



Breeding

Webinar for the Estonian pig producers

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Põllumajandusfond:
Euroopa investeringud
maapiirkondadesse

Breeding

Breeding is combining information on economic and biological conditions to maximize profit per kg of pork produced.

Presentation:

- Breeding in general
- Breeding strategy
- Selection of animals
- Culling strategy



Breeding

Breeding goal: the economically most important characteristics of pig production weighted by their economic values.

Breeding characteristics:

- It must have production economic significance
- It must be possible to determine the economic value of the traits
- It must be hereditary and exhibit genetic variation
- It must be possible to measure

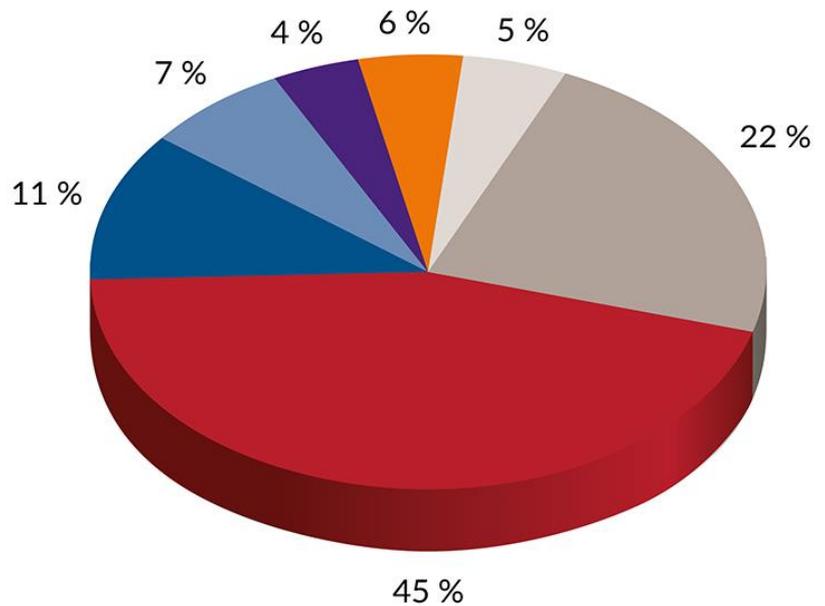
The more traits that are included in a breeding goal, the less the breeding progress per characteristic.

Breeding Characteristics

Characteristic	Economic value, DKK
Daily gain 0-30 kg (g/day)	0,11
Daily gain 30-118 kg (g/day)	0,13
Feed conversion rate (FE/kg gain)	-135
Meat percentage (%)	10,2
Strenght (point)	3
Slaughter loss (kg)	-4,8
Early gain, mother effect (g/day)	0,21
LG5 (live pigs on day 5)	11,1
Fertility & survival, father effect (live pigs day 5)	11,1
Longivity (%)	85

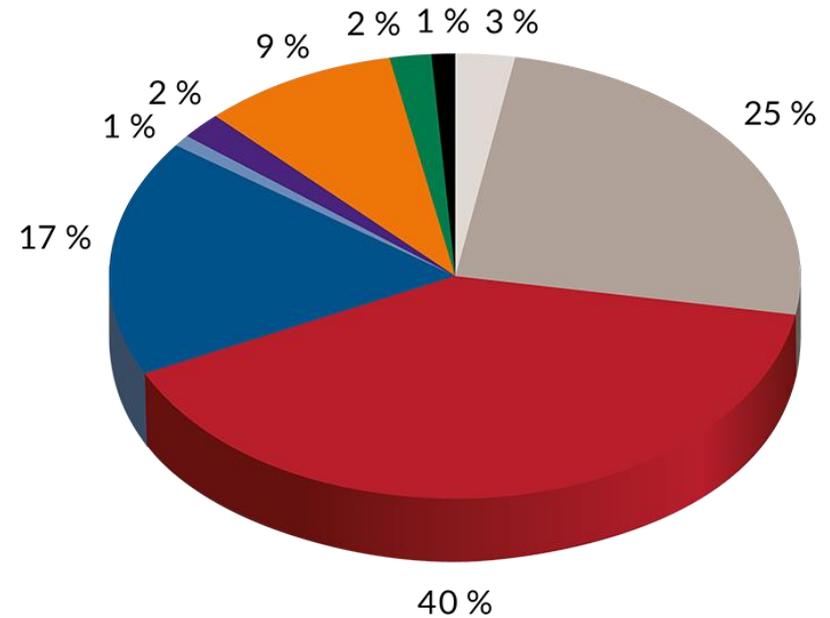
Breeding Goals

Evaluation minimum every 3 years
Longterm effects: 5-10 years



- Daglig tilvækst fødsel - 30 kg
- Styrke
- Daglig tilvækst 30 kg - slagtning
- Slagtesvind
- Foderudnyttelse
- Frugtbarhed & Overlevelse, fareffekt
- Kødprocent

DanBred Duroc 2020



- Daglig tilvækst fødsel - 30 kg
- Slagtesvind
- Daglig tilvækst 30 kg - slagtning
- LG5
- Foderudnyttelse
- Holdbarhed
- Kødprocent
- Tidlig tilvækst, moreffekt
- Styrke

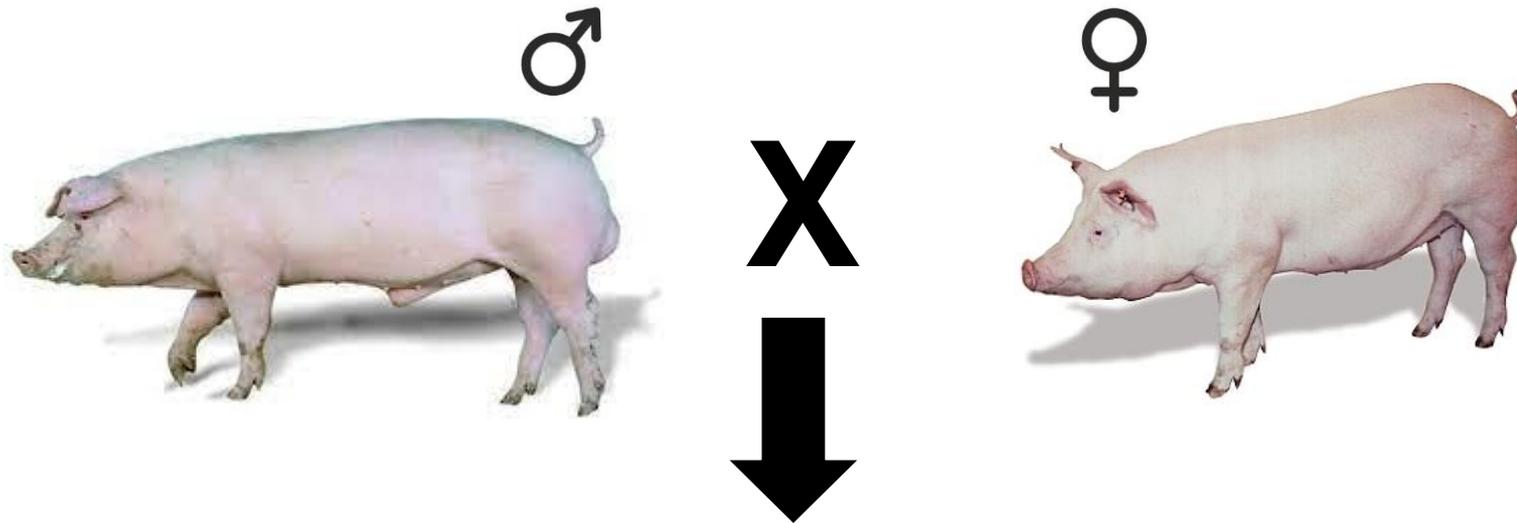
DanBred Landrace & DanBred Yorkshire 2018

Index

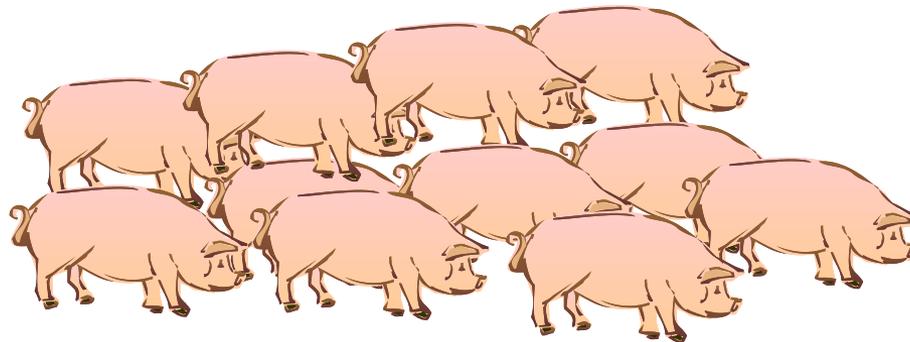
- Collection of data => index
- The animal's breeding index is based on a combination of its own data and of data from the animal's relatives.
- Index = value of an animal compared to average for the breed
- Avoiding inbreeding



Breeding Strategy

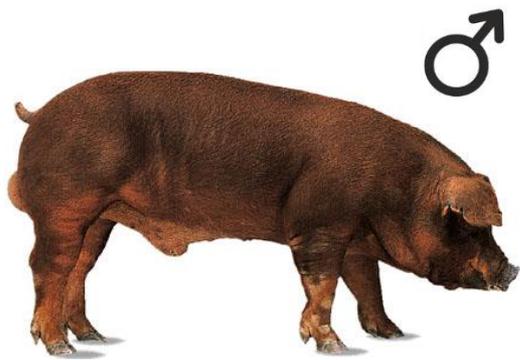


Gilts
Crossbreed

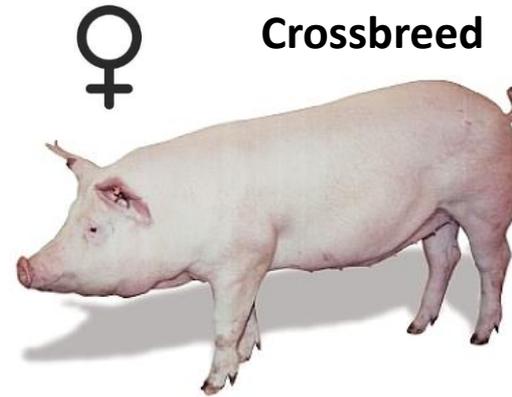
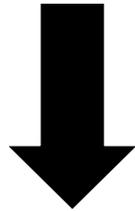


Heterosis:
Higher litter size
Higher farrowing rate

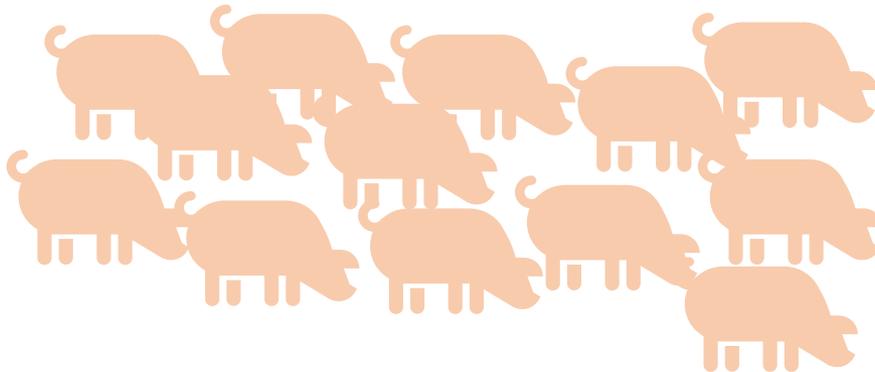
Breeding Strategy



X



Finisher pigs



Breeding Strategy

Home breeding or purchase of gilts?

- Purchase gives the highest breeding progress, and heterosis is utilized 100%
- Home breeding can be an advantage for some herds (immunity management).

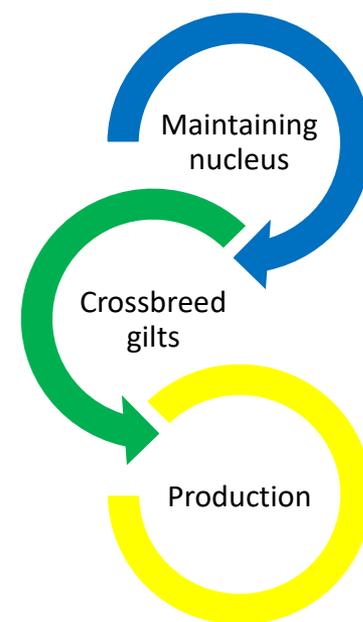
Possible home breeding strategies:

- Pure breed
- Zigzag
- Lasso = no strategy



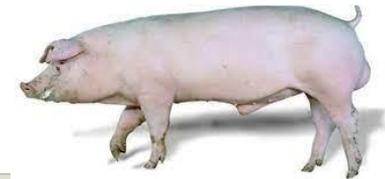
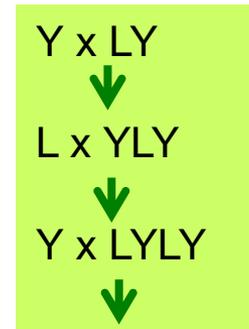
Breeding Strategy

- Home breeding: Pure breed
- Breeding Nucleus
 - Size: approx. 10% of inseminations
 - 1% of inseminations to make pure breed litters
 - 9% of inseminations to make cross breed litters
 - Too large => expensive
 - Too small => risk of uneven flow of gilts
=> reduced selection
 - Use high index semen



Breeding Strategy

- Home breeding: ZigZag
- ZigZag
 - Approx. 10% of inseminations
 - Choose from the best sows in the herd
 - Use high index semen



Generation	Boar	Sow	Heterosis
1	L	Y	100%
2	Y	L-Y	50%
3	L	Y-LY	75%
4	Y	L-YLY	63%
5	L	Y-LYLY	69%
6	Y	L-YLYLY	66%
7	L	Y-LYLYLY	67%
8	Y	L-YLYLYLY	67%

Heterosis results in higher litter size and better reproduction

Breeding Strategy

Method	Average index of litters
Purchase of LY-gilts (cross breeds)	102,1
Zigzag with KerneStyring®	97,3
Zigzag without KerneStyring®	77,3
Pure home breeding with KerneStyring®	93,4

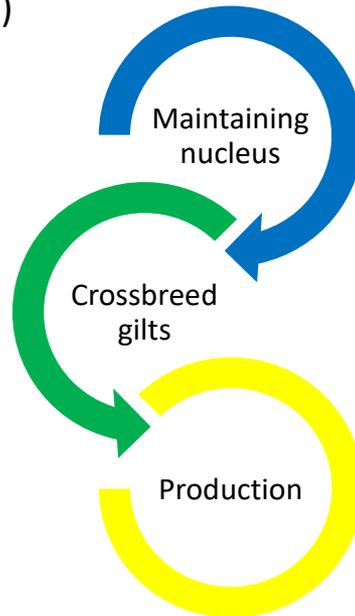
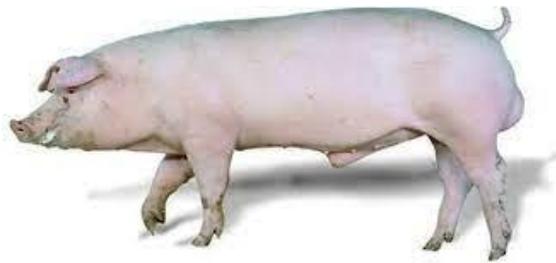
Home Production

- Select sows on basis of
 - Exterior (legs, hooves etc.)
 - Index
 - Performance:
 - Reproduction
 - Littersize (affected by age at insemination, flushing, body condition etc.)
 - Maternal quality



Home Production

- Maximum genetic progress
 - Select the most promising gilts
 - Select the youngest sows
 - Use high index semen
 - Price!
 - Synchronization of heat (gilts)



Home Production

Farrowing section – breeding litter

- At birth:
 - Select thriving female pigs
 - Ear mark with ID of mother
 - Week number – cross breeds



Home Production

Farrowing section – breeding litter

- At weaning:
 - Select the strongest females
 - Control number of teats
 - Ear tag



Home Production

After weaning

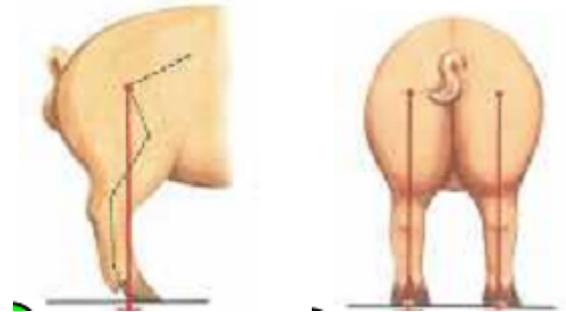
- Separate pens
- Extra space – good housing conditions



Home Production

After weaning

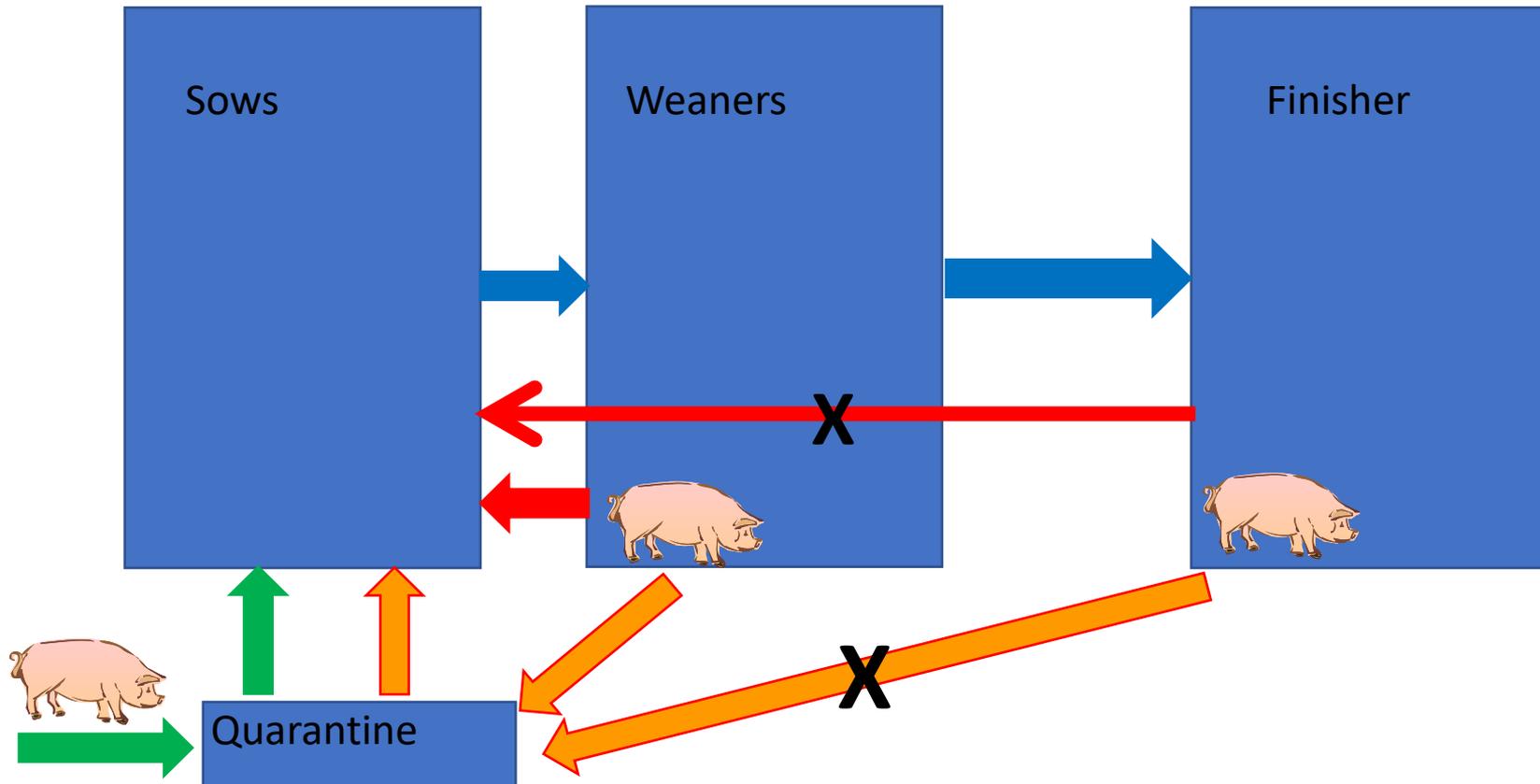
- Evaluate minimum twice before 100 kg
 - Exterior: Legs, hooves etc.
 - Weight – age
 - Behavior
- Feeding
 - Body condition
 - Strength
- Immunity
 - Vaccination



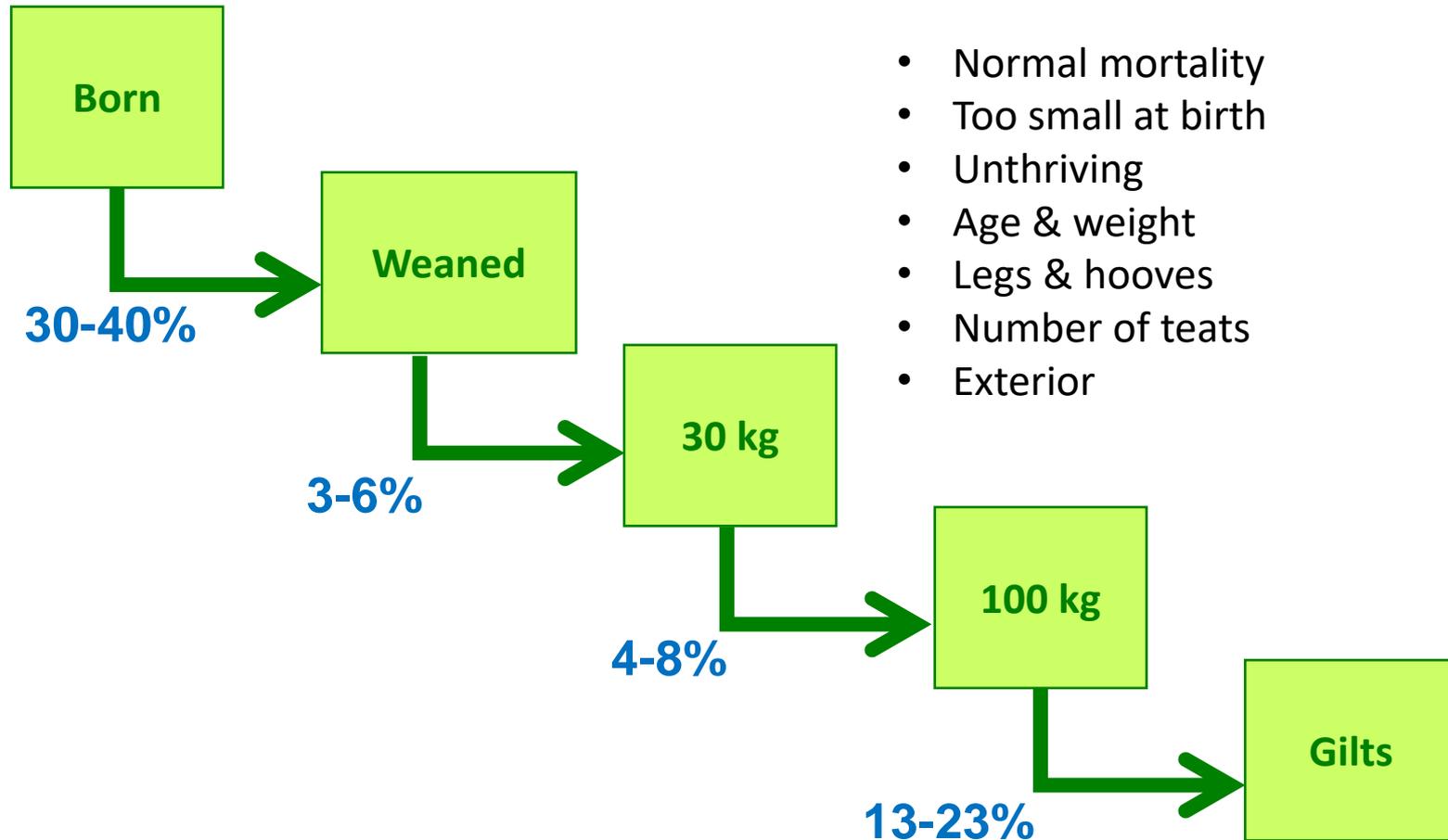
Immunity management

Purchase

Home production



Selection



- Normal mortality
- Too small at birth
- Unthriving
- Age & weight
- Legs & hooves
- Number of teats
- Exterior

Gilts

- How many gilts ready to inseminate do you need?



Longevity of sows

- Should the sow have another litter?



Criteria for culling

1. litter sows

- Exterior
- Reproduction: Lack of oestrus/pregnancy

2.-4. litter sows

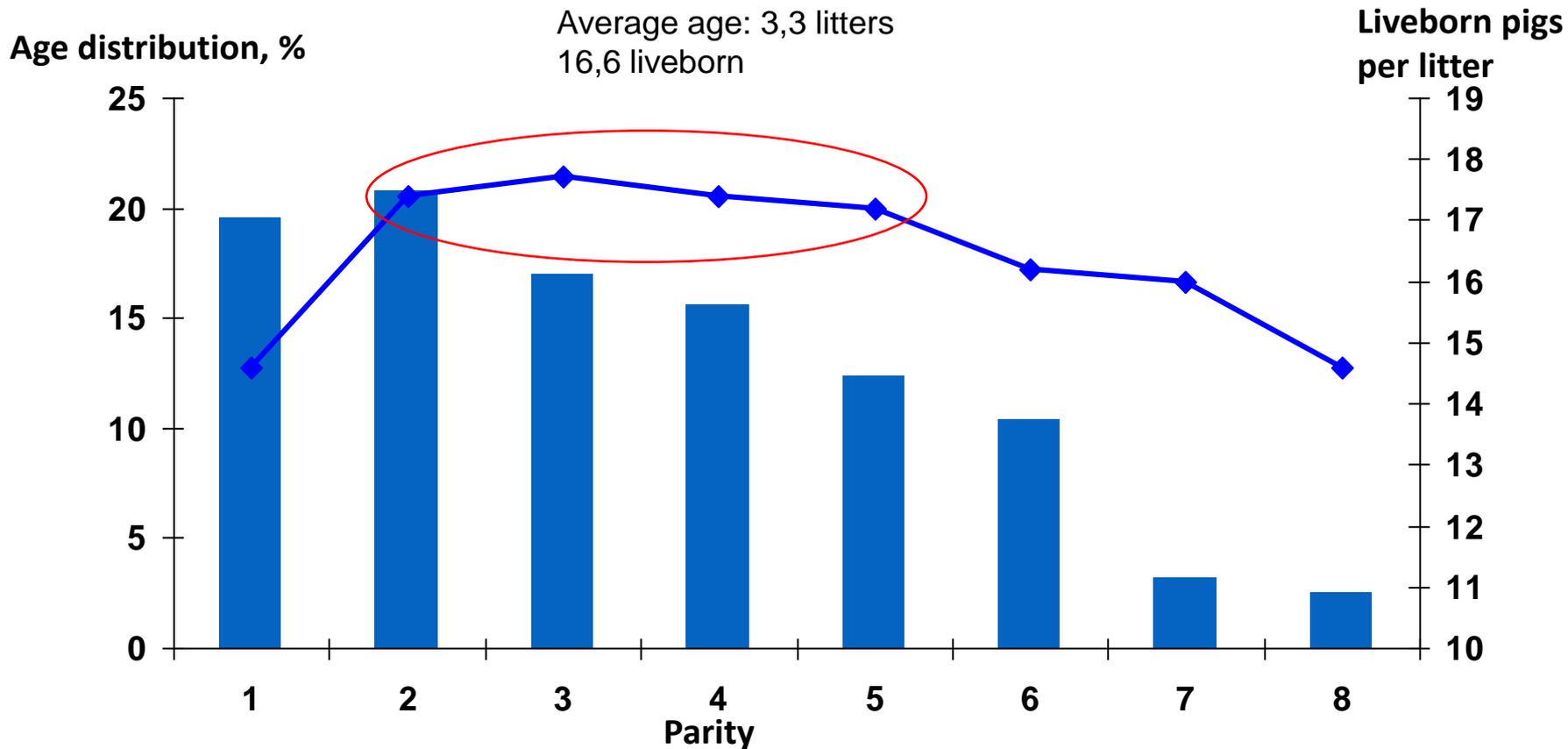
- 2 bad litter performances

>5. litter sows

- Sows with the lowest litter results
- Age

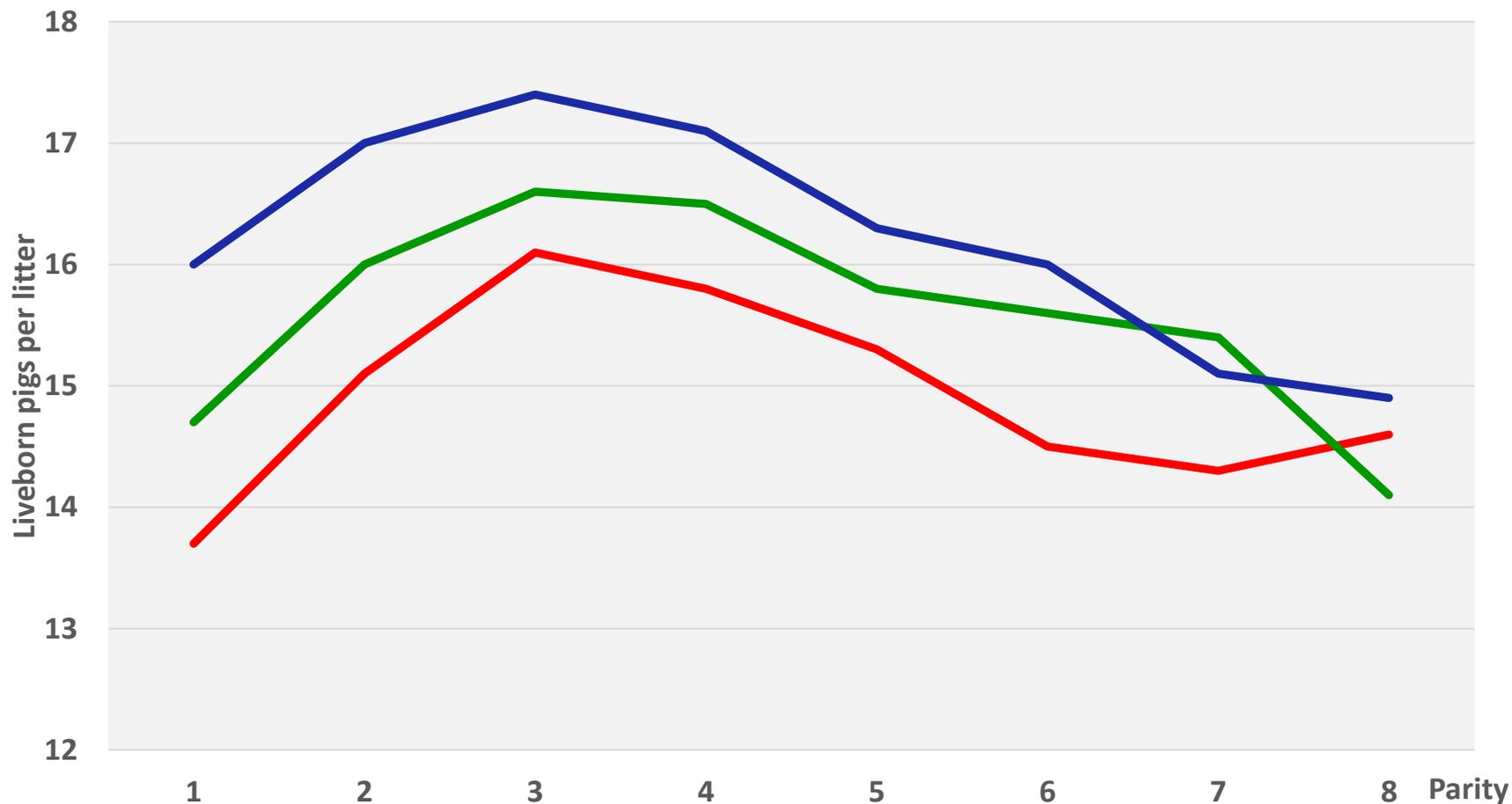


Culling of sows



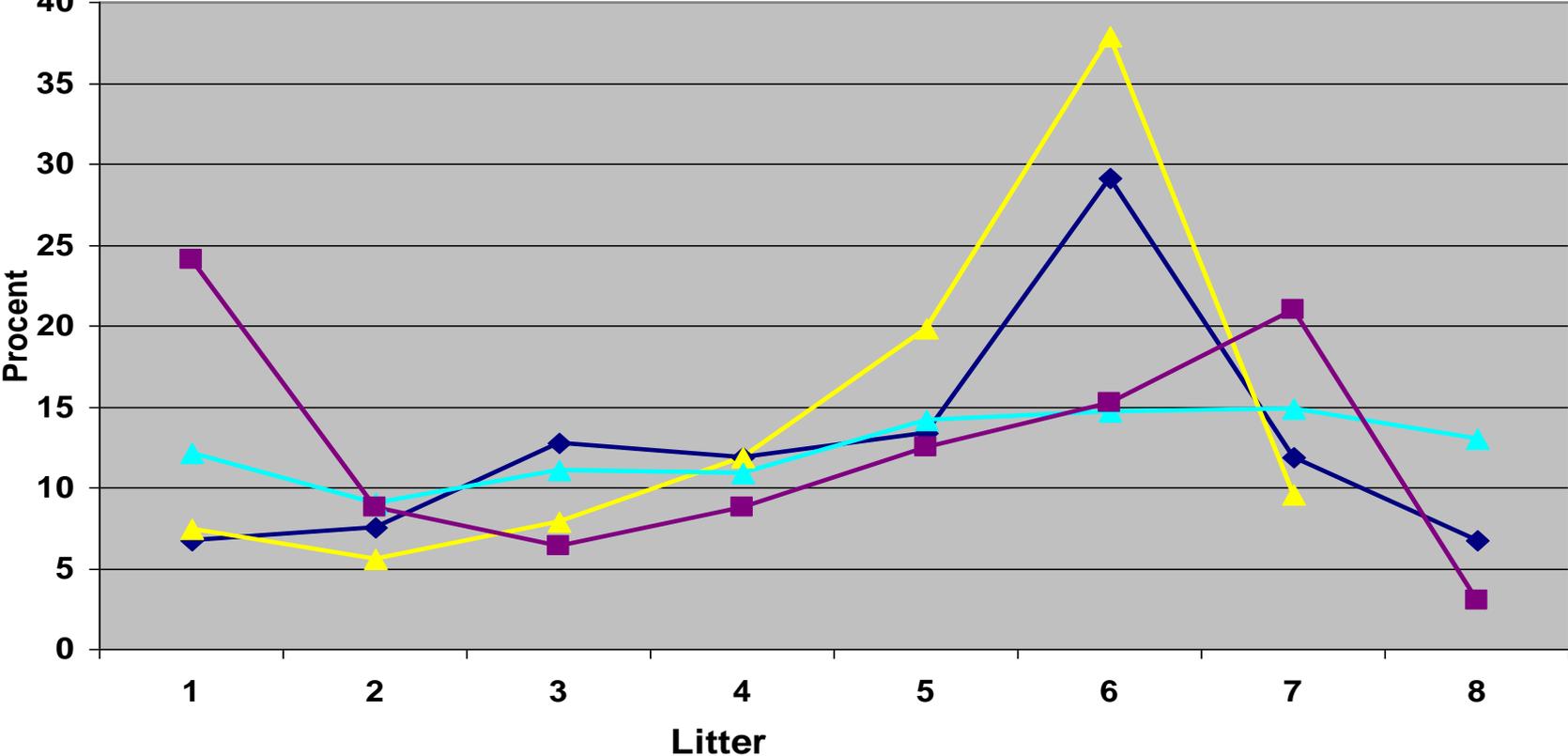
Culling of sows

Liveborn per litter - parity



Culling of sows

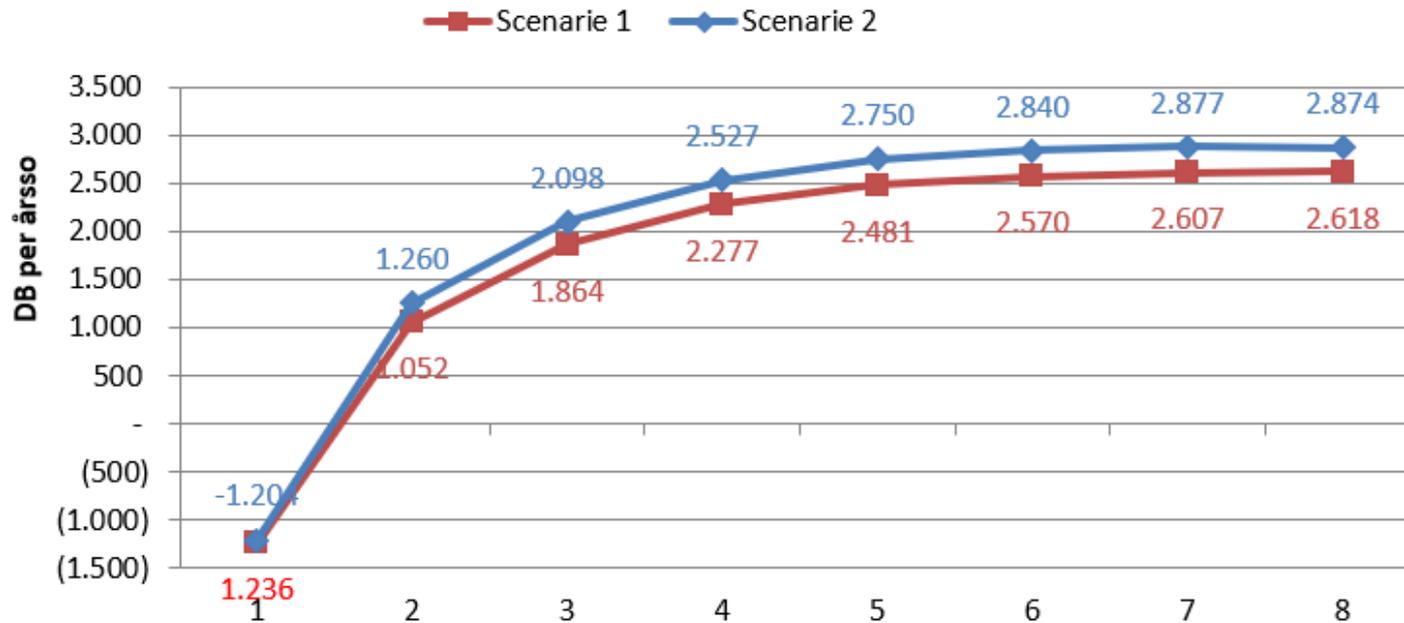
Culled sows





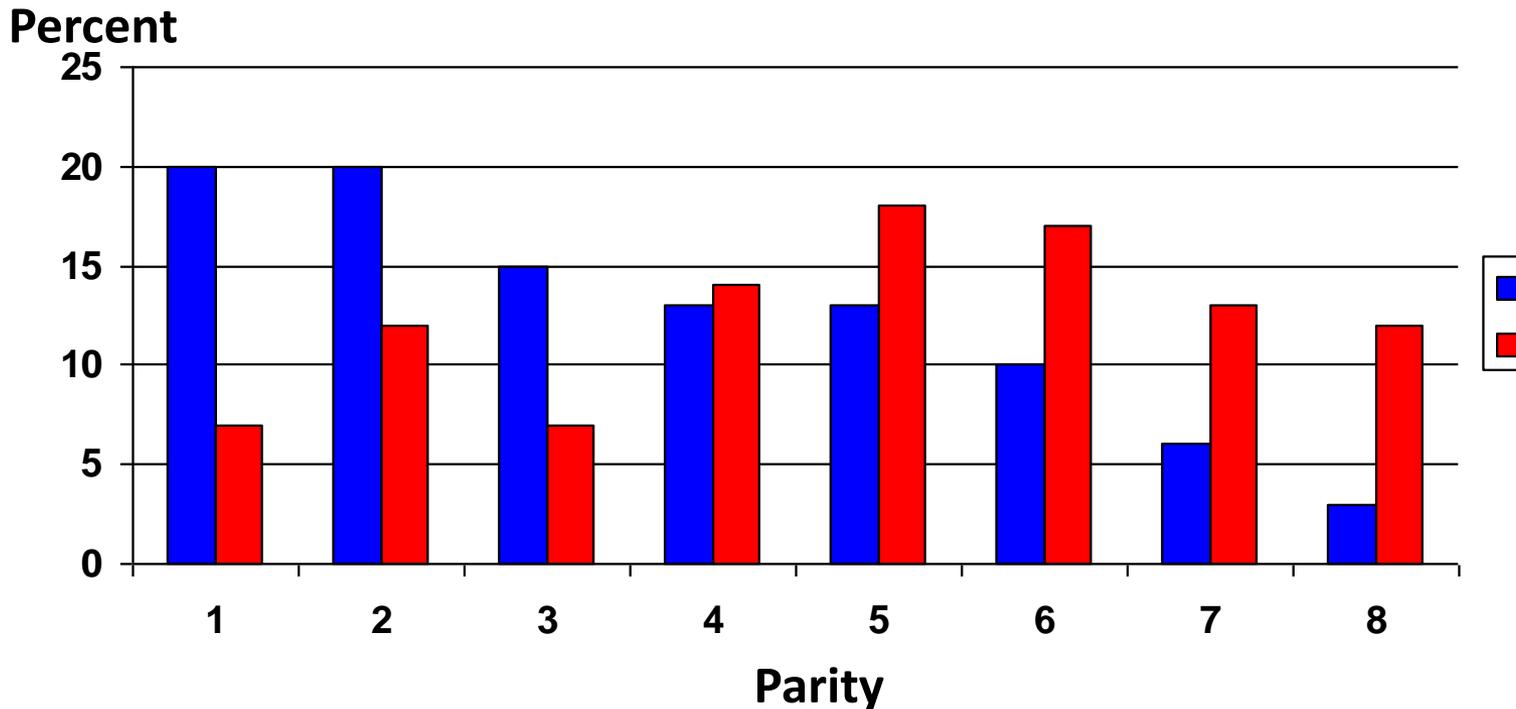
Economy in longevity

- It is expensive to cull young sows
- Optimum is for sows to have minimum 5. litters



Culling of sows

- Recommended age distribution: average 3,0-3,5 litters
- Culling rate of 45-55%
=> approx. 18-22% 1. parity litters



Home production of gilts

- Produce what correspond to 50-55% of the number of sows in the herd (gilts ready for mating)



Home production of gilts

300 sows => 150-165 gilts per year

300 sows => approx. 15 inseminations total per week

Production of gilts => 10% of inseminations => average 1,5 inseminations per week

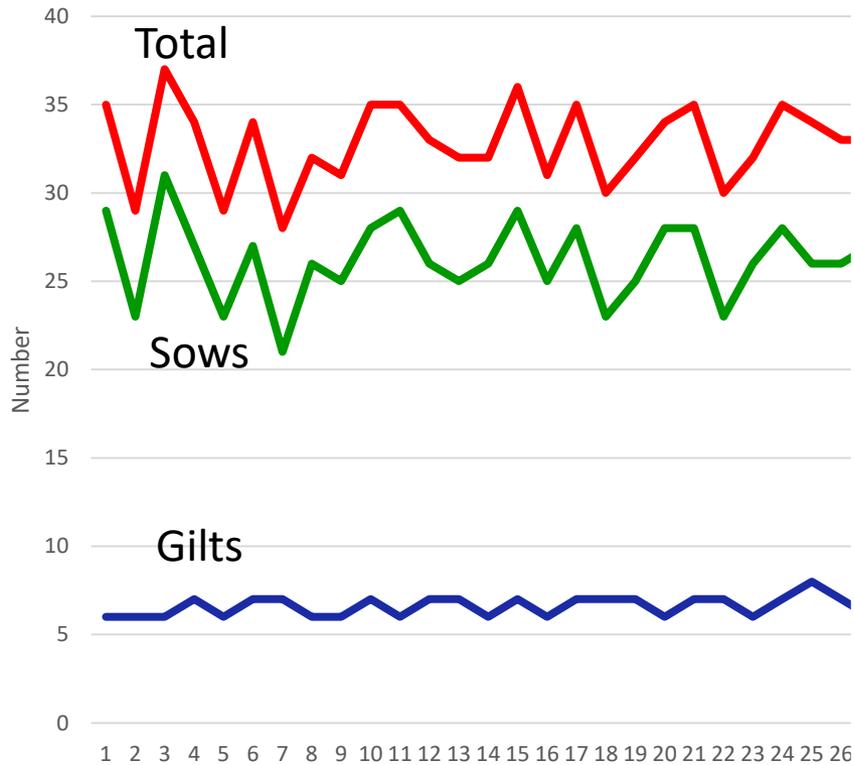
1,5 inseminations x 52 weeks x 0,85 farrowing rate = approx. 66 litters per year

6 female pigs born per litter - selection 50-60% => 2,5 gilts per litter

2,5 gilts per litter x 66 litters => 165 gilts per year

Gilts inseminated per week

- fixed or variable?

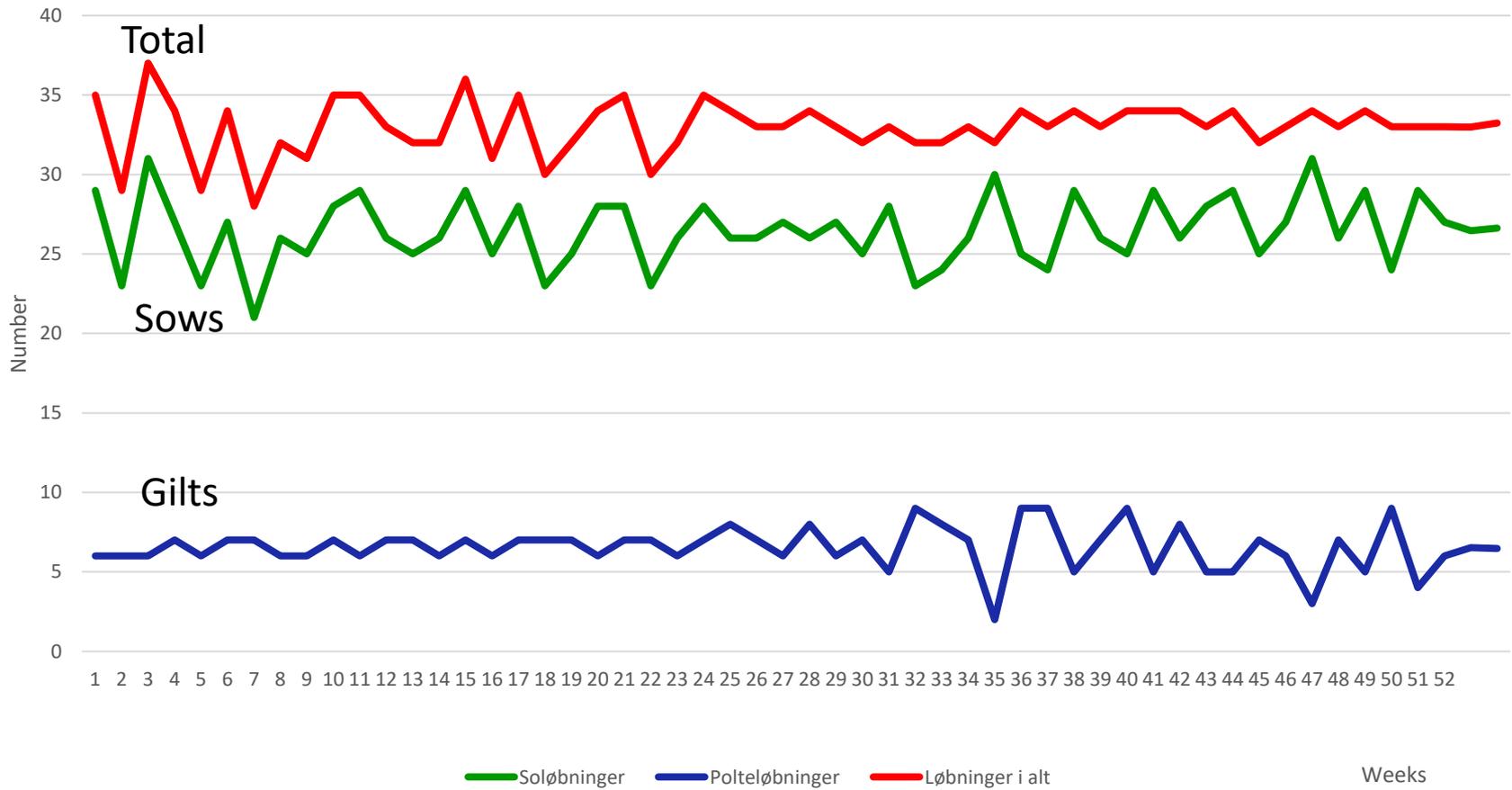


— Soløbninger — Polteløbninger — Løbninger i alt

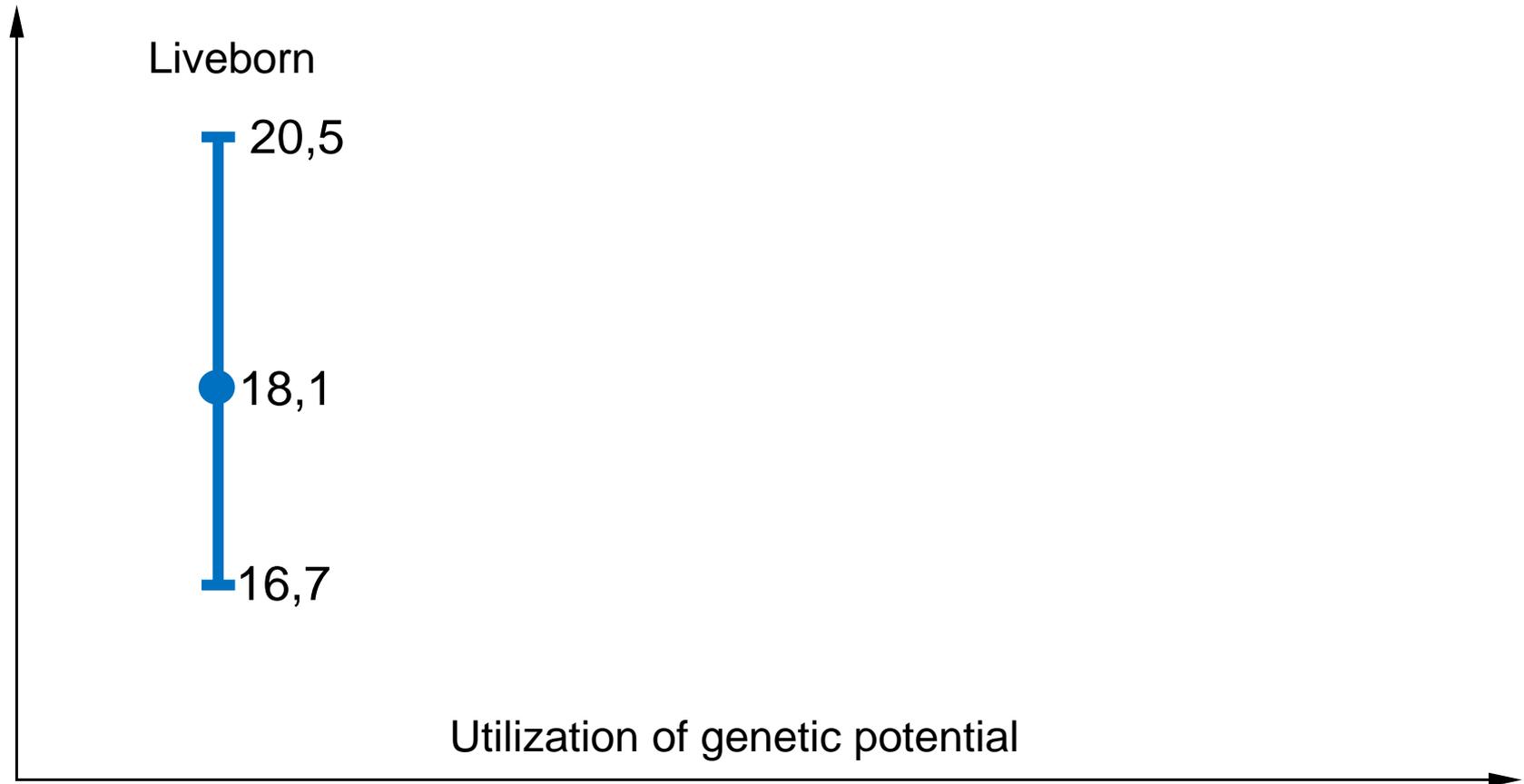
Weeks

Gilts inseminated per week

- fixed or variable?



Variation



Home breeding

- Effect of farm
 - Housing
 - Feeding
 - Infections
 - Management



