	5.3	3.8	8.3

How do sows drink before / during farrowing?



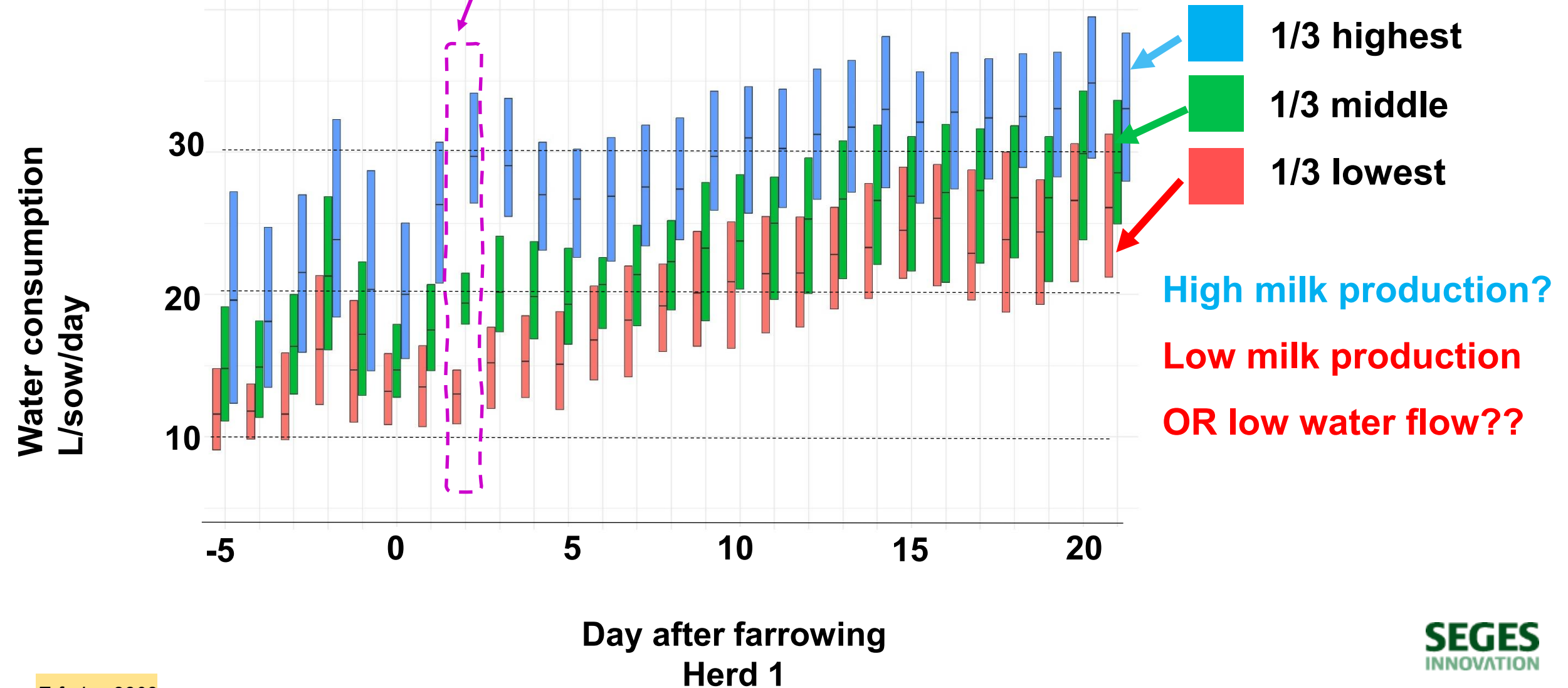
Birth of First Piglet	Morning (06-08)	Day (08-13)	Afternoon (13-15)	Night (15-06)
Night (before)	1.59	1.14	0.57	1.17
Morning	1.33	2.80	3.30	1.10
Day	0.38	0.76	1.26	1.09
Afternoon	0.74	0.60	0.58	1.17

Number of stillborn – and length of drinking-pause (sec)



Length of drinking-pause (sec)				
Number of stillborn	n	Median	P25	P75
0	56	4296	2567	7657
1	47	4970	1962	10499
2-3	36	5099	2044	11527
4	21	5374	1362	11953

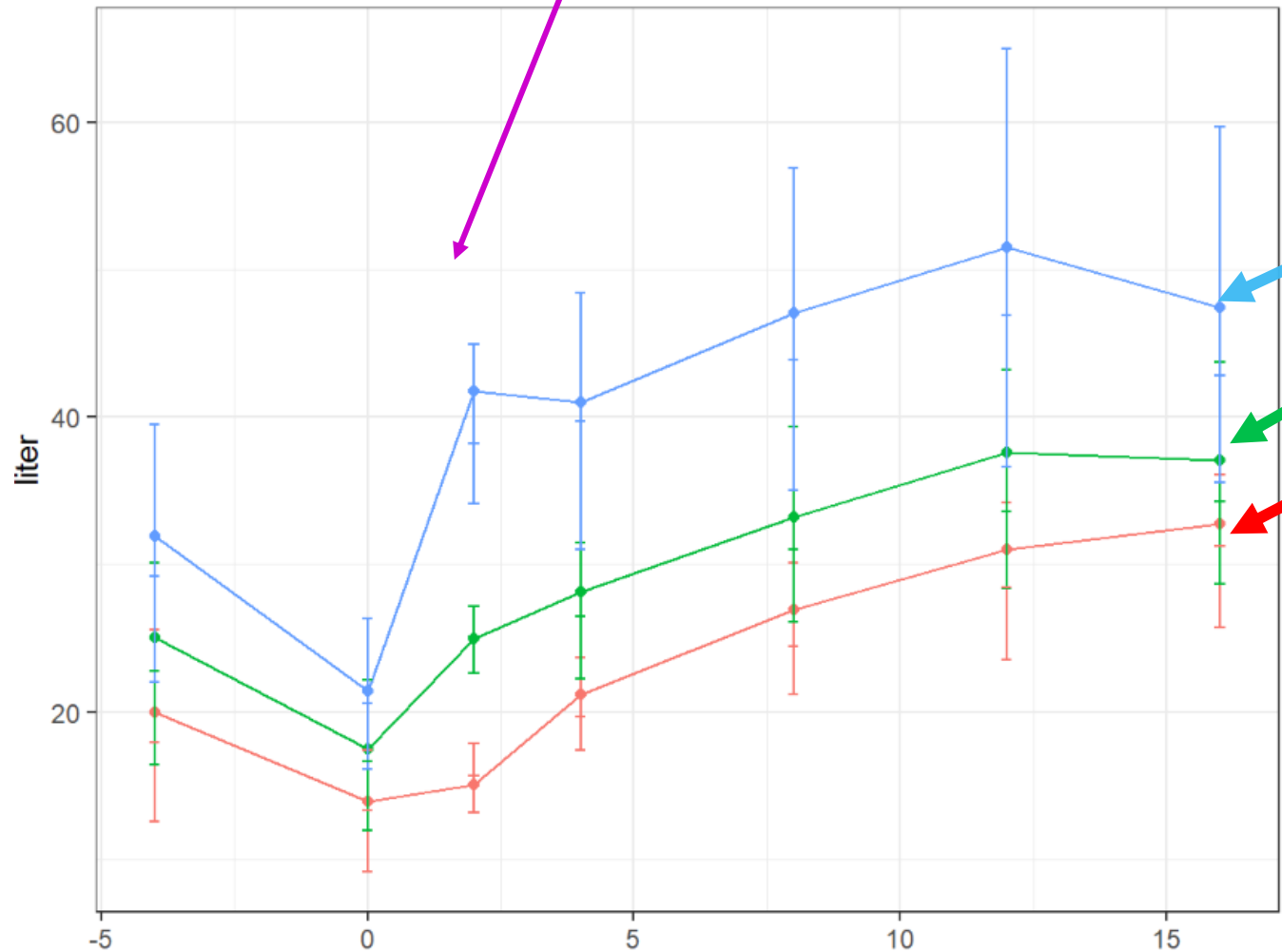
Water consumption day 2 after farrow. – and the rest of the lactation¹²



Water consumption day 2 after farrow. – and the rest of the lactation



Water consumption
L/sow/day



- 30- L - highest
- 20-30L - middle
- 0-20L - lowest

High milk production?

Low milk production

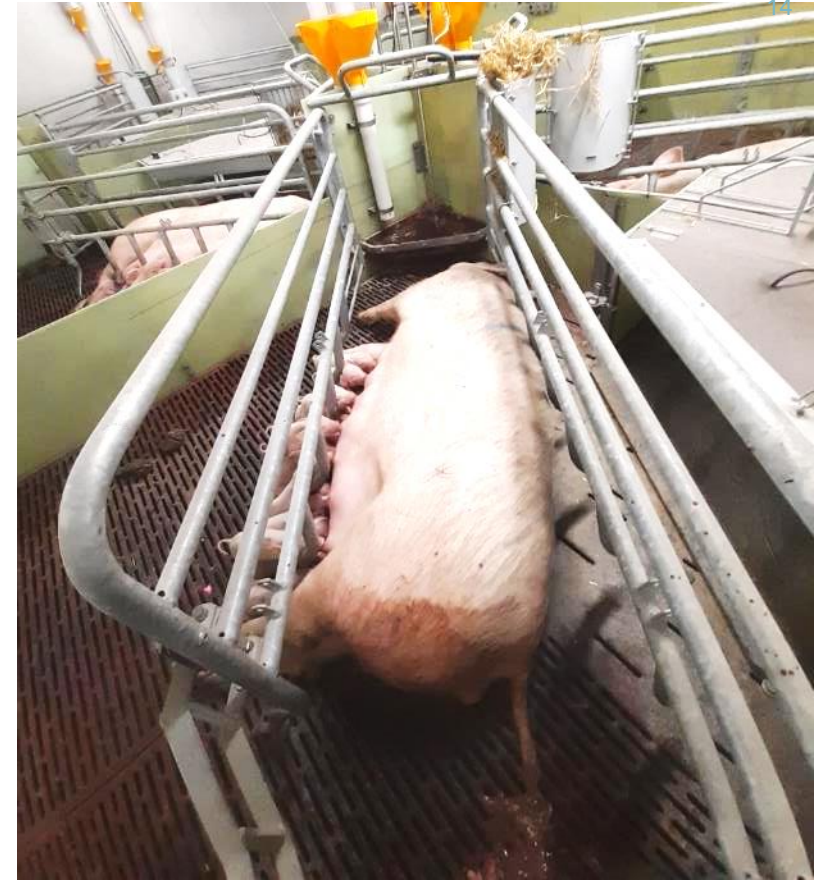
OR low water flow??

Day after farrowing
Herd 3

Note from data collection

– potentials – overview individuals

- Drinking breaks
 - At farrowing the sow lay down
 - They do not drink!
 - Sows given **dry feed** drink when they eat
 - If they don't drink – they don't eat
- Daily management – sows may stand up at feeding time
 - But drinking behaviour shows if they eat.....
 - Sows still standing 20 minutes after feeding drank more water



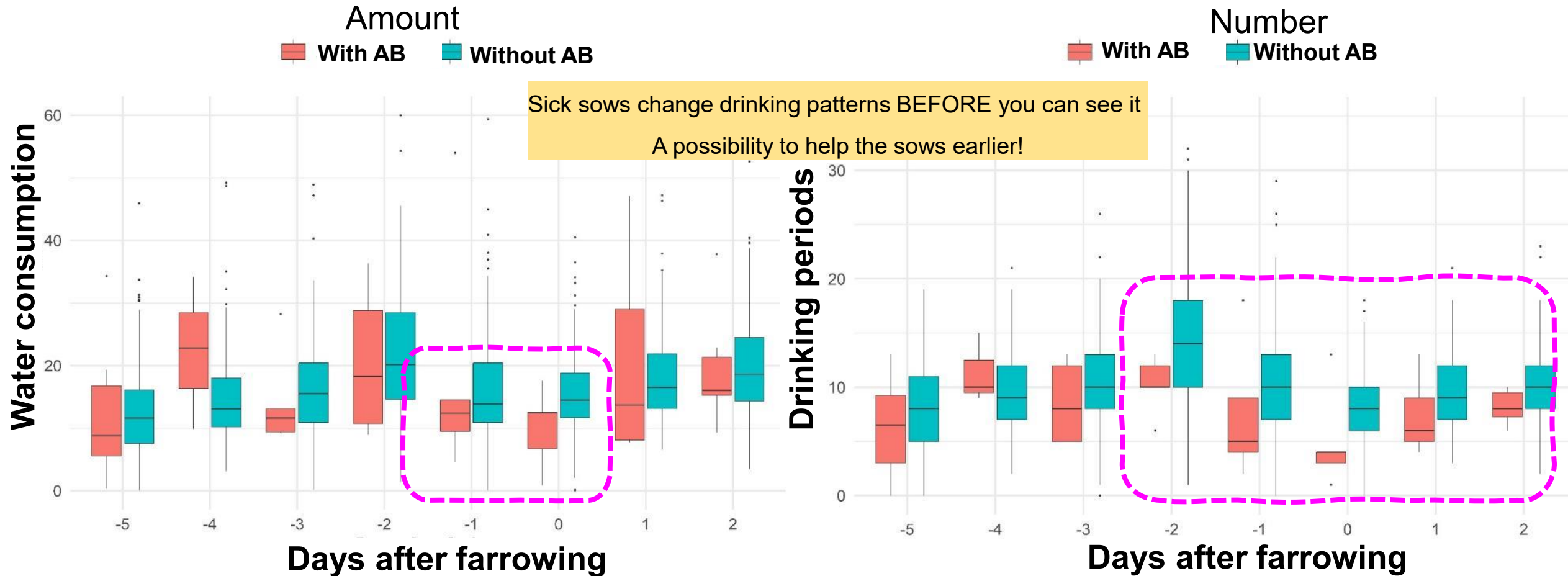
The sows change drinking behaviour before they get sick

(dry feed – herd 1)



Treatment:

The sow was treated with antibiotics around farrowing – or two days after.



The sows did not change drinking behaviour before they get sick (dry feed – herd 3)



PDS+

Sows with rectal temperature ≥ 40 °C or sows with rectal temperature ≥ 39.5 °C and decreased appetite grade 2 or 3* in at least one occasion within the first 48 hours after the first piglet is born.

PDS÷

Sows with rectal temperature < 39.5 °C and normal appetite grade 1* on Days 0-2.

*Grade 1 - Normal appetite: The trough is empty ($< \frac{1}{2}$ Liter) when temperature is measured; Grade 2 - Reduced appetite: The trough contains feed residue ($> \frac{1}{2}$ Liter) when temperature is measured; Grade 3 - Ceased appetite: The trough contains the whole portion of feed when temperature is measured.

PDS	D	N	Number events			Water/event			Sum water		
			P50	P25	P75	P50	P25	P75	P50	P25	P75
0	-4	85	19	16	23	1.5	1.2	1.8	29	20	39
0	-2	90	15	12	18	1.7	1.3	2.2	26	19	35
0	0	90	11	8	15	1.5	1.1	2.0	17	12	23
0	2	90	23	16	27	1.4	1.2	1.5	29	22	39
1	-4	63	18	15	23	1.6	1.3	2.0	28	22	40
1	-2	64	15	11	21	1.6	1.2	1.9	25	19	32
1	0	63	9	7	11	1.6	1.2	2.1	15	10	20
1	2	63	23	19	30	1.2	1.0	1.5	30	21	37

Were we to 'sensitive' in our diagnosis of 'sick sow'?
Or at least close to 1/3 diagnosed as sick



Water supply – what are the needs?

Is the water supply OK? And for all pigs

- The lactating sow
- The section with lactating sows
- All farrowing sections
- Gestating sows
- Weaners
- For wet feed
- Soaking the stables
- The seasonal variation



Is the capacity for water good enough for all pigs?
– turn some handles?
– change routines?



How to calculate?

Water quick tool_water consumption estimate

Number of productive sows

1.493

Estimated daily water consumption

66.435

Liters

66

m³

English

Weaned piglets per sow per year

36

Peaking consumption total

2.157

l/m

36,0

l/s

Weight span of weaner

7-25 kg

Peaking waterflow circuit 1

2157

l/m

Peaking waterflow circuit 2

0

l/m

Weight span of finishers

Up to 115 l

Peaking waterflow circuit 3

0

l/m

Peaking waterflow circuit 4

0

l/m

Climate zone

1

5 weeks v

	Quarantine	Boars	Young sows	Sows for service	Gestation	Farrowing	Weaners	Finishers	Delivery
Select view of pig groups	Include	Include	Include	Include	Include	Include	Include	Exclude	Include
Split of the pigs	30-60 kgs	1,2% of sows	60-120 kgs	Week cycle	Week cycle	Week cycle	Week cycle	Week cycle	Week cycle
Automatically generated weekflow	150	18	240	405	852	426	7.235	15.039	251
Adjusting pig quantity manually (pcs)	0	8	40	-350	300	-80	1200	0	30
Quantity of pigs	150	12	280	55	1.152	346	8.435	0	281

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Water consumption tool

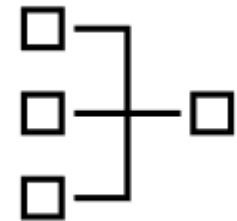
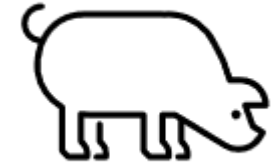
Consumer											Consumer total
Feeding principle	I/m	22	27	151	25	1037	339	62	90	67	1.820
		Dry ad lib ▼	Dry restric ▼	Dry ad lib ▼	Dry ad lib ▼	Dry restric ▼	Dry restric ▼	Dry ad lib ▼	Liquid ▼	Dry restri ▼	
Sprinkling	I/m	0	12	45	3	56	-	65	0	14	194
		No ▼	Yes ▼	Yes ▼	Yes ▼	Yes ▼		Yes ▼	Yes ▼	Yes ▼	
Soaking	I/m	8	-	-	-	-	32	24	0	16	80
		Yes ▼					Yes ▼	Yes ▼	Yes ▼	Yes ▼	
Cooling pads	I/m	1	0,2	2,7	0,6	11,1	7,3	0,0	0,0	2,7	25
		Yes ▼	Yes ▼	Yes ▼	Yes ▼	Yes ▼	Yes ▼	No ▼	Yes ▼	Yes ▼	
High pressure cooling	I/m	0,6	0,1	2	0	7	5	10	0	2	27
		Yes ▼	Yes ▼	Yes ▼	Yes ▼	Yes ▼	Yes ▼	Yes ▼	Yes ▼	Yes ▼	
High pressure cleaning	I/m	25					25	25	25	25	125
		Yes ▼					Yes ▼	Yes ▼	Yes ▼	Yes ▼	
	I/m										

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If the capacity is too low?

- **Thinking about the routines**
 - Do you need to soak when the sows are fed?
- **Which pigs need water at the same time?**
 - Gestation sows – if all are fed at the same time
 - Possibilities to divide the feeding of different sections?
- **Need for more water lines?**
- **Buffer tank**
 - Can a buffer tank cover soaking and or washing?
 - Can a buffer tank cover mixing of wet feed?





Medication by the water pipes –
must only be in clean water

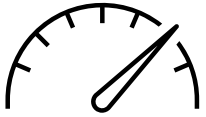
Farrowing section



- Cleaning the water centrally is no guarantee for clean water for the pigs
- A clean surface does not necessarily mean clean pipes.
- Water that does not move and the temperature is high
- Walk through the farrowing section approx. one week after farrowing and flush the pipes. Use a clothes peg.
- **BUT** the pipes must also be cleaned and flushed before insertion of the sows.



Take home



- **The pigs need sufficient water.**
 - Can you eat dry oatmeal?
- **Water usage** - an indicator for sow condition and performance
- **Water supply in the stable**
 - Is there flow enough to cover the need of all pigs?
- **Water quality**
 - Do you want to drink the water?
 - Medication only in water without additives.



Water quality testing.....



Acknowledgement

- Marianne Kaiser and colleagues at Aarhus University
- Herd 1, Herd 2 and Herd 3
- SEGES colleagues

Q u e s t i o n s

EXPERTS IN IMPROVING PIG WELFARE

Our dedication stands in respecting pigs

Our unwavering commitment to sustainability and ethical practices in animal production drives our mission. Explore how we prioritize the well-being of our pigs and work towards a fairer food future.

What is WelFarmers Project?

The WelFarmers Project is a collaborative initiative aimed at improving the welfare of pigs within the European Union. Funded by the Horizon Europe Program, WelFarmers will set up eight national innovation networks from eight different countries and will put together pig farmers, advisors, veterinarians, and researchers to address the challenges of the upcoming change in the European pig welfare legislation.

