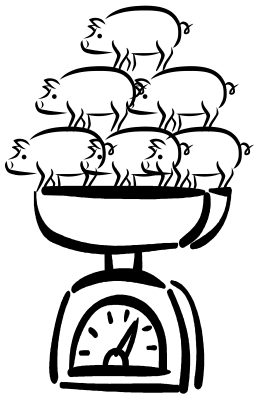
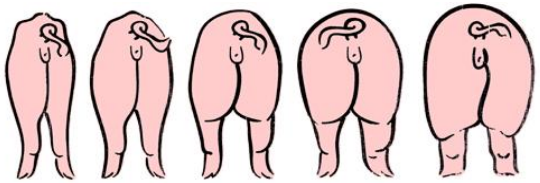
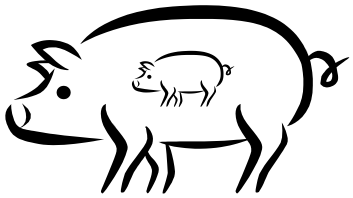
EAAP Annual Meeting 2011, Stavanger, Session 39 abstr.no: 10207

Genetic analysis of sow performance from 1st to 2nd parity







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Genetic correlations between litter weight, sow body condition at weaning and reproductive performance in next litter

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Our aim was to investigate the associations between the five traits litter weight at 3 weeks (LW), sow body condition at weaning (BC), weaning-to-service interval (1-7d, WSI7; 1-50 d transformed, WSI50) and total number born in 2nd parity (NBT2). Data on 4 964 Norwegian Landrace sows and their piglets recorded from January 2008 to April 2010 were used. Genetic parameters were estimated with a multivariate animal model. Heritability estimates for LW (n=4 534), BC (n=4 964), WSI7 (n=2 340), WSI50 (n=2 598) and NBT2 (2 091) were 0.17, 0.19, 0.16, 0.07 and 0.14 respectively. Estimated genetic correlations for the trait combinations were; LW-BC r_g= -0.55; BC-WSI7 r_g= -0.13; LW-WSI7 r_g= 0.29; BC-WSI50 r_g= -0.25; LW-WSI50 r_g= 0.10; BC-NBT2 r_g= -0.38; LW-NBT2 r_g= 0.28. Ability to raise heavy litters is genetically correlated to lower body condition at weaning, longer weaning-to-service interval and increased number of piglets born in the following litter. Poor body condition at weaning seems to be genetically correlated to longer WSI and more piglets born in the following litter.

Background

Investment in piglets



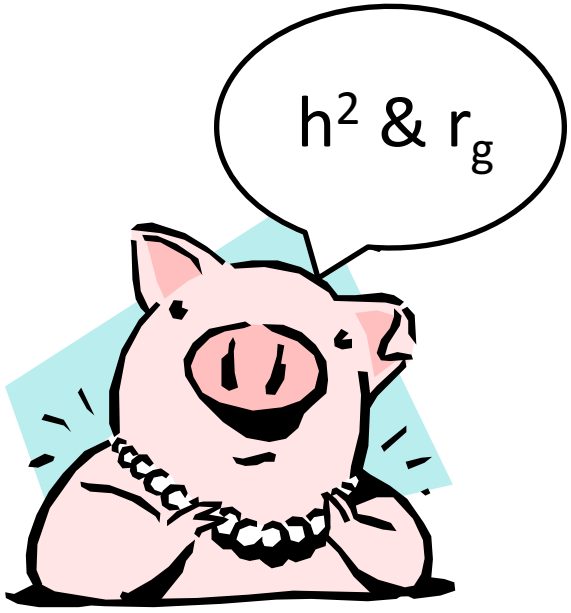
Background

Use of body reserves


Photo: Magnus Haandlykken

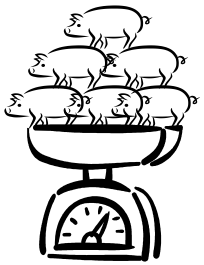

Photo: Helena Chalkias

Aim

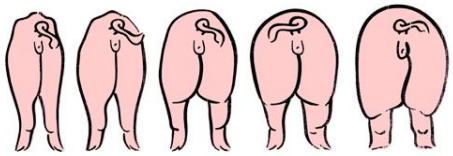


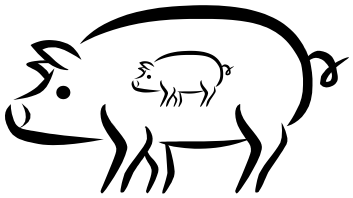
Sustainable piglet production

Litter weight (3 weeks)



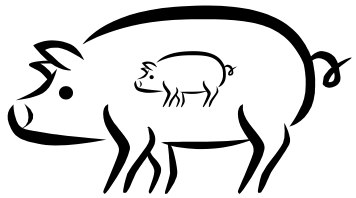
Sow body conditon (weaning)





Reproduction

Trait definitions



7-d WSI - weaning-to-service interval 1-7 days

50-d WSI - weaning-to-service interval 1-50 days

DELAYED - not inseminated 1st week

PREGNANT - pregnant on 1st insemination

NBT2 - number born total in 2nd litter

Data

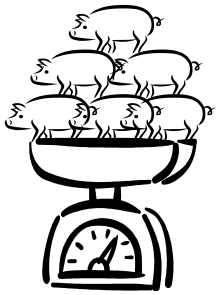
- 4606 Norwegian Landrace sows and their 1st litters
- 39 herds nucleus/multipliers
- From Jan 2008 to May 2010

Genetic analysis

- GIBBS2F90
- multitrait analyses
- animal or sire model (trait dependent)

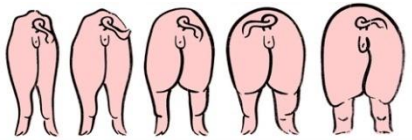
Fixed effects:	herd, year, season
Random effect:	herd-year-season, animal or sire
Covariates:	age at first farrowing
	mean age of piglets at weighing
	lactation length (day, day^2 & day^3)

Heritabilities



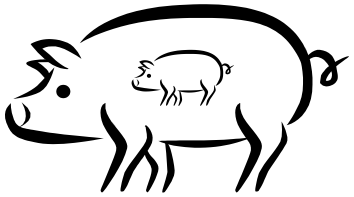
$0.22_{0.05}$

Litter weight



$0.17_{0.04}$

Sow body conditon



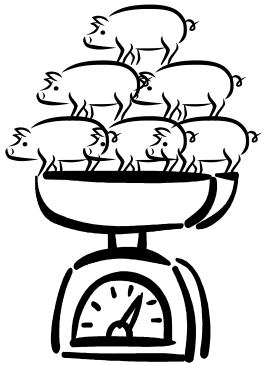
Reproduction

7-d WSI	$0.12_{0.05}$
50-d WSI	$0.14_{0.05}$
DELAYED	$0.41_{0.15}$
PREGNANT	$0.27_{0.11}$
NBT2	$0.11_{0.03}$

Threshold model

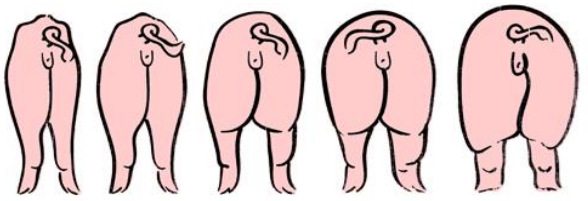
Genetic correlations

Heavy litter – lower body condition



Litter weight

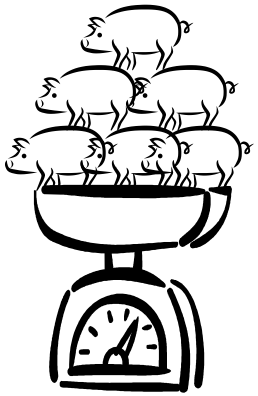
$-0.54_{0.15}$



Sow body conditon

Genetic correlations

Heavy litter – longer weaning-to-service interval



Litter weight

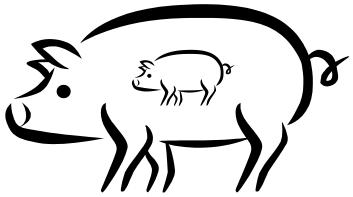
$0.43_{0.23}$ WSI7

$0.33_{0.21}$ WSI50

$0.14_{0.23}$ DELAYED

$-0.15_{0.23}$ PREGNANT

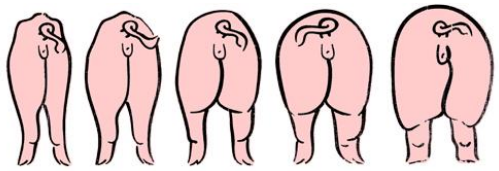
$0.29_{0.17}$ NBT2



Reproduction

Genetic correlations

High body condition– larger next litter



Sow body conditon

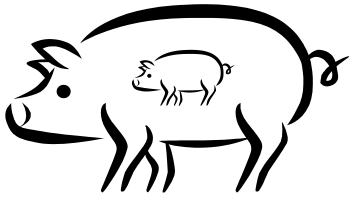
$-0.19_{0.30}$ WSI7

$-0.10_{0.26}$ WSI50

$-0.13_{0.27}$ DELAYED

$0.18_{0.27}$ PREGNANT

$0.64_{0.13}$ NBT2



Reproduction

Conclusion

Heavy litter is genetically related to lower sow body condition at weaning.

Heavy litter is genetically related to longer weaning-to-service interval.

Low body condition at weaning is genetically related to smaller next litter.

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