



Europæiske Landbrugsfond for Udvikling af Landdistrikter
Danmark og Europa Investorer i Landdistrikterne

LDP 2020

Miljø og Fødevarerministeriet
NaturErhvervsstyrelsen

Den Europæiske Landbrugs
for Udvikling af Landdistrikter
Kommissionen, Den Europæiske Landbrugsfond for Udvikling af Landdistrikter


Cand. agro Dorthe Poulsgaard Frandsen,
SEGES Construction & Environment

September 18th 2017





AGENDA

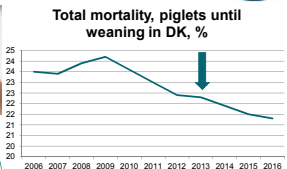
- From mortality to survival 2015-2016 (PattegriseLIV)
- Causes of death
- Results
- Milking systems
- Farrowing crates




PURPOSE: SURVIVAL OF MORE PIGLETS



Total mortality, piglets until weaning in DK, %



Summit declaration 2014:
Reduce piglet mortality with 1 piglet per litter in 2020 – approx. 16 % total mortality




TOTAL PIGLET MORTALITY

Fravæmmede grise pr. årsko, stk.	33,0	33,2	34,4	36,0	33,7	32,5
Fravæmmede grise pr. kuld	14,4	14,5	16,5	15,3	14,5	14,4
Kuld pr årsko incl. gyfte, stk.	2,29	2,28	2,28	2,35	2,30	2,25
Dagnummer på dage	31	31	32	32	30	29
Total fødte pr. kuld, stk.	18,3	17,4	19,8	18,7	17,9	17,8
Levede fødte pr. kuld, stk.	16,7	16,2	18,3	17,3	16,5	16,6
Døde fødte pr. kuld, stk.	1,6	1,2	1,5	1,4	1,4	1,2
Døde incl. færdigværing, pot.	13,8	10,5	10,5	11,4	12,1	13,2

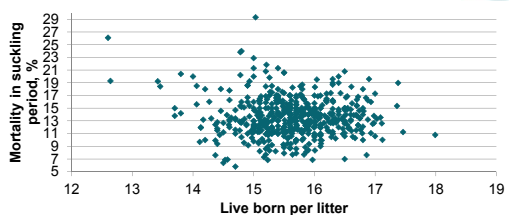

Total born per litter = Live born/litter + Still born/litter $18.3+1.5 = 19.8$

Dead per litter = Total born per litter - weaned per litter $19.8-16.5 = 3.3$

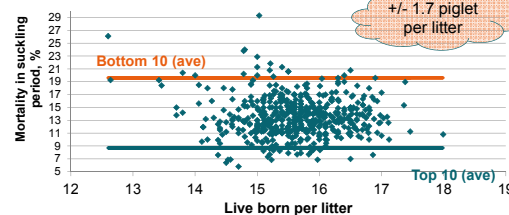

Total piglet mortality = $\frac{\text{Dead piglets per litter} \times 100}{\text{Total born per litter}} = \frac{3.3 \times 100}{19.8} = 16.7\%$

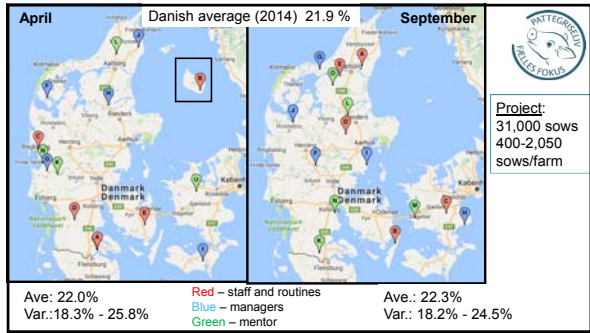
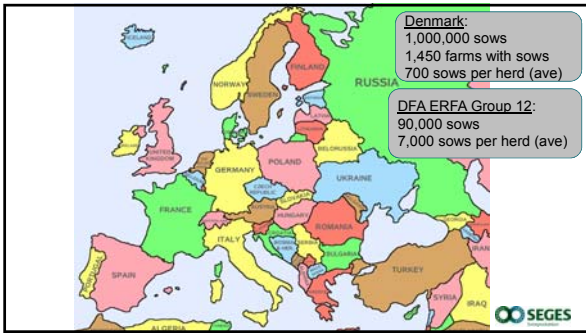
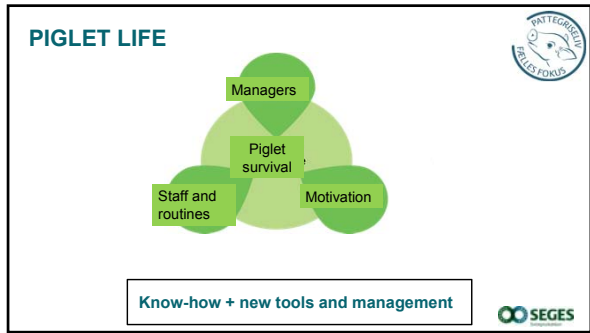


LIVE BORN VERSUS MORTALITY IMPROVEMENT POTENTIAL

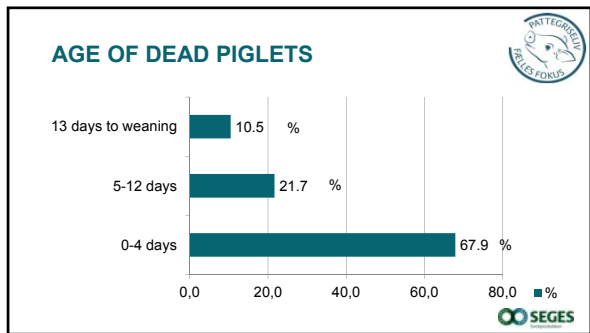
LIVE BORN VERSUS MORTALITY IMPROVEMENT POTENTIAL

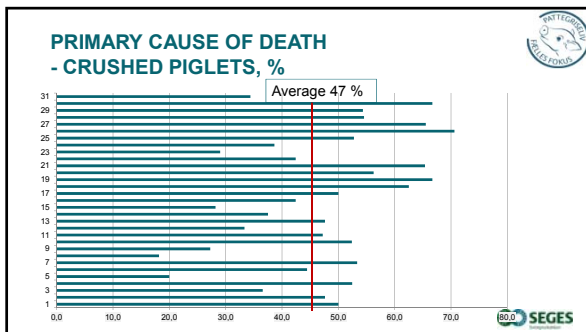
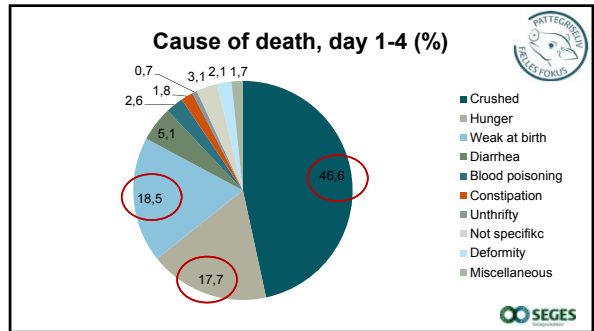
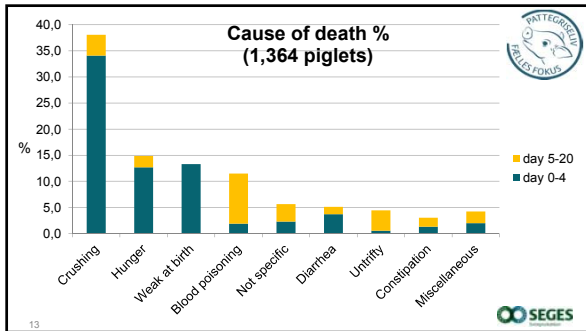





CAUSE OF DEATH

- 1) Post mortem examination on 50 piglets per herd (1,364)
- 2) Post mortem course for staff

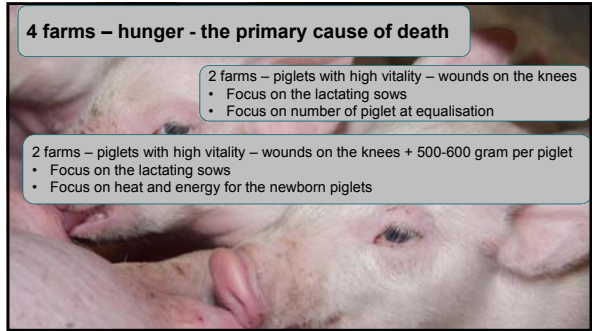
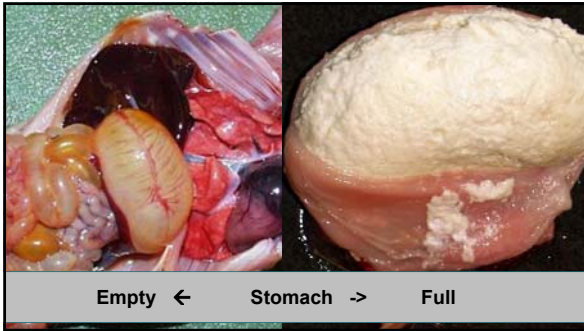




22 farms – crushed piglets - the primary cause of death

- 13 farms - nothing else but crushing
 - Focus on the farrowing box (space to move)
 - Focus on the creep area (warm, creep training)
- 6 farms - hunger + weak at birth
 - Focus on lactating sow
 - Focus on temperature
- 1 farm - weak at birth
 - Focus on temperature
- 1 farm - enteritis
 - Focus on treatments
- 1 farm - hunger
 - Focus on lactating sow





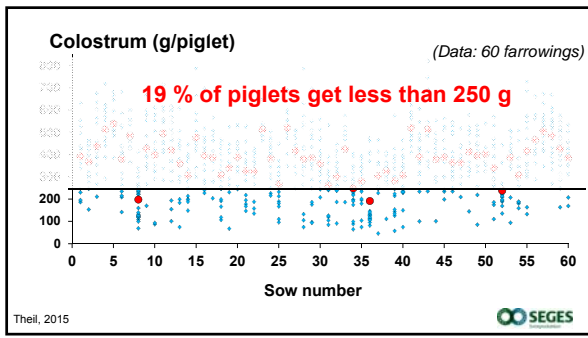
HUNGER – SICK SOWS
- CAN DESTROY IT ALL

- Milk production falls 19% in sows with untreated M.M.A. (mastitis metritis agalactia) (day 2 to 6)
- Daily litter gain decreased 12% in "chronically sick sows" (day 0 to 18)
- The milk production already peaks 6 to 10 days in chronically sick sows – they do not get over it!
- Increasing milk production all the way to weaning for the group of healthy sows.

Kilde: Sauber et al. (1999)

PATEGROVSKA PLES FOKUS





TRAIL - COLOSTRUM

Treatment	Time	Growth, g/piglet
Sugarbeet + Sunflower meal + Soy hulls (23% fibre)	106 - farrowing	76
Standard feed (13% fibre)	106 - farrowing	85

	Standard feed	High fibre
Colostrum-intake (piglets < 900 g):	137 g	216 g

Theil, 2015

HUNGER – COLOSTRUM FROM THIS?

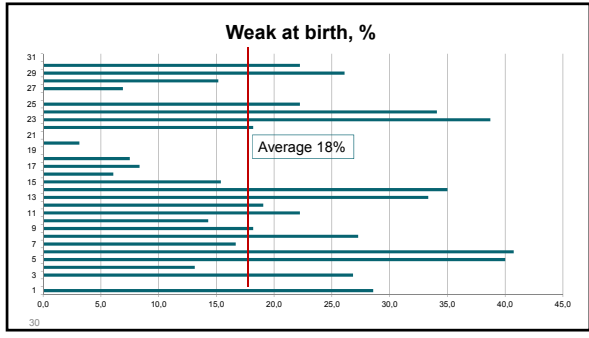
Theil, 2015

FIND THEM

Theil, 2015

WEAK AT BIRTH

Theil, 2015



WEAK AT BIRTH - FEEDING IN GESTATION

SEGES

WEAK AT BIRTH - FEEDING IN GESTATION

Fibres reduce stillborn and weak

- reduces farrowing time
- less constipation

Reducing feed intake 2-3 days before farrowing increases the risk of constipation

Fiber Level	% sows with constipation
Lav fiber	~65
Høj fiber	~30

(Oliviero et al.,)

SEGES

WEAK BORN - THE BASAL FEED INTAKE AND WATER SUPPLY

Bad idea with many days of low feed intake

- 3.5 FEso/day against farrowing
- 2.8-3.0 FEso 1-2 days before farrowing
- Remember to adjust the length of gestation in the control system

Clean water – easily accessible

- Empty the mangers

SEGES

HEAT A NECESSITY

Temperature is critical in the first day of life

Time after birth (h)	Surviving (°C)	Dying (°C)
0	~37.8	~36.5
1	~38.0	~37.0
2	~38.0	~37.5
3	~38.0	~37.5
24	~38.5	~37.5

Baxter 2008

SEGES

WEAK AT BIRTH - HEAT = NECESSITY

Time from expulsion (min.)	Surviving (°C)	Dying (°C)
0	~39.0	~39.0
15	~36.0	~34.0
30	~35.5	~33.5
60	~36.5	~35.5
90	~37.5	~35.5
120	~38.0	~35.5
180	~38.0	~35.5
240	~38.0	~35.5


SEGES

WEAK AT BIRTH - HEAT

Piglets at 34 °C use 50% more energy than piglets at 38 °C

SEGES

WEAK AT BIRTH - HEAT



**PAT TEGORNIK
VÆLDES FOKUS**

SEGES

WEAK AT BIRTH - NEED HEAT



**PAT TEGORNIK
VÆLDES FOKUS**

"We put straw behind the sow at farrowing and reduced the number of helping and the number of stillborn piglets"

"We reduced the amount of cold and weak piglets by putting straw behind the sow at farrowing"

SEGES

WEAK AT BIRTH

- Heated to a body temperature of 37 °C before moving back to the sow:
- 4/5 piglets with temperatures below 30 °C were alive 3 weeks old
- Piglets in trail have the same growth rate as the sisters and brothers

Kammersgård, 2013



**PAT TEGORNIK
VÆLDES FOKUS**

SEGES

HEAT - MISTAKE


- Use dog wrapper with care
 - Do not over implement
- Look at the pigs and react to what you see
- 150 W light bulbs are sometimes too much



**PAT TEGORNIK
VÆLDES FOKUS**

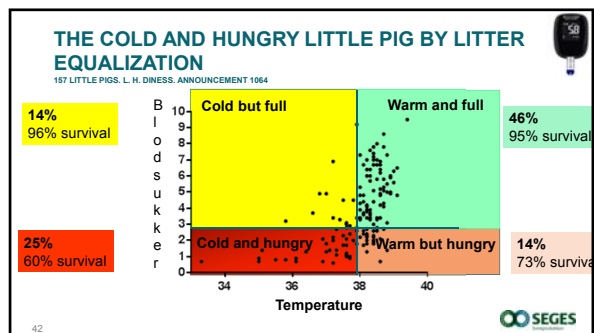
SEGES

IS THE HEAT WORKING?



**PAT TEGORNIK
VÆLDES FOKUS**

SEGES




COLD PIGS

IF YOU DO SOMETHING, THEN DO IT WELL


To be heated for one hour in incubation at 32-36 °C
 Give 5 ml of a 20% glucose in the mouth

1. time: When the pig is placed in the incubator
2. time: When the pig is added to the nursing sow



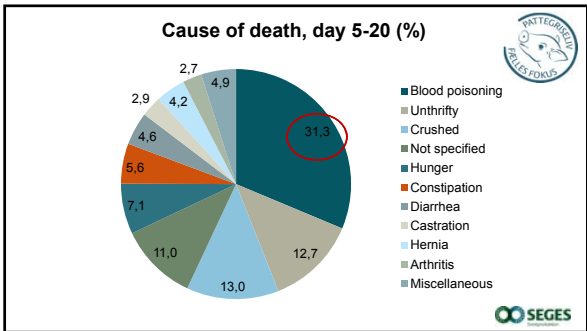
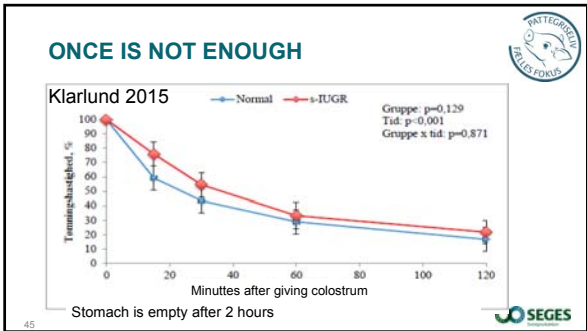
There is too little glucose in commercial energy products
 20% glucose = 200 gram glucose and 1 liter of water

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FIND THEM





HOW MUCH INFECTIVE MATTER DO YOU NEED ?

Infection	Amount of vira/bacteria
Oral	100,000
Snout	10,000
Wound	10

Jeff Zimmermann






BLOOD POISONING – TAIL DOCKING




2% on day 0-4
10% on day 5-20




- Unhealed wound
- Crooked cut
- Poor hygiene
- Too cold "cutter"


BLOOD POISONING – TOOTH GRINDING



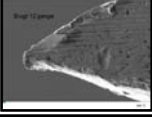



- Wrong instruction
- Lack of precision
- Time pressure





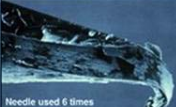


BLOOD POISONING - CASTRATION

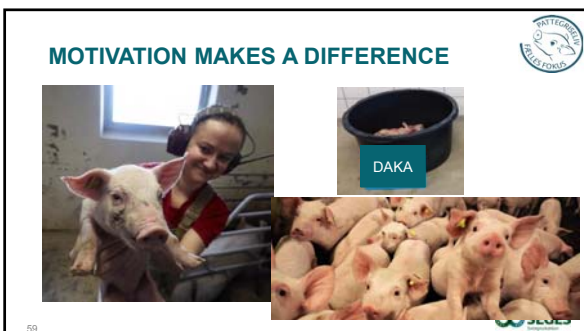
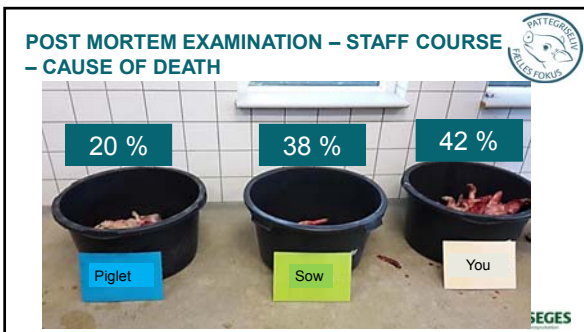
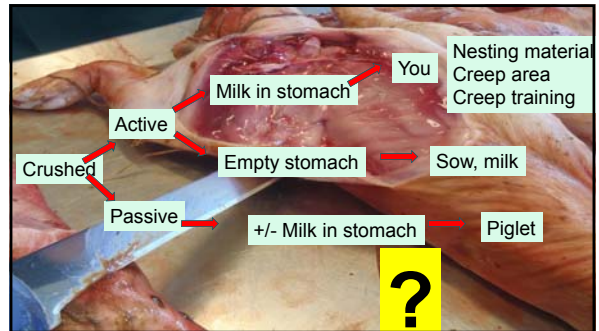
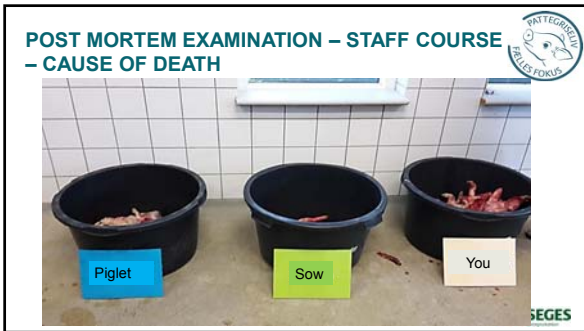


- Poor instruction (maybe none)
- Blunt scalpel
- Poor hygiene
- Too fast


BLOOD POISONING - OTHERS



SOME OF THE TOOLS IN PIGLET LIFE




PigletLIFE - Farrowing house course

SEGES - PigletLIFE - Farrowing house course
Started - 11. nov 2015

[Se Kursus](#)

E-learning

<http://www.pattegriseliv.dk/Pages/E-laering.aspx>
<https://kurser.seges.dk/>



Farrowing

[Farrowing web page](#)

FARROWING

Sows undergo huge physiological changes when farrowing approaches. They go from having been gestating and having a quiet time in the gestation pens to performing the strenuous task of farrowing and rearing a large litter of piglets.

Farrowing preparations

Farrowing

Monitoring farrowing

Problem signs


Observe sow

Before the actual farrowing begins, the sow will start nesting and acting restlessly. It then turns calm and lies down on its side. During farrowing, the sow acts passively with reduced ability to move. The farrowing section should therefore be a calm, quiet place while farrowing is in process.

Farrowing often takes place in the evenings and night. The time it takes from farrowing starts and until it is complete varies greatly. When the first piglet is born, the sow will often rise to inspect the piglet, but will usually calm down again. Piglets are born one at a time, the unborn piglets are retained in the uterus where they have been during gestation. They are thereby assured of a sufficient supply of oxygen until they are born.

Piglets presented but first are born more slowly than piglets presented head first - perhaps due to less stimulation of the birth canal. There is normally a gap of 10 minutes between the birth of two piglets which amounts to 3-4 hours for an entire litter.

Sows do not release the newborn piglets from within their placenta and umbilical cord nor do they direct them towards the udder.



SOME OF THE TOOLS IN PIGLET LIFE




Normal farrowing m. enkelte små grise **TimeLapse**

1. grise 08:07 (00:00) Svagfekt
2. grise 08:18 (00:11) Svagfekt
3. grise 09:19 (01:12) Svagfekt
4. grise 09:24 (01:17) Svagfekt
5. grise 09:50 (01:43) Svagfekt
6. grise 11:18 (03:11) Svagfekt
7. grise 11:49 (03:42) Svagfekt
8. grise 11:52 (03:45) Svagfekt
9. grise 11:53 (03:46) Svagfekt
10. grise 11:55 (03:48) Svagfekt
11. grise 11:58 (03:51) Svagfekt
12. grise 11:40 (03:33) Svagfekt
13. grise 11:49 (03:42) Svagfekt
14. grise 11:46 (03:39) Svagfekt
15. grise 12:09 (03:56) Svagfekt
16. grise 12:06 (03:53) Svagfekt
17. grise 12:20 (04:13) Svagfekt
18. grise 12:46 (04:39) Svagfekt
19. grise 13:17 (05:10) Svagfekt
20. grise 13:27 (05:20) Svagfekt
21. grise 13:48 (05:41) Svagfekt
22. grise 13:52 (05:45) Svagfekt
23. grise 14:06 (05:59) Svagfekt

[HTTP://WWW.PATTEGRISLIV.DK/PAGES/TIMAPSE.ASPX](http://www.pattegriseliv.dk/Pages/TIMAPSE.ASPX)



SOME OF THE TOOLS IN PIGLET LIFE



Interactive video

SE ALLE FILM


Fodring Vand Forberedelse

Efter faring Kuldudjævning

Faringshjælp Sult

Høj hygiejne 1

[HTTP://WWW.PATTEGRISLIV.DK/PAGES/INTERAKTIVE-VIDEOER.ASPX](http://www.pattegriseliv.dk/Pages/INTERAKTIVE-VIDEOER.ASPX)



"GAME OF PIGLETS"




<http://www.pattegriseliv.dk/Pages/gameofpiglets.aspx>





WHAT ELSE HAVE WE LEARNED...

Things don't change until...



Broken

- The weakest part also reacts - and it's bad when it's the boss!
- Many tasks at once - it's bad when you don't help each other

CULTURE






Common language
Teamwork
"Board-meetings"


Motivation






MOTIVATION THROUGH COMPETITION

THE COMPETITION



Yellow jersey = highest survival rate 

Polka dot jersey = biggest improvement 

Green jersey = most points 

Points



- > 20% - 1 point per percent improvement
- > 20 - 19% - 2 points
- > 19 - 18% - 3 points
- > And so on...

CHARTS

2. kv + 3. kv 2016

Planering	Gns	1	2	3	4	5	6	7	8
Planeringsnummer	15	1	2	3	4	5	6	7	8
Teleskibe angivet									
Antal avl. jorde. vks	1.066	1.213	810	424	1.190	2.503	679	1.237	480
Fremmede jorde. vks	18,0	17,2	17,7	16,0	17,7	17,5	14,8	13,0	12,1
Fremmede jorde. vks	18,4	14,5	14,5	15,3	14,5	14,4	15,9	13,0	13,8
Kvæd pr. jorde. vks	2,29	2,29	2,29	2,25	2,32	2,25	2,20	2,38	2,17
Chopprerakt. vks	81	121	92	50	89	277	88	28	26
Vægt ved besætning, kg	6,8	7,0	6,4	6,0	7,0	7,2	7,5	6,4	6,7
Antal jorde. vks	88	88	88	88	88	88	88	88	88
Væ. kvæd af jorde. vks	9,5	11,3	9,5	4,3	6,2	12,9	6,1	10,7	7,8
Teleskibe									
Teleskibe pr. kvæd. vks	18,3	17,8	19,9	18,7	17,0	17,8	19,3	17,2	17,1
Teleskibe pr. kvæd. vks	18,2	18,2	18,3	17,7	18,5	18,6	17,4	19,0	18,7
Teleskibe pr. kvæd. vks	1,8	1,2	1,5	1,4	1,4	1,2	1,8	1,5	1,5
Teleskibe ved besætning, ant.	15,9	15,3	15,3	13,4	15,3	15,4	14,4	12,9	15,3
Teleskibe									
Teleskibe	21,2	20,1	21,8	19,0	19,0	19,3	20,2	18,5	18,1
Teleskibe	22,8	20,6	21,7	18,5	20,9	20,9	21,1	18,5	17,9
Teleskibe pr. kvæd. vks	25,8	25,9	24,2	19,1	21,1	21,4	23,2	21,2	21,1
Teleskibe ved besætning, ant.	1	11,2	9,9	1,3	1,0	1,8	4,7	—	8,8



WE CELEBRATE SUCCES

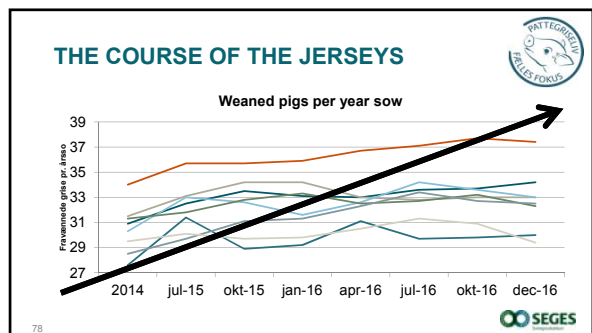
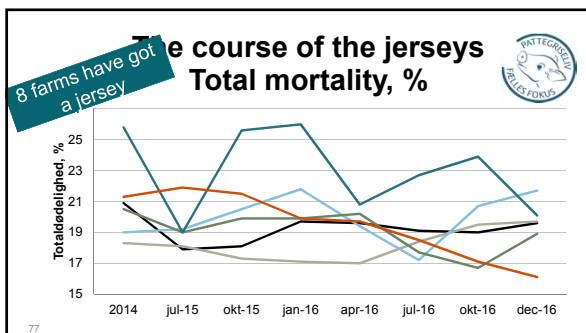
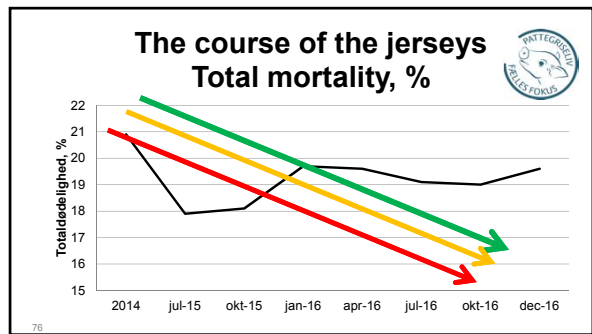
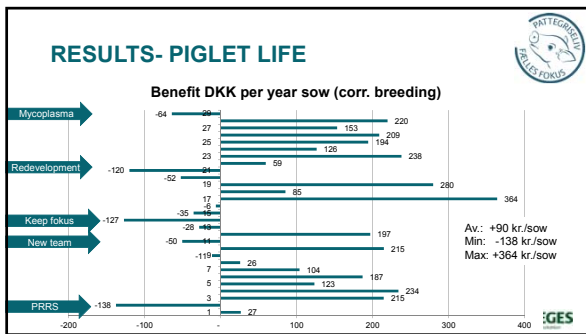
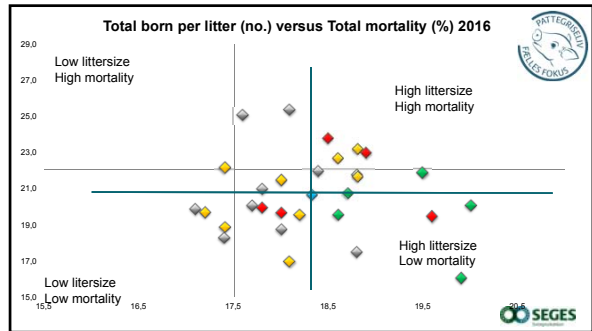
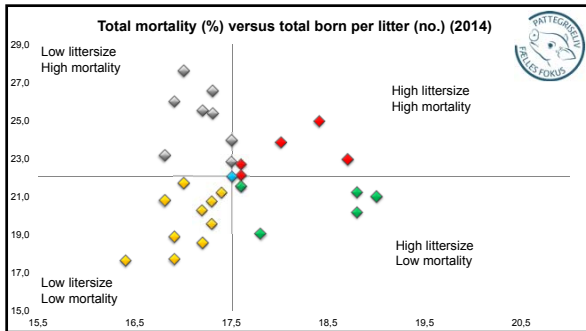


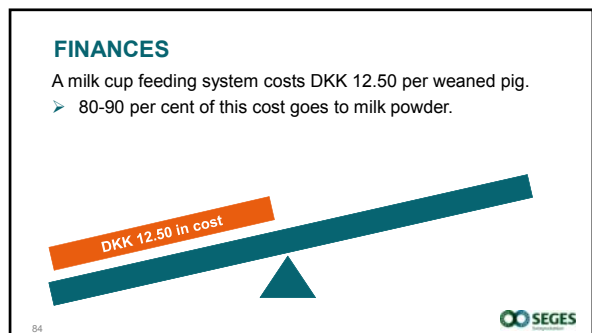
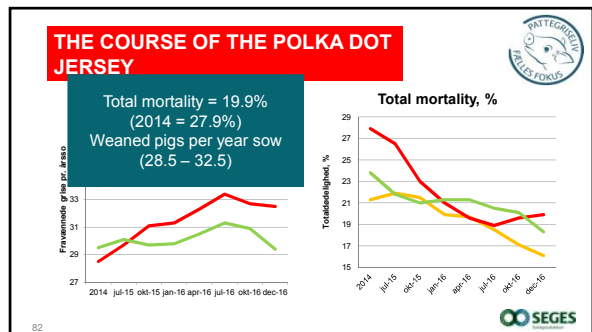
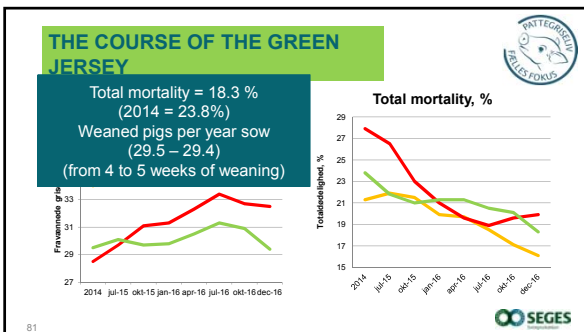
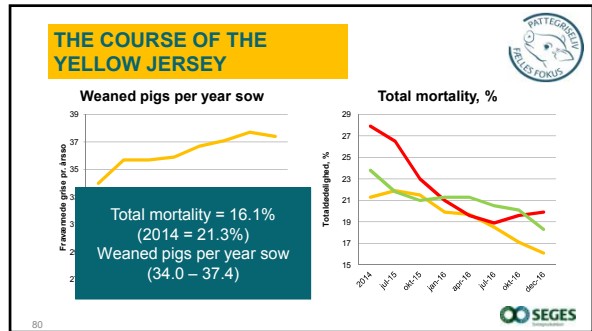
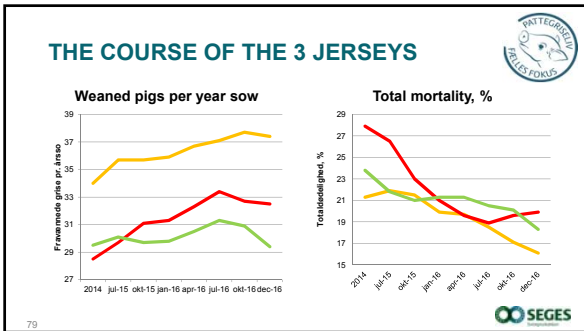



RESULTS - PIGLET LIFE

	PigletLIFE 2014	PigletLIFE 2. half 2016	Difference	
Lifeborn per litter	15,9	16,8	+0,9	+Breeding (1,5 years): +0,8 weaned piglets per sow
Stillborn per litter	1,70	1,60	-0,1	
Weaned per litter	13,7	14,4	+0,7	+ management: +1,2 weaned piglets per sow
Litter per sow	2,27	2,29	+0,02	
Weaned piglet per sow	31,0	33,0	+2,0	© SUCCES ©
Totalmortality, %	22,0	20,9	-1,1	





FINANCES

A milk cup feeding system costs DKK 12.50 per weaned pig.

- 80-90 per cent of this cost goes to milk powder.

85

FINANCES

A milk cup feeding system costs DKK 12.50 per weaned pig.

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BUT...NEVER CALCULATE MARGINALLY

Almost all farms change their production form when investing in a milk feed system.

They put more pigs to the sows and reduce the use of nursing sows.

- Increases the weaning age

OR

- Increases the number of farrowings per section (if there is capacity in the gestation pen)

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WE PUT MORE PIGS TO THE SOW

- Test of 14, 16, 18 and 20 pigs with the sow
- Day 1-21 (no space for the pigs anymore)
- Box pens and combi pens
- Sows selected by:
 - Body condition (minimum 17 mm back fat)
 - Number of functional teats (minimum 14 pcs.)
- Fed after close to appetite with med dry feed
- Piglets weighed all over 1 kg at litter equalization

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RESULTS

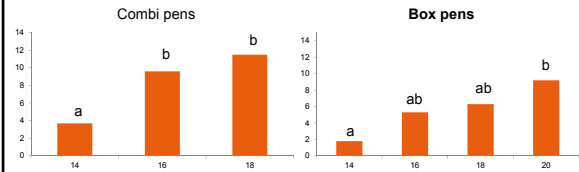
- The group of 20 pigs in the combi pens was closed after 10 batches due to high mortality.



SEGES

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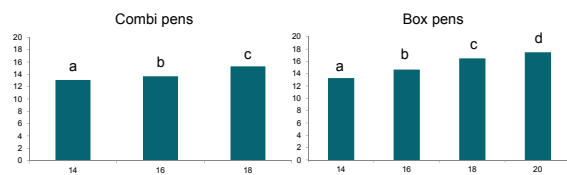
PROPORTION OF DEAD AND MOVED PIGS AFTER LITTER EQUALIZATION, %



SEGES

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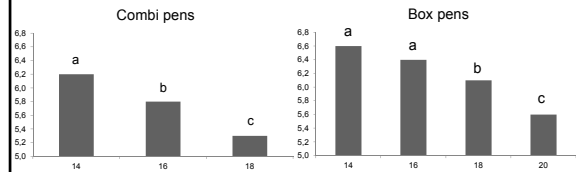
NUMBER OF PIGS IN THE LITTER DAY 21, PCS. PER BATCH



SEGES

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AVERAGE WEIGHT PER PIG IN THE LITTER DAY 21, KG PER PIGS



SEGES

94

THE SMALL PIGS ARE SQUEEZED

- The spread in the pig's weight increases
- The proportion of pigs below 3.5 kg was increasing with litter size
- The little pig fell behind with the increasing litter size



SEGES

95

THE SMALL PIGS

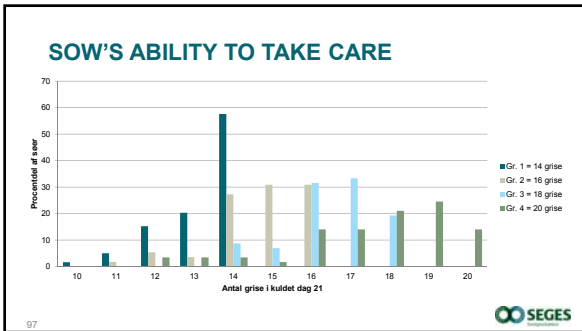
14 small pigs at a nursing sow with and without milk replacement

Group	Without milk	With milk
Proportion of dead and moved pigs, %	16,7	19,5
Weaning weight, kg	5,37	5,35
Weight gain piglets pen, g /day	350	360

No effect of group – but there were unfortunately several very small pigs in the group of milk

SEGES

96



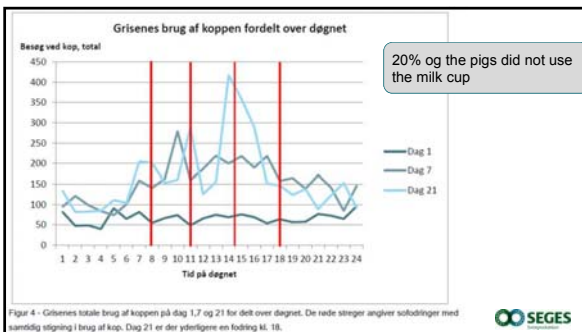
HOW TO INCREASE THE LITTER SIZE

Increase carefully! – with one pig at a time

Register the following:

- ✓ Proportion of dead pigs
- ✓ Number of collecting sows
- ✓ The amount of consumed milk powder (Weaning weight)

98



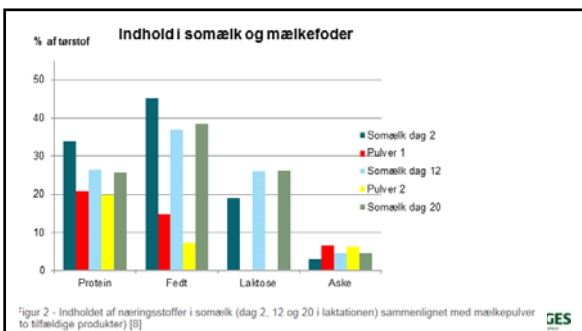
WEIGHT GAIN DEPENDING OF THE USE OF CUP AND +/- MILK REPLACEMENT

Aarhus University examines the pigs' use of cup by 14 and 17 pigs in the litter and +/- milk replacement

SEGES examines the weight gain the first week in the piglets pen depending of

- +/- milk replacement
- Low/high user of cup within the litter

100



FALSE OR

Quality and price are related to milk powder

If comparable within the same age group.

- No more energy in the expensive powders
- No more fat in the expensive powders
- No more lactose in the expensive powders

- We do not know the pig's growth depending on intake and different powders – we will investigate that next year

102

FALSE OR....

- Milk cup pigs get only milk and not an enzyme trained intestine (compared to mini wet feed plant)

NO

- There is plenty of wheat starch and even soy protein in the milk powder – especially for the oldest pigs

103



FALSE OR....

- An expensive and fancy plant is not necessarily equal to higher production or lower operating costs

- Example of heating plants that can only use one brand of milk powder.
- We do not know if the pig benefits from phase feeding and wet feed already in the farrowing pen. A cheap milk powder can be the best throughout the period.

104



FACT is, sow milk will always be the cheapest and best nutrition for piglets

As long as there are no extra farrowing pens built for the extra-born pigs, we will continue to see milk feeding systems for a number of years.....

FACT

- Results last year

FALSE

- Considerations regarding the choice of systems and milk powder



105

FARROWING - STANDARD PEN – CRATED SOW



DIMENSIONS

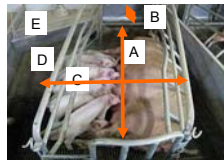
Sow:

- A. Crate length ≥ 210 cm
- B. Trough: 40 cm from front to back

Piglets:

- C. Distance needed for suckling ≥ 125 cm
- D. ≥ 1 m² solid floor
- E. Covered creep area: 0,8 m²

Pen length: ≥ 270 cm
 ≥ 15 cm from crate gate to pen gate



107



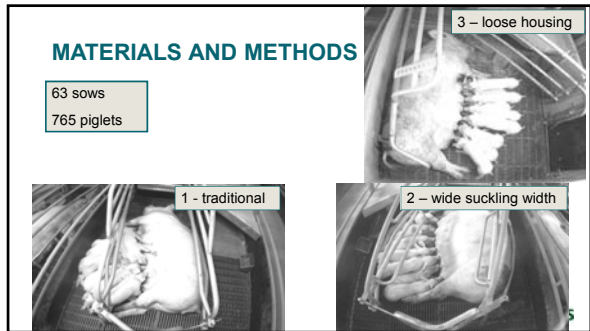
NURSING

Milk is only available during milk letdown
 Piglets must stimulate udder

Five phases:

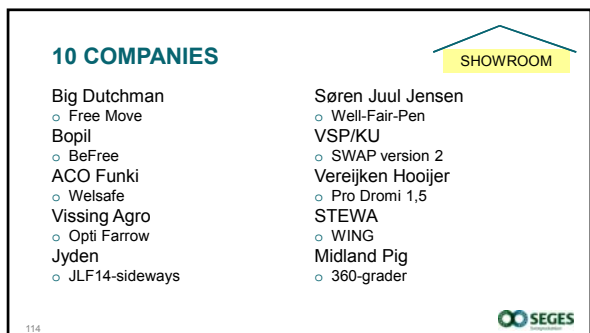
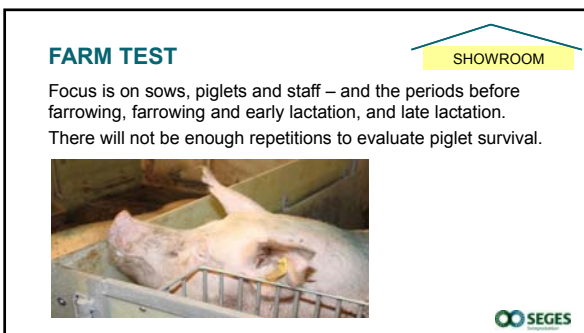
- Gathering
- Premassage
- Slow suckling
- Rapid suckling, 10-15 s
- Postmassage







RESULTS


Traditional	Wide suckling width	Loose housing
		+ 2 sec. milk production
Day 28: 6,1 kg (a)	Day 28: 6,4 kg (ab)	Day 28: 7,1 kg (b)
Day 28: 13 piglets (11-14) (a)	Day 28: 12 piglets (8-14) (b)	Day 28: 12 piglets (8-13) (b)
Daily grain: 205 g/piglet (a)	Daily grain: 243 g/piglet (b)	Daily grain: 228 g/piglet (ab)



SHOWROOM

Søren Juul Jensen, Well-Fair-Pen (9) VSP/KU, SWAP version 2 (8)



115

SHOWROOM

STEWA, WING (8) ACO Funki, Welsafe (7)



 




116

SHOWROOM

Big Dutchman, Free Move (7) Vissing Agro, Opti Farrow (7)






117

SHOWROOM

Bopil, BeFree (7)

Midland Pig, 360-grader (8)



118

NANNY SHOWROOM

Vereijken Hooijer, Pro Dromi 1,5 (8)





119

SHOWROOM

Jyden, JLF14-sidevendt (6)





120

M² PER PEN

Traditional pen 5 m²

Pro Dromi 6 m²

121 | 20. december 2017

RESULTS

SHOWROOM

COMING SOON

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THANKS FOR YOUR ATTENTION

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