Insemination

We harvest what we plant

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Introducing

What is our target:

- High percentage of successful inseminations
- High percentage of farrowing's
- High amount of born alive piglets
- The Quality of born alive piglets
- Full farrowing group

High percentage of successful inseminations

Anestrus

The act of weaning the sow or even removing just 3-4 piglets increases the pressure of milk in the mammary gland and this causes the udder or relevant gland to stop production. This mechanism causes the hormones that promote milk production to cease, thus allowing the development of the follicle stimulating hormone and luteinizing hormones, to bring the sow back into estrus or heat.

Check list for Anestrus

- The most common cause of anestrus or delayed estrus is loss of body condition, particularly in the first two - three weeks of lactation.
- Make sure that overfeeding in lactation does not happened
- Make sure that there is easy access to water, with a nipple flow of at least 4 liters per minute.
- Always remove uneaten feed from the trough because in a warm farrowing house fermentation takes place within 3-4 hours.
- If the sow is correctly fed and managed during lactation, she should come into heat in the fertile period.
- Are sows comfortable in the farrowing house? A too low temperature will cause the sow to lose weight in spite of possibly eating slightly more.
- Avoid weaning more than 20% of piglets from the sow during lactation.
- If you think a gilt or sow is on heat and she will not stand always try another boar but leave a gap of half an hour before doing so.

Gilts condition

- Weight in insemination period 150-160kg
- Back fat level 12-14 mm
- 240-260 days old
- Second or third heat
- Daily gain is 600-660 gram

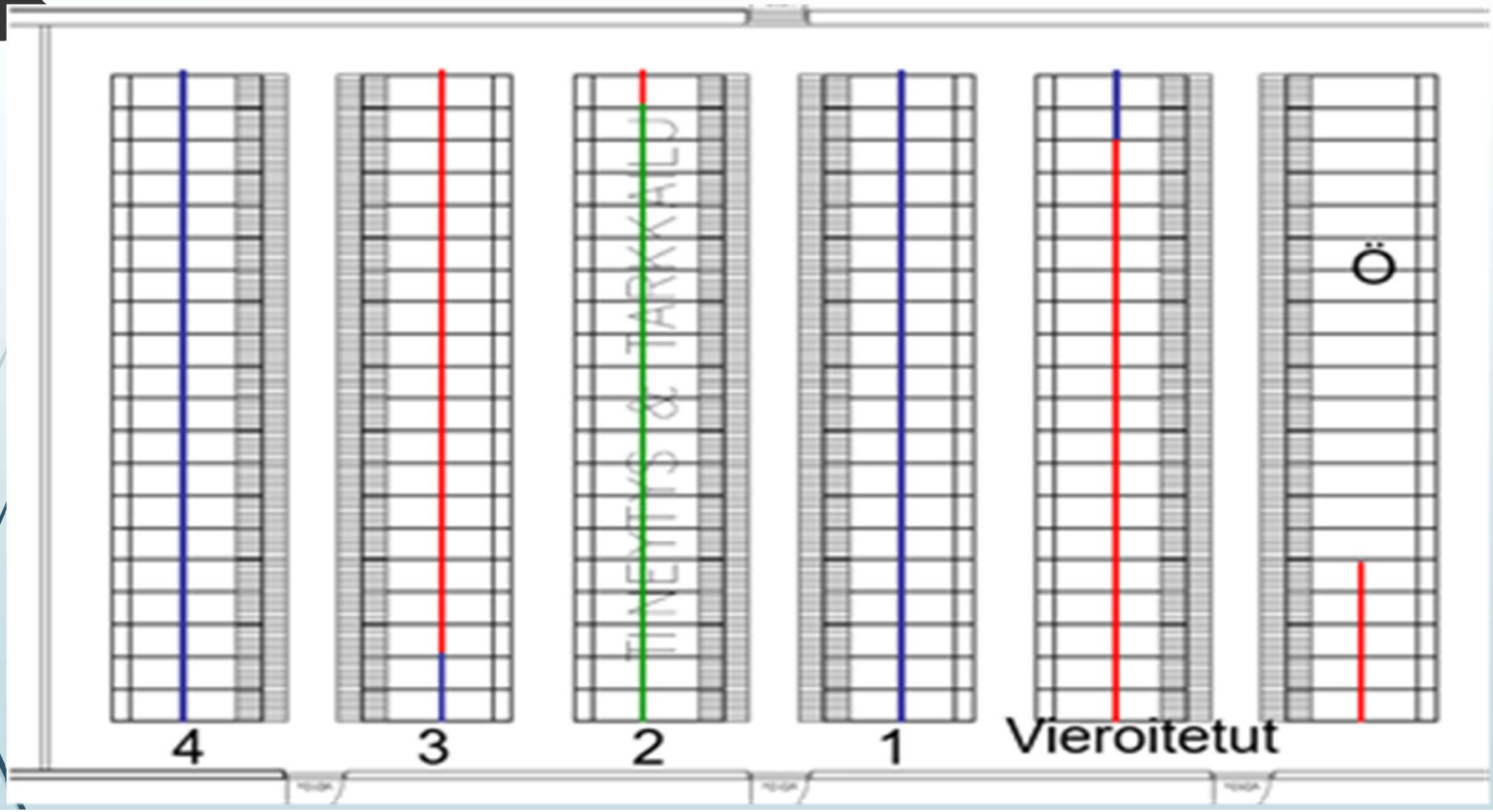
Sows condition

- Parity 2 till 8 (recommended)
- Back fat level 12-15 mm(depended of the race)
- Lactation days is 21-35 (recommended)
- No injuries and infections

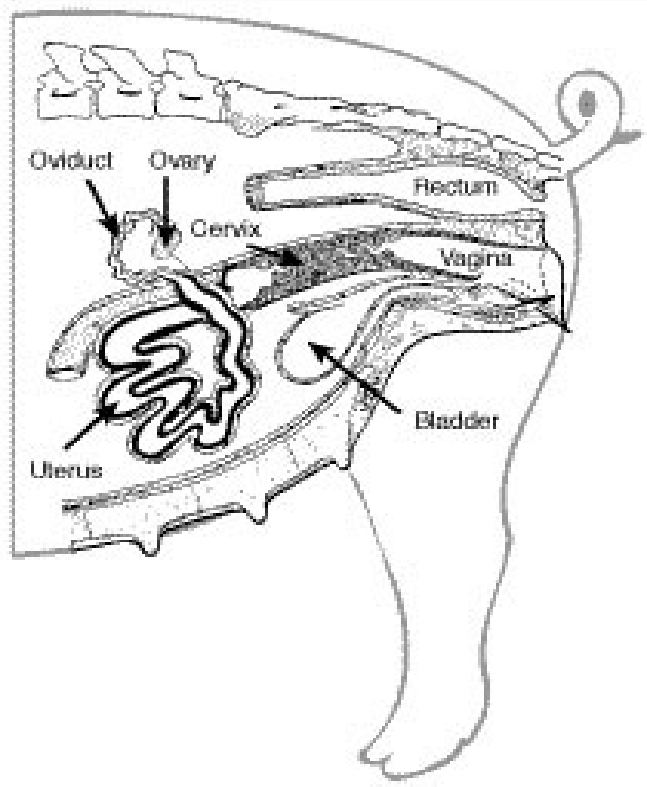
Effective placing in insemination rooms

- Use week color
- Own place for empty sows
- Clear marking system for empty sows
- Own mark if you re inseminate sows
- Scanning two times (4th and 6th week), why ?

Example

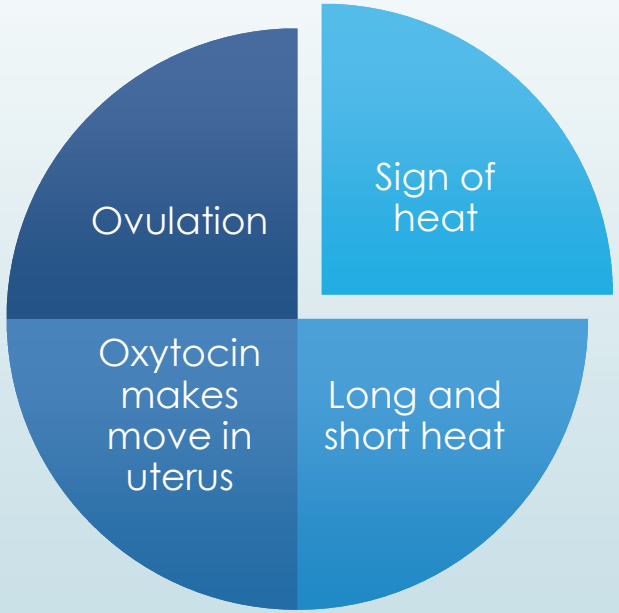


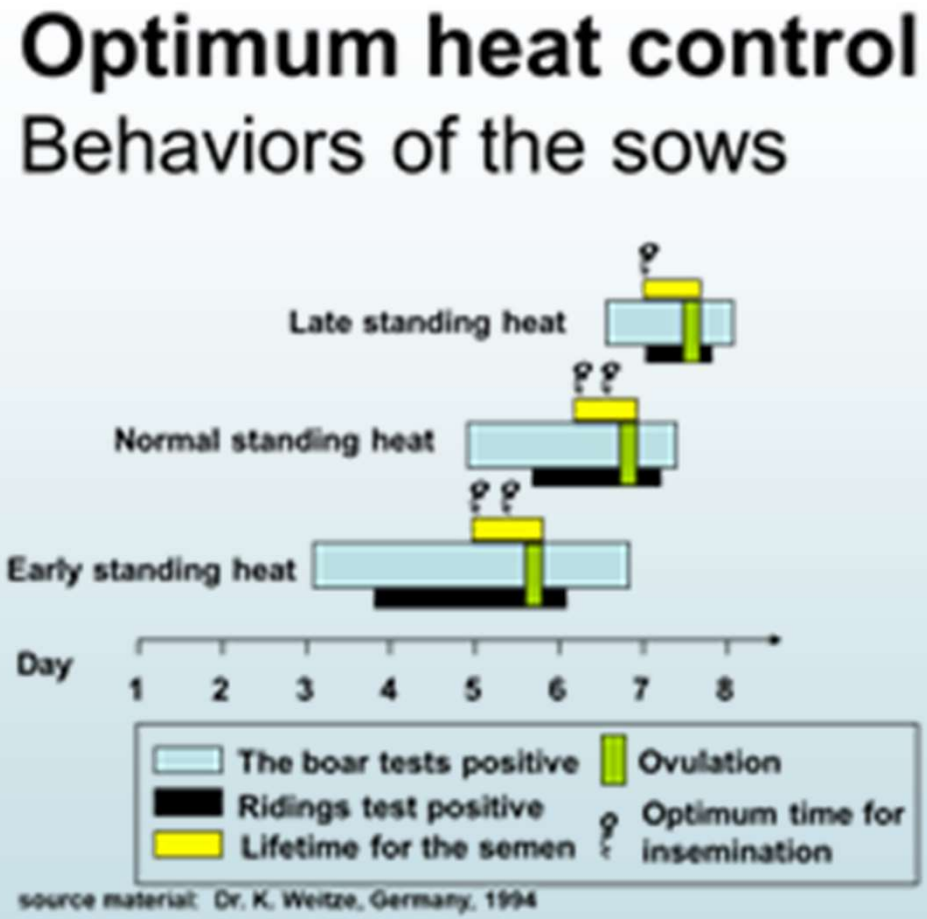
Reproductive anatomy of the sow



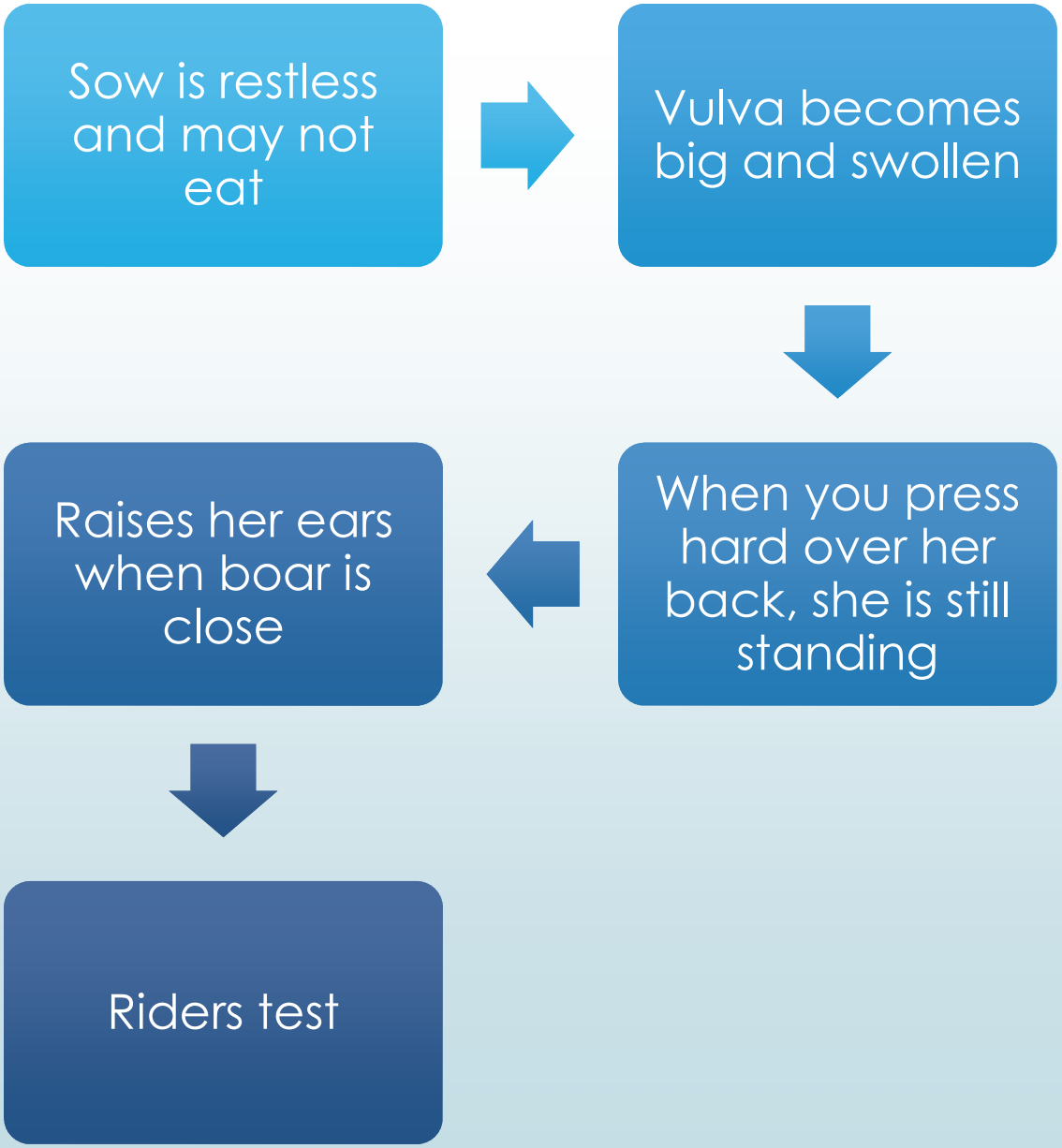
- Vulva is visible part of reproductive tract
- Vagina tapers into the cervix
- During the estrus cervix become to be swollen
- Uterus is the corridor to transport semen to the Oviduct
- Ovary releases the eggs during ovulation, and the oocytes enter the oviduct.

Heat Control





Signs of heat



Heat check with the boar

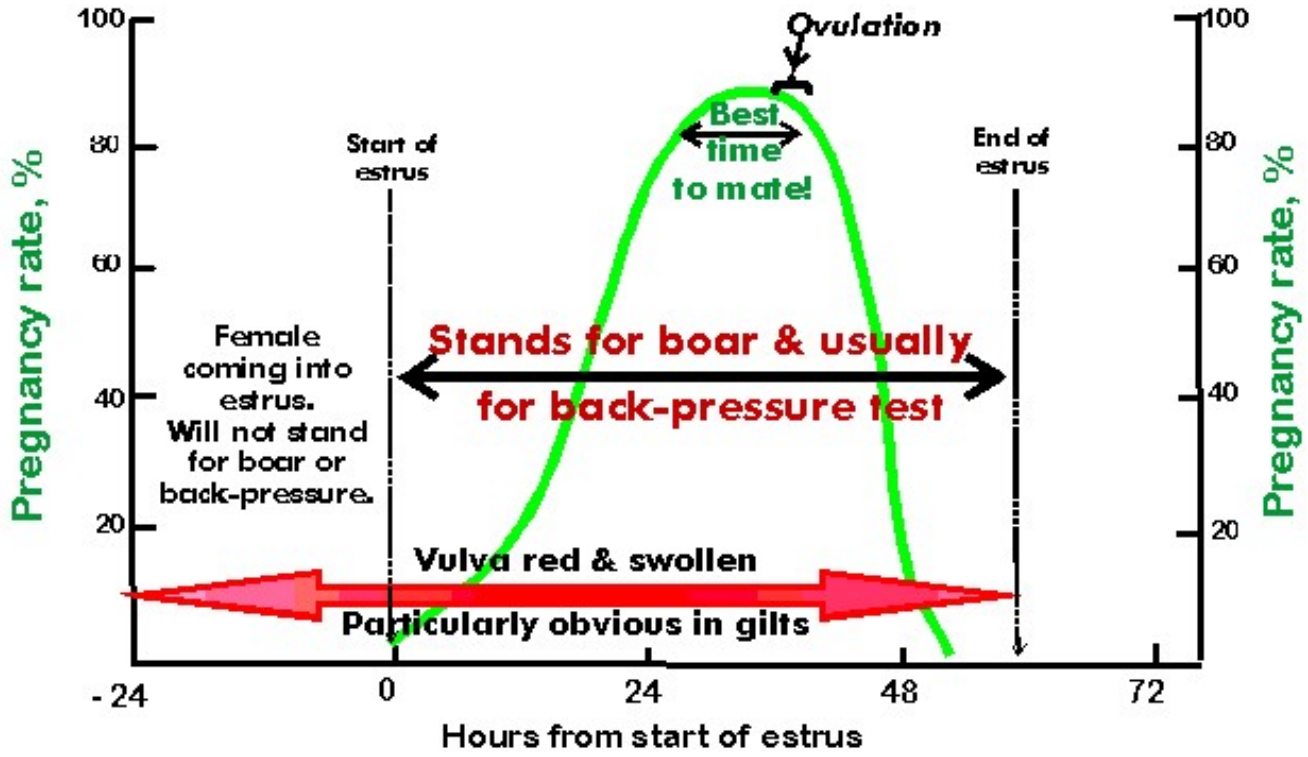
- Do the checking on calm moment at daytime
- Use always the active and experienced boar, use differed boars
- Make a round with the boar in the pregnancy checking room
- You could place the boar in a group of pregnancy sows (10 minutes)

Long and short heat

- Long heat: its sows only after weaning 3-5 days
- Short heat: every other, including the gilts

Ovulation

- Modern sows produce 20-26 eggs and gilts 14-22 eggs at ovulation
- Eggs will begin to die within 8 hours after ovulation
- Fertilization should occur within 6 hour after ovulation for optimum fertility
- Ovulation occurs about 70 % into the time frame of estrus



Sows and gilts are usually mated once during the first day and again during the second day of estrus. Spermatozoa have relatively long survival periods in the female reproductive tract (>24 h) but get tired towards the end of this interval. In contrast, oocytes degenerate soon after leaving their follicles so should be fertilized quickly. Mating during the first and second day should insure that viable spermatozoa are present in the female's reproductive tract, ready to fertilize oocytes very soon after they are ovulated and pass into the oviduct.

Right time for gilts insemination

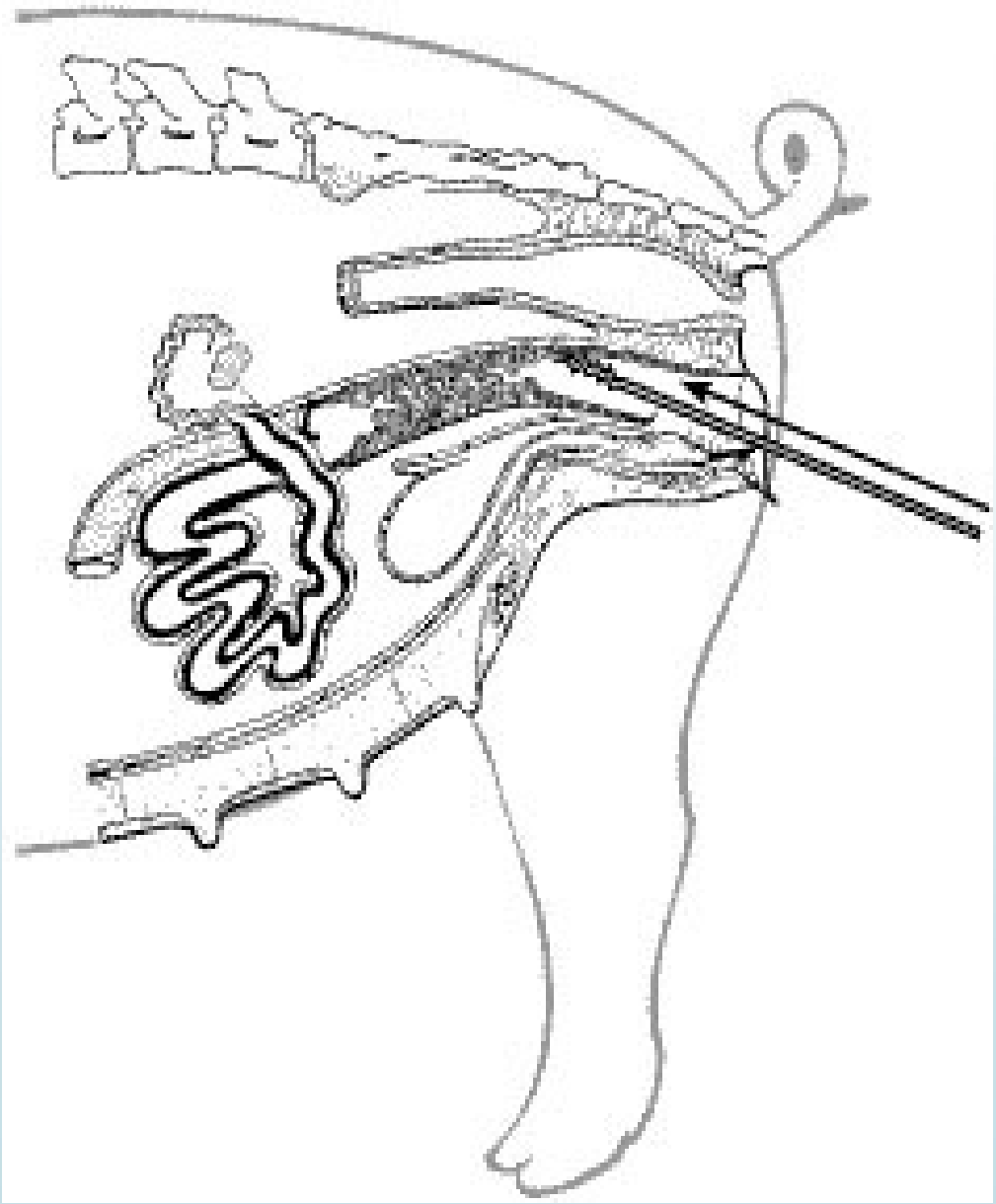
- Move gilts in inseminations section 2 weeks before expected heat
- Move gilts in inseminations pen 7 days before expected heat
- Minimum 1 hour before or after feeding
- Half hour after sugar flush feeding

Right time for sows insemination

- Start to observe the heat in day 4 after weaning
- In normal situation in day 5 is 100% heat
- Minimum 1 hour before or after feeding
- Half hour after sugar flush feeding
- All sows has to be done during 1 hour after boar were coming inside the insemination room
- Make sure that you have enough time to do it ready

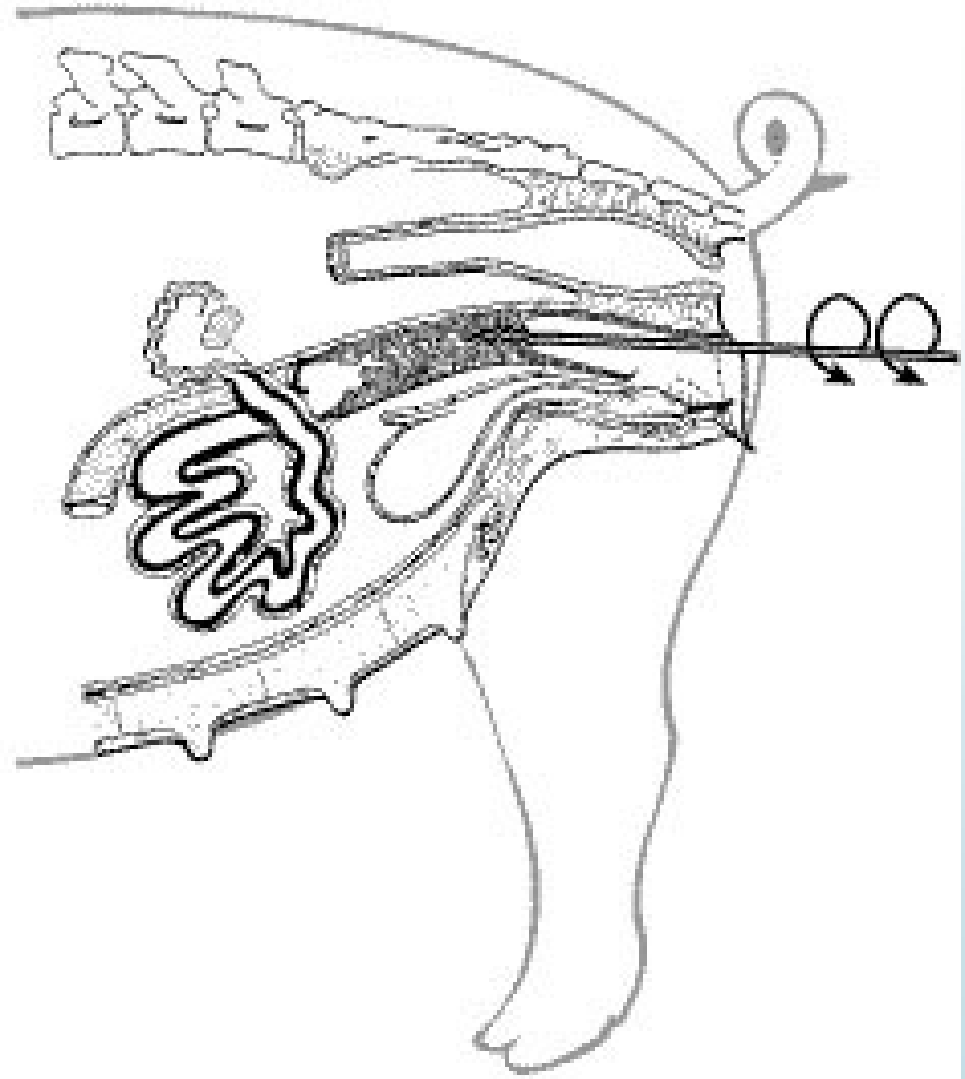
Stimulation and catheter insertion

- Do stimulation to sows what really needed it.
- Before seamen, you must at least check heat to do riding test, to find is sow too early to inseminate.
- Clean the vulva before the Catheter inserting
- Put catheter enough deep and in right place
- Don't push the semen package, its take what is take !



Stimulation and catheter insertion

- Use a counterclockwise rotation to insert the catheter into the cervix
- Gently invert the bottle of diluted semen two or three times to mix the semen
- A small amount of backflow is expected. If an excessive amount of backflow occurs, stop
- Sows should always be handled calmly and gently
- A new catheter should be used for each insemination
- Keep the female in quiet surroundings for 20--30 minutes



Pregnancy check with pregnancy scanner

All the sows should scan on 24 – 28 day pregnancy

Remember to scan also the sows on sick pen

Use a gel on the scanner head and place head on a groin

Turn slowly the scanner head until you see a clear image

If the image is unclear, add the gel again

If the result is not sure, mark the sow and check again after one week

Scan the empty sows on both sides, mark minus for empty sow and transfer to insemination room or cull the sow.

Working plan for the empty sows

Transfer the sow on the insemination room or cull

Do heat checking daily

Inseminate the sow, when it is on standing heat

When the sow had inseminated, move into week group

Everyone should be clear, how long the sow has chance to become pregnant before culling

Right feed and amount

- Use special recipe of feed for insemination period
- Feed amount is based on parity and sow condition
- The skinny sows can have even 40% percent more
- Minimum 12 litter of water intake per day
- High hygienic level of feeding trough

Days in gestation	Cycle 1		Cycle 2-3		Cycle 4 and more	
	Min	Max	Min	Max	Min	Max
0-49	2.1	2.2	2.5	2.6	2.7	2.8
50-84	2.3	2.4	2.4	2.5	2.5	2.6
85-110	2.8	2.9	2.9	3.0	3.1	3.2

Flushing feed with sugar or other products

- Minimum 150gm of dextrose for each sow per day
- Twice per day, half hour before the boar contact
- What is the difference between sugar and horny feed ?

What you need to know about light ?

Gilts exposed to 14-18 hours light:

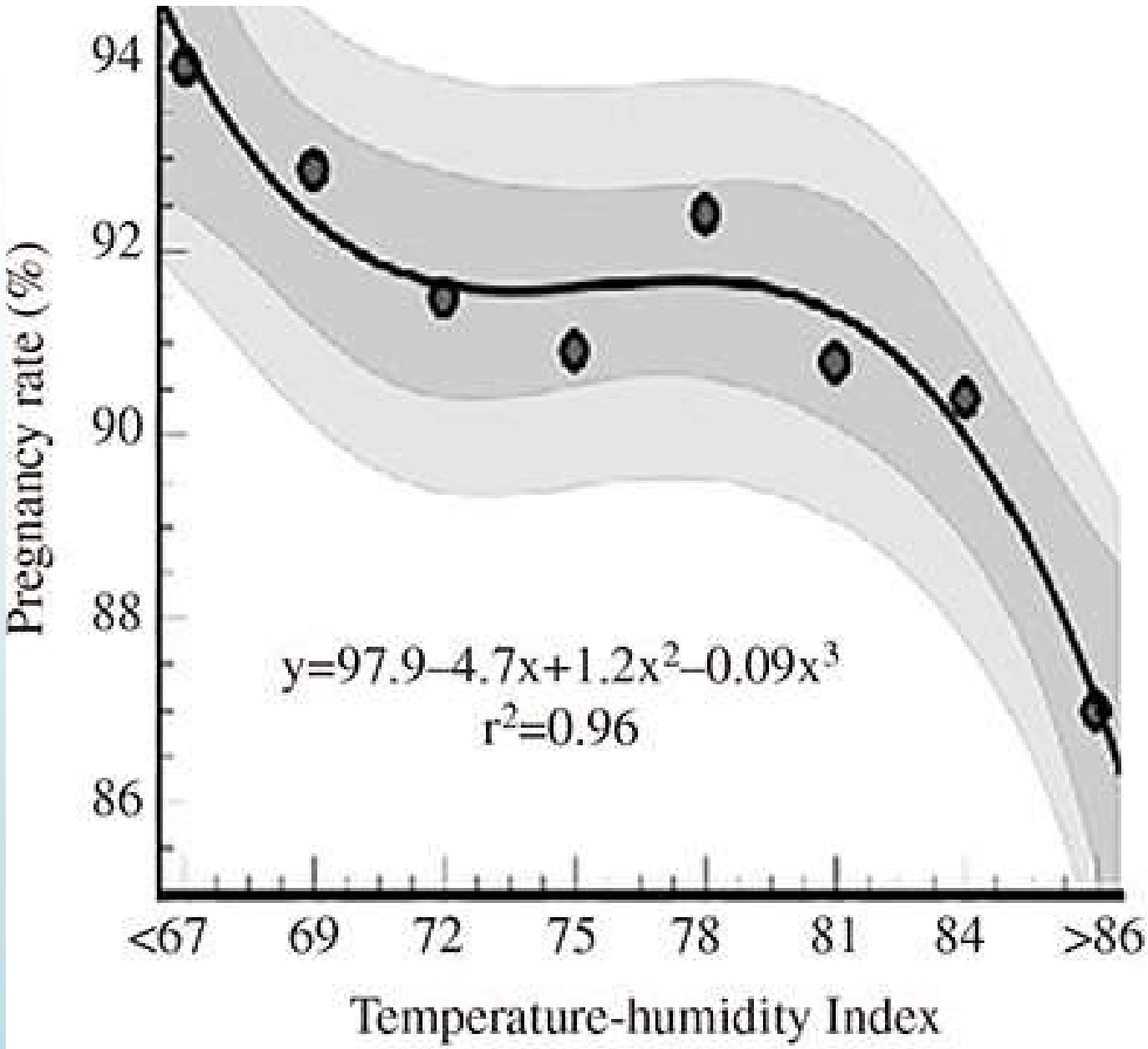
- Reach puberty earlier.
- They are a lighter weight at puberty.
- There is no difference in ovulation rate.
- Both gilts and the boar are sexually more active.

Couple facts for sows

- The weaning to service interval is reduced if 16 hours of light is given after weaning with a continuous light intensity of 250 lux
- Sows are on heat longer when exposed to more light
- Light has no effect on litter size but absorption of embryo and foetuses may occur in poor lighting during early pregnancy
- During the dry period a minimum of 220 lux is required for 14 hours a day
- Fluorescent light is nearer to natural light than incandescent lighting
- The light must be placed over the sow's heads
- Make sure sows are not exposed to decreasing daylight lengths
- Provided 8-10 hours of darkness after a period of light

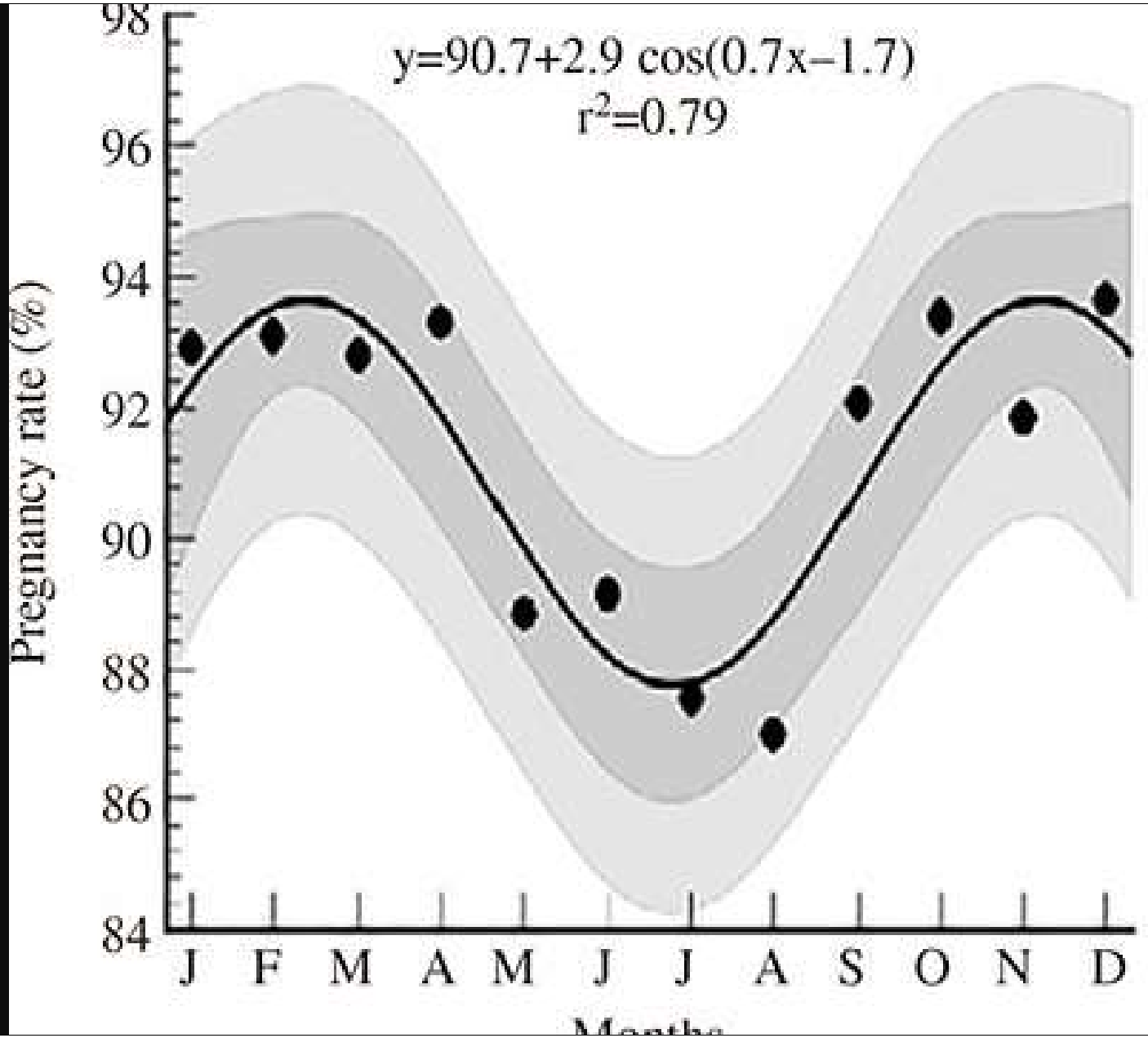
Temperature and Humidity

- The mean pregnancy rate for different temperature- humidity indexes in a commercial pig farm (Yorkshire x Landrace gilts/sows) in a subtropical zone (20° N; n= 8851 farrowings). Darker bands are 95% confidence intervals for predicted values. Lighter bands are 95% confidence intervals for observations.



Rate by breeding month

- The mean pregnancy rate by breeding month in a commercial pig farm (Yorkshire x Landrace gilts/sows) in a subtropical zone (20° N; n= 8851 farrowings). Darker bands are 95% confidence intervals for predicted values. Lighter bands are 95% confidence intervals for observations.



Boar is important factor for insemination

Space needs

- On a pen must have at least 6 m2 free area / boar
- If the boar does also mating, on pen must have at least 10 m2 free area / boar
- Do not use a sawdust or cutter as bedding, these may contain estrogen like substances and that's why could increase the number of returners.

Taking care of the boar

The boar must get same vaccines, as giving herd's vaccination program for sows

When the using -age reached, do 10 pure mating and check return -%.

The boar index must be at least 120 on internal seamen using

If farm using the internal boar seamen, check sperm mobility and quality by microscope

Using the boar for mating

- You can begin to use the boar, when it is 7 – 8 months old
- The boars walking corridors can't be slippery
- You can close the sow to boar's pen only by supervision
- The sow must take out from pen immediately after mating
- The boar should jump (do mating), at least every 14 days
- You should use actively the boar only 12 months, because of index

Learn to the boar jump on internal seamen taking

- Bring a phantom to boar's pen, that how it feels safe
- It is very good, if just before the other boar had just jump on that phantom
- Let the boar stay couples minutes a lone with the phantom
- If the boar doesn't jump, you could go guide boar and clap to phantom
- Learn the boar only time when it is interested on
- When the boar is not anymore interested, stop immediately. Try again after couple days

Smelling boar

Select the cross -breed boar, it has higher sexual activity than pure breed

To keep the smelling boar on activity, it should also jump sometimes to sows on heat what are just going to culling

You can use the smelling boar so long until it is still activity

Boar Contact

- Young and active boars
- Is one is enough ?
- How to get best boar contact ?

Semen

- Fresh semen on main days
- Check semen life permanently !
- Ordering is twice per week
- Follow the refrigerator temperature. Optimum is 17 degrees.
- Don’t take with you, more than you need
- Follow the race on the semen packages

Seamen reception and storage

Seamen should be delivered in cool box or bag

When seamen have delivered, move doses on a seamen storage cabinet. If it is possible, place them on one layer only

Seamen should storage all time at 16 – 18 C temperature

On the storage cabinet should always be min / max thermometer, check storage temperature daily.

According to the recommendations for right storage, production seamen are 4 days and pure -breed seamen 2 1/2 days useable on farm.

On heat checking, take only that amount seamen, what you need

If you storage seamen on styrox -box during the insemination room working time, you could use doses also on next day. Use these doses first on tomorrow

A baskets on storage make easier to notice differ seamen batch / sort

Temperature

- Seamen is very sensitive for temperature variation.
- Less than 15 Co and over 38 Co temperatures causes damages on sperm.
- On temperature 18 – 38 Co sperm are on move, and that how it use unnecessarily it's energy, and that how usability time come shorter.
- Direct sunlight, detergents (cleaning products) and alcohol will kill the sperm.

Don't never storage seamen:

- on cold and draught place
- on window
- on floor
- on pocked

High percentage of farrowing's

- What is the difference between insemination and farrowing percent ?
- Mix sows either less than 4 days or 4 weeks after
- Non-productive days what is this ?
- Check the gestation every day, best is during the feeding time
- Hygienic of feeding trough
- Free access to fresh, clean water

Transfer the gilts and sows to gestation

- The gilts and sows should to transfer either immediately after insemination or after 4 weeks pregnancy to gestation. Every time when a group have made, they will make a new ranking order.

Before the animals transferring to gestation

Spread enough straw etc. and check that every feeding stations, -valves, dry feeders will work.

Watering the manure area, that the animals will use right place (and if you have: check the functioning of slat wetting system)

Transferring the animals

Fill up the pen at once

Transfer should do on daytime, when it is a calm moment, usually after feeding time

Give the extra feed dose immediately after the transfer

Special attention to the gilts

- You could put the gilt with sows on the stabile groups.
- If the gilt will put together with sows, it is recommended to transfer gilts 2 – 3 days earlier before sows.
- It is recommended to keep the gilts on own stabile group.
- If you need to add gilts to already existed groups, add at least 10 gilts at a same time, then the group will become re-formed (dynamic group).

Attention !

- Do not mix the animals on the fetal attachment time (5 – n. 25 days after insemination), because it will increases the risk of abortion!
- Please note the valid legislation of the holding time on cage after insemination! Work within limits of the law, so that the transfer time is in the safest time as possible, so before or after fetal attachment time.
- It is recommended to not transfer the animals at all on fetal attachment time on models where become competitions on feeding time.

The pregnancy cart

How to work with it ?

V	Em	En	Yh	U	1+2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Odo	Por	%	Yh	El	Ku	Vi	Vi
26	42	5	47	2		/1	2/	/1											1/	/1		41	87	14.3	13.3	1.0	0.6	11.6
27	31	13	44	3	1/	2/1		1/								1/		2/				36	82	14.8	13.8	1.1	0.2	11.7
28	40	8	48	5		1/	2/		1/1	1/	/1				/1			1/1	/1			37	77	15.2	14.1	1.1	0.4	11.4
29	36	15	51	4			2/			/1			/1				/1	/1				45	88	15.4	13.9	1.4	0.4	12.1
30	31	18	49	4			1/	1/	1/	2/	/1								/1	/1		41	84	14.7	13.9	0.8	0.5	11.6
31	36	13	49	5			2/			1/					/1					/1		44	90	14.1	13.4	0.7	0.5	11.5
32	43	8	51	4			1/	1/1	/1						1/1					/1		44	86	15.2	13.9	1.3	0.5	12.5
33	35	16	51	2			4/1				/1				/1					/1		43	84	15.3	14.3	1.0	0.5	11.9
34	35	16	51	5			2/		/1	3/	/1											44	86	14.3	13.3	1.0	0.3	11.5
35	35	10	45	2			1/	1/1	2/	1/	1/	/1							1/			36	80	14.2	13.7	0.6	1.1	11.2
36	42	14	56	10			1/3	1/		1/1									/1			48	86	13.6	12.7	0.9	0.9	11.7
37	34	12	46	4		1/				/1						/1				/1		42	91	14.2	13.1	1.0	0.5	11.5
38	36	13	49	1		1/	2/	1/	2/			1/	/1			1/						40	82	14.1	13.3	0.7	0.4	11.8
39	32	23	55	4		1/	/1			1/			/1									51	93	14.1	13.5	0.6	1.0	11.5
40	41	8	49	4	/1	/1	/2	3/		1/							/1					40	82	15.2	14.0	1.2	0.3	12.2
41	40	7	47	8			3/1	2/1		/2		1/										37	79	15.0	14.1	0.9	0.3	12.4
42	42	13	55	6				2/1	/1	1/1												49	89	14.3	13.3	1.0	0.4	11.8
43	37	9	46	4			1/	1/												/1		43	93	13.8	12.9	0.9	0.3	11.7
44	39	8	47	6		1/											1/1					44	94	14.4	13.8	0.7	0.3	11.2
45	38	14	52	3			/1		1/	1/			1/			/1	1/					46	88	14.5	13.7	0.8	0.3	10.8
46	43	8	51	4					3/1	2/1			/1									43	84	14.0	12.5	1.4	0.3	12.0
47	32	6	38	3			2/1	/1	2/	1/						1/						30	79	15.1	13.9	1.2	0.4	12.6
48	36	21	57	1	1/1		2/	1/	1/1	2/					1/							47	82	14.9	13.9	1.0	0.3	12.0
49	38	12	50	2			1/	1/	1/						1/		/1	1/				44	88	15.4	14.4	0.9	0.2	11.0
50	42	5	47	3		1/					1/							1/1	/1	/1		41	87	14.8	13.8	1.0	0.4	11.0
51	38	11	49	5											1/				/1	1/		46	94	13.9	13.3	0.6	0.4	12.3

Insemination Problems

V	Em	En	Yh	U	1+2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Odo	Por	%	Yh	El	Ku	Vi	Vi
26	42	10	52	3			4/1			1/	1/					/1		/1		/1		42	81	16.5	15.3	1.1	0.3	11.9
27	40	16	56	1			3/	/1	1/	/1									/1	/2		47	84	15.8	14.9	0.9	0.2	11.2
28	52	13	65	6		1/	2/		1/							/1						60	92	14.7	13.5	1.2	0.4	12.3
29	39	11	50	5			2/	1/1												/1		45	90	16.1	15.3	0.8	0.4	11.3
30	54	2	56	5		1/	5/1			1/	1/									/3		44	79	16.7	15.4	1.3	0.2	13.4
31	46	10	56	2		1/	2/1		1/	/1	/1		/1						/1	/1		46	82	16.1	14.9	1.2	0.5	13.1
32	39	9	48	6		1/1				/1		/1	/1									43	90	16.5	15.6	0.9	0.4	12.7
33	42	7	49	8		1/	1/3		/1	/2		/1										40	82	16.6	15.9	0.8	0.3	14.4
34	45	11	56	3		3/	3/1	1/	1/											/1		46	82	15.8	15.2	0.6	0.3	12.1
35	47	8	55	3			3/				/1						/1			/2		48	87	16.9	15.9	1.0	0.4	11.8
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37	40	17	57	6		1/	2/	1/1	1/		/1								/1	/2		47	82	15.7	14.5	1.2	0.6	12.1
38	47	10	57	3		2/	4/	1/1		1/				/1	/1		/1		/1	/1		43	75	16.3	15.1	1.3	0.4	13.9
39	41	15	56	7			2/1	/1		1/2										/2		47	84	15.3	14.5	0.8	0.6	11.7
40	50	7	57	4			2/2	1/1	1/			/1		/1								48	84	15.5	14.4	1.1	0.3	13.0
41	39	6	45	3			2/		1/				/1					/1	/1	/1		38	84	16.2	15.3	1.0	0.2	11.1
42	44	13	57	6		1/	4/			1/	/2	/1										48	84	16.2	15.0	1.2	0.3	11.6
43	41	14	55	3			3/			/1		/1	/1							/1		48	87	16.0	15.1	0.9	0.1	11.5
44	40	13	53	2					1/							/1				/2		49	92	15.0	14.1	0.9	0.1	11.7
45	36	6	42	6		1/	3/1	1/		/1	/1											34	81	16.5	15.4	1.2	0.6	11.5
46	46	12	58	6			1/1	2/		2/				/1			/1		/2	/2		46	79	16.2	15.0	1.2	0.4	11.5
47	44	13	57	1		/1	1/		1/	/1		/1								/2		50	88	15.4	14.5	0.9	0.2	13.4
48	45	10	55	4			1/				/1	/1								/3		49	89	14.8	14.1	0.8	0.2	12.1
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50	44	14	58	5		1/			/1	/1						/2				/2		51	88	16.0	15.1	0.9	0.2	11.5
51	42	6	48	2		1/	3/1		/1			/1		/1						/1		39	81	17.4	15.9	1.4	0.9	12.8

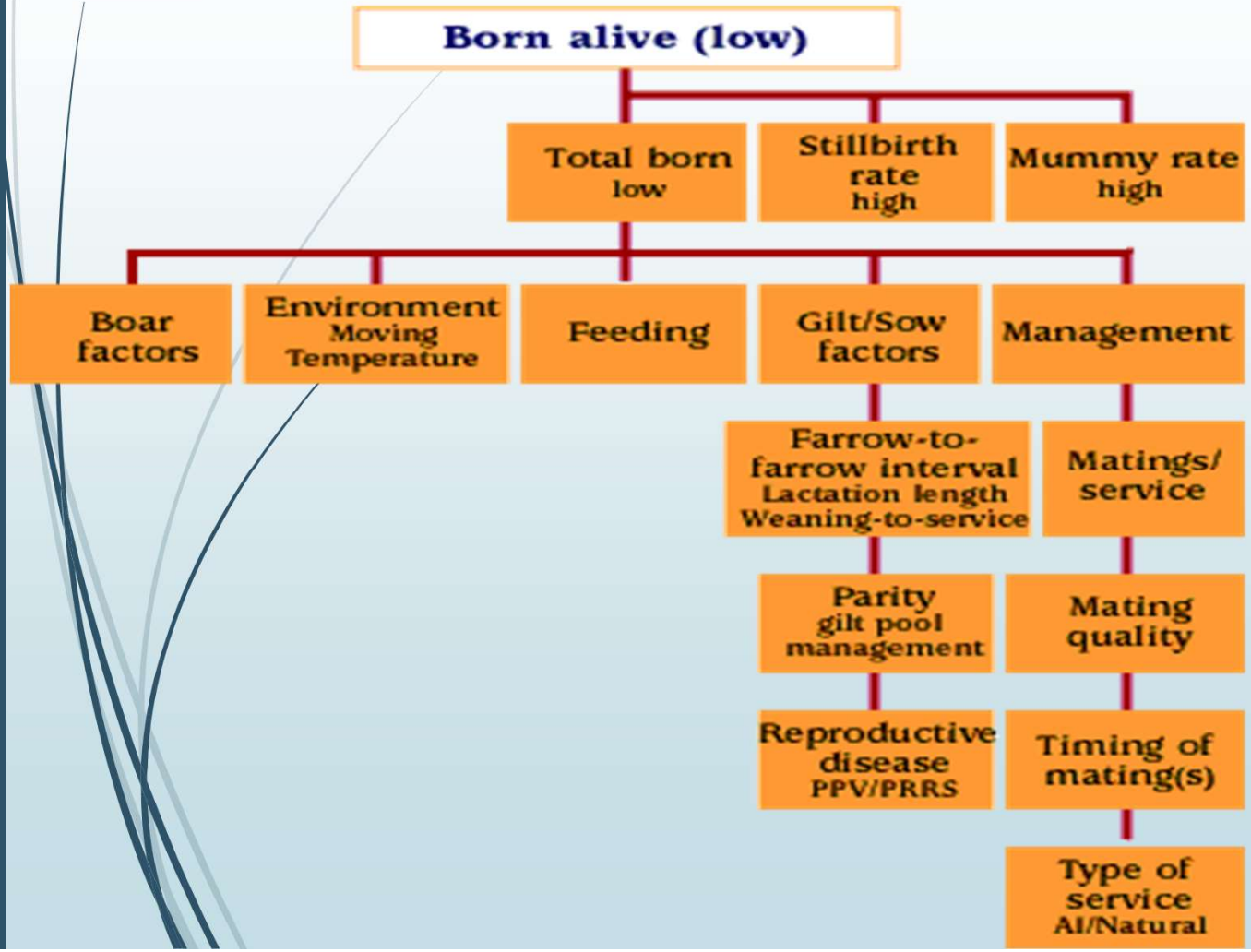
Gestation problems

V	Em	En	Yh	U	1+2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Odo	Por	%	Yh	El	Ku	Vi	Vi
4	31	6	37								1/						/1			/1		34	92	16.9	15.3	1.6	0.1	14.7
5	22	7	29	1	2/		1/									/1				/2		23	79	16.4	15.0	1.3	0.1	17.0
6	32	4	36	4						1/1			/1									33	92	17.6	16.6	1.1	0.0	14.0
7	49	16	65	3				1/	1/1											/1		61	94	18.5	16.9	1.6	0.3	14.6
8	26	6	32	3															/1	/1		30	94	16.7	15.1	1.6	0.2	12.3
9	43	13	56	3				2/	1/	2/		1/1			/1		/1					47	84	16.4	15.1	1.3	0.0	13.3
10	34	6	40	1			1/	1/														38	95	18.0	16.2	1.8	0.3	13.3
11	28	11	39	1			1/															38	97	17.2	16.0	1.2	0.2	14.8
12	41	13	54	3										/1					/1			52	96	17.8	16.6	1.3	0.4	14.7
13	36	13	49	3						1/				/1	/2	/1	/1		/1			42	86	17.4	15.4	2.0	0.3	12.4
14	26	6	32	3				/1		1/										/1		29	91	16.8	15.0	1.8	0.2	14.8
15	33	7	40	3			1/	/2	2/		/1						/1			/1		32	80	18.0	15.6	2.4	0.0	13.3
16	39	18	57							/1					/1					/1		54	95	17.1	16.0	1.0	0.3	15.4
17	37	10	47	2	1/			1/	2/2	1/										/2		38	81	17.8	16.0	1.8	0.3	13.3
18	25	12	37	1																		37	100	17.1	15.6	1.5	0.5	14.6
19	27	8	35					/1			/1								/1		1	31	91	17.2	15.5	1.7	0.4	12.8
20	43	8	51	2				2/	2/	2/1	/2						/1					41	80	18.7	17.2	1.5	0.3	13.4
21	43	5	48	2				1/	1/											/1		45	94	17.4	15.8	1.6	0.5	13.6
1	32	12	44	2				/1	1/	1/	2/					/1	/1			/3		34	77	17.5	15.9	1.6	0.3	12.8
2	28	4	32	2	/1					1/	1/									/1		28	88	18.3	16.9	1.4	0.1	15.7
3	40	11	51	2	1/		1/	1/	/1													47	92	17.1	16.0	1.1	0.2	13.5
4	32	9	41	4					1/3	2/	1/		1/		/4					/1		28	68	18.0	17.2	0.8	0.2	12.8
5	34	12	46	3	1/	/1		2/		3/	1/			/1								37	80	16.9	15.8	1.1	0.2	12.8
6	36	19	55	3	2/1			3/	1/										/1	/1		46	84	17.2	16.0	1.3	0.3	14.0
7	40	9	49	3								1/								/1		47	96	16.1	15.0	1.1	0.3	15.8
8	28	7	35	2										/1						/1		33	94	16.6	15.1	1.5	0.2	12.6

Normal Situation

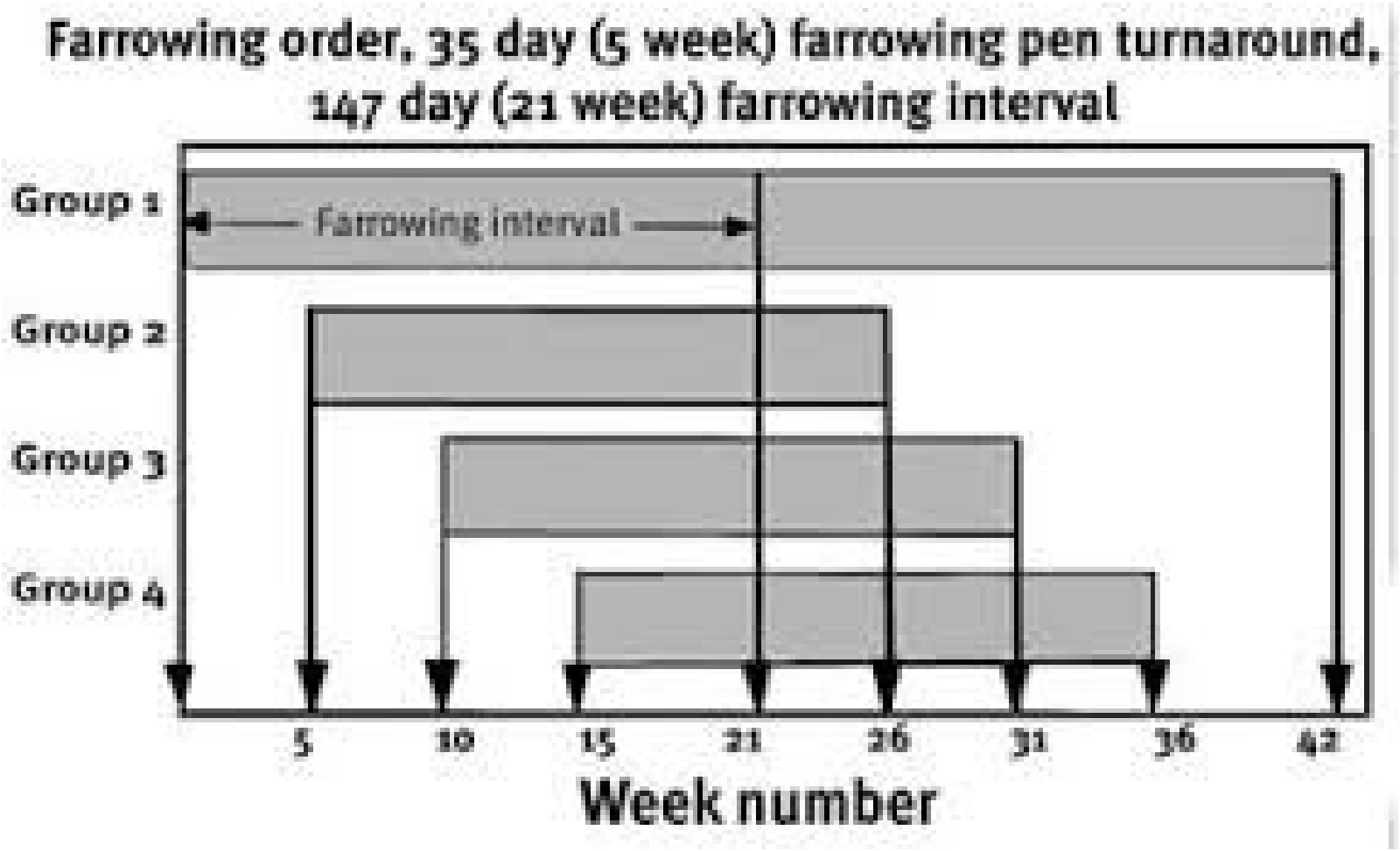
V	Em	En	Yh	U	1+2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	-	Odo	Por	%	Yh	El	Ku	Vi	Vi
1	13	5	18				2/	/1															15	83	15.5	14.1	1.3	0.2	10.8
2	23	1	24	1			2/		/2														20	83	17.8	16.3	1.5	0.4	11.3
3	17	2	19	1						/1	/1												17	89	14.6	13.4	1.2	0.1	11.7
4	23	3	26	3	/1	2/		1/															22	85	16.0	14.6	1.4	0.1	14.0
5	15	1	16	1				/2															14	88	16.8	14.8	2.0	0.3	13.9
6	12	9	21	2			1/																20	95	14.8	13.7	1.1	0.1	12.3
7	18	8	26	1		/1	2/2				/1												20	77	15.1	14.3	0.8	0.1	12.9
8	15	6	21	1	/1				1/			/1								/2			16	76	14.5	13.8	0.8	0.1	12.8
9	19	4	23								/1												22	96	16.3	15.0	1.4	0.1	11.0
10	16	6	22	2						/1													21	95	15.7	14.4	1.3	0.0	14.7
11	12	7	19	1		1/																	18	95	15.9	14.8	1.2		13.6
12	19	5	24			1/																	23	96	16.8	15.8	1.0	0.3	12.5
13	21	5	26	2			2/																24	92	17.5	16.2	1.2	0.0	13.5
14	15	5	20							/1													19	95	17.3	16.4	0.8	0.5	12.3
15	15	7	22	1				/1	/1														20	91	17.4	16.6	0.8	0.1	12.8
16	15	12	27	2	1/	1/	/1	/1															23	85	15.8	14.9	1.0	0.3	12.7
17	13	3	16	1				/1															15	94	15.7	14.5	1.3	0.3	16.7
18	19	10	29				1/	1/															27	93	16.3	15.3	1.0	0.1	10.0
19	16	6	22	1			1/																21	95	16.8	15.9	0.9		11.9
20	12	5	17																				17	100	15.8	14.7	1.1	0.2	13.1
21	12	6	18	1					/1											/1			16	89	16.1	14.9	1.1	0.2	10.8
22	12	15	27	2		1/	1/	/1	/1	/1													22	81	15.0	14.4	0.6	0.1	11.1
23	18	2	20		/1															/1			18	90	15.2	14.2	0.9	0.1	13.3
24	14	8	22				1/												/1	/1			19	86	16.8	15.6	1.3	0.1	13.4
25	12	2	14	2					/1														13	93	14.6	14.1	0.5	0.1	12.4
26	18	3	21						/1								/1						19	90	17.6	15.7	1.9	0.2	11.5

High amount and quality of born alive piglets



Full farrowing groups

- Why it is important ?
- What kind of tools we have to keep it in balance ?
- What is the replacement percent ?
- What is the optimum replacement percent in different situation ?
- What is mean “Gold Team” ?


Farrowing order, 35 day (5 week) farrowing pen turnaround, 147 day (21 week) farrowing interval
Group 1
Farrowing interval
Group 2
Group 3
Group 4
5
10
15
21
26
31
36
42
Week number

Sows herd analyze

Questions
Comments
Proposals

The End