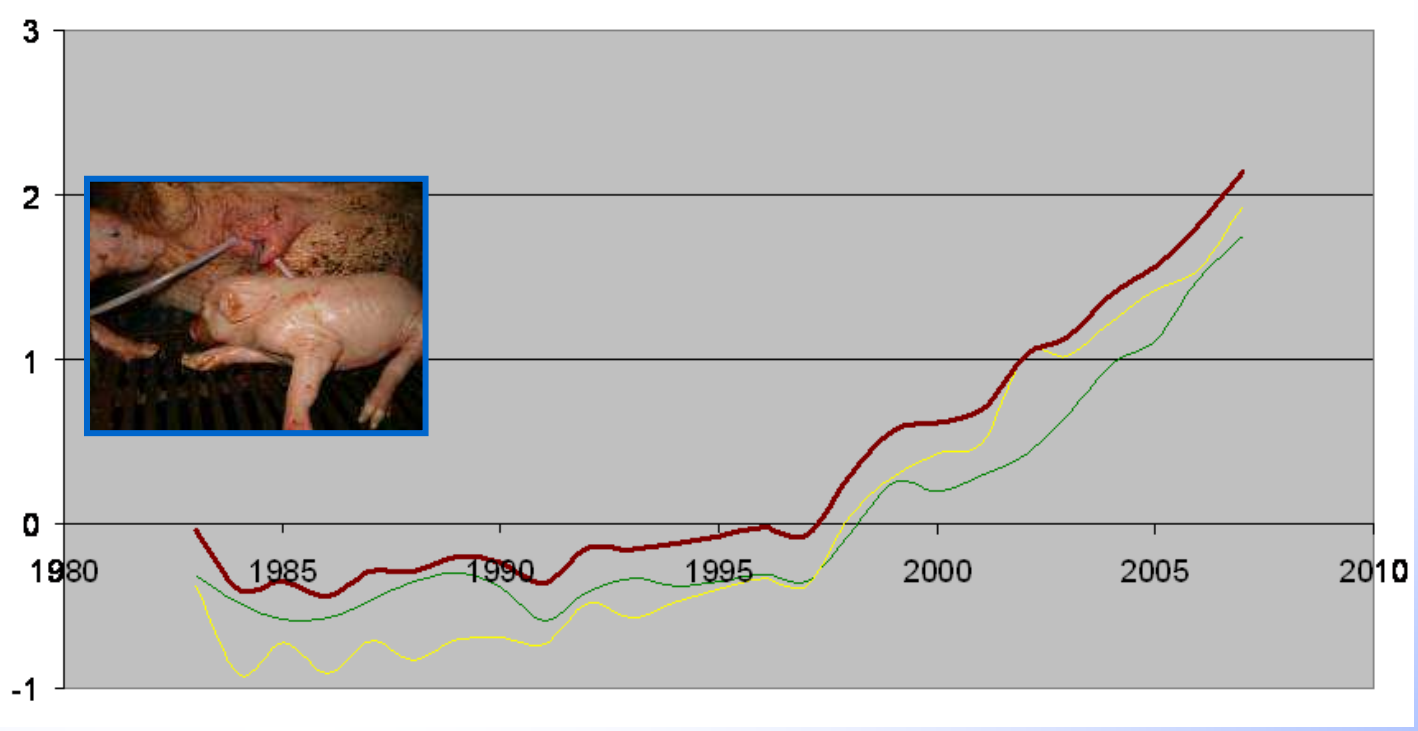
Piglet survival, implementation, looking back and forward

Egbert Knol

Marc Rutten and Dieuwke Roelofs-Prins

Institute for Pig Genetics

Intro: Current trends in total born (in three lines)



2 pigs total born in 10 years time: 0.2 / litter / year

Intro: Fear

- Larger litters
- Lower birthweights
- Higher mortality
  - Mortality during expulsion
  - Mortality during lactation

  Is it heritable, what is influence of genes of the animal, genes of the dam, genes of the sire and genes of the sow nursing the piglet

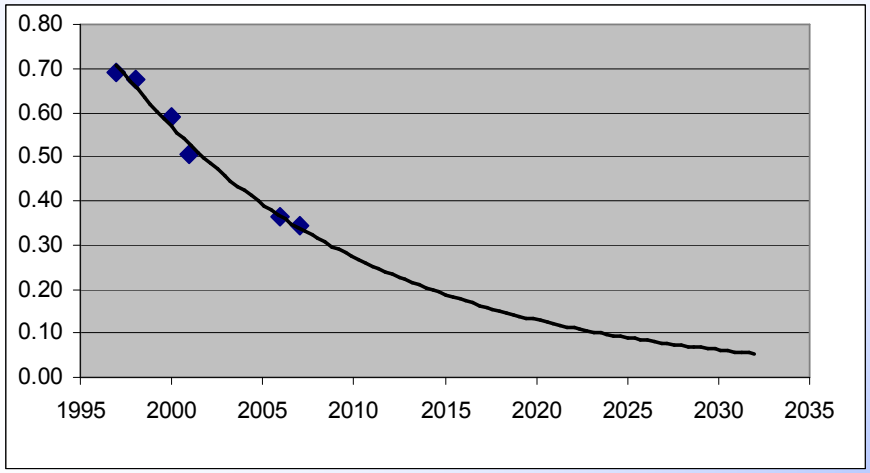
Intro: Levels of reference

Total born	13.65
Farrowing survival	93%
Pre Weaning Survival	87%

81%

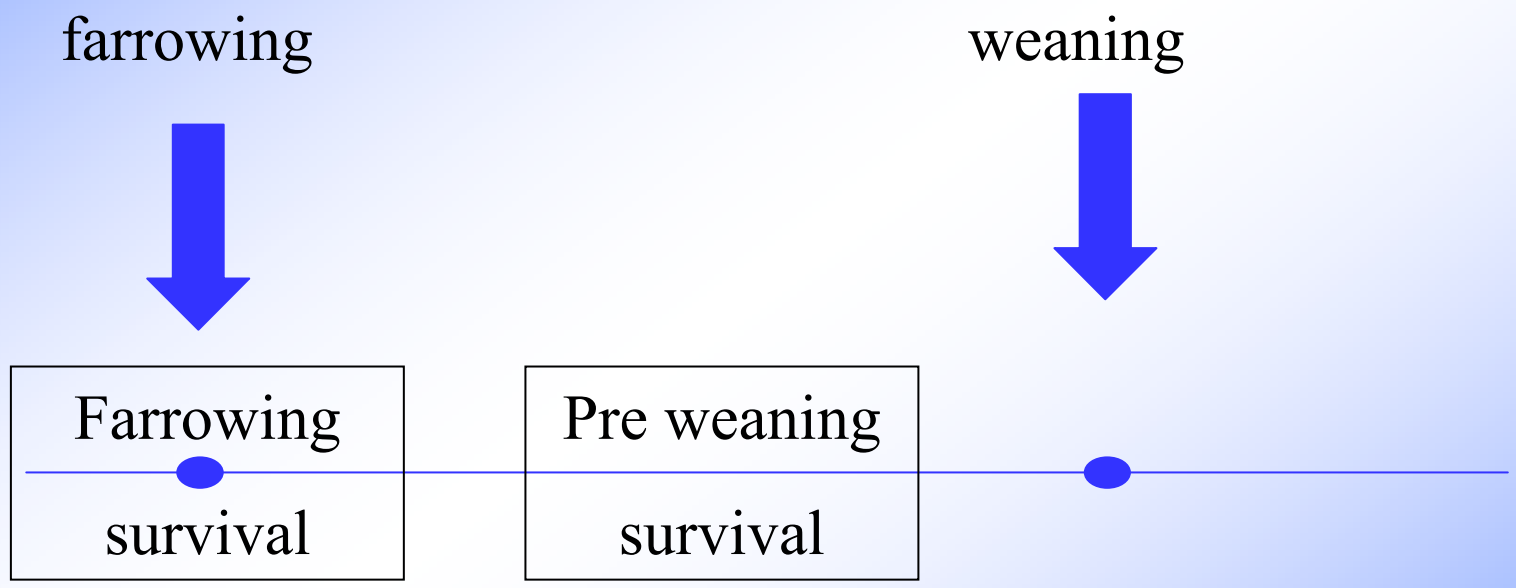
11.0 weaned

Labour in hours per piglet (NL)



Material and Methods: visualisation

75.000 records of piglets, including crossfostering



Total survival = additive + maternal + foster

Farr. survival = additive + maternal

PW survival = additive + maternal + foster

Result

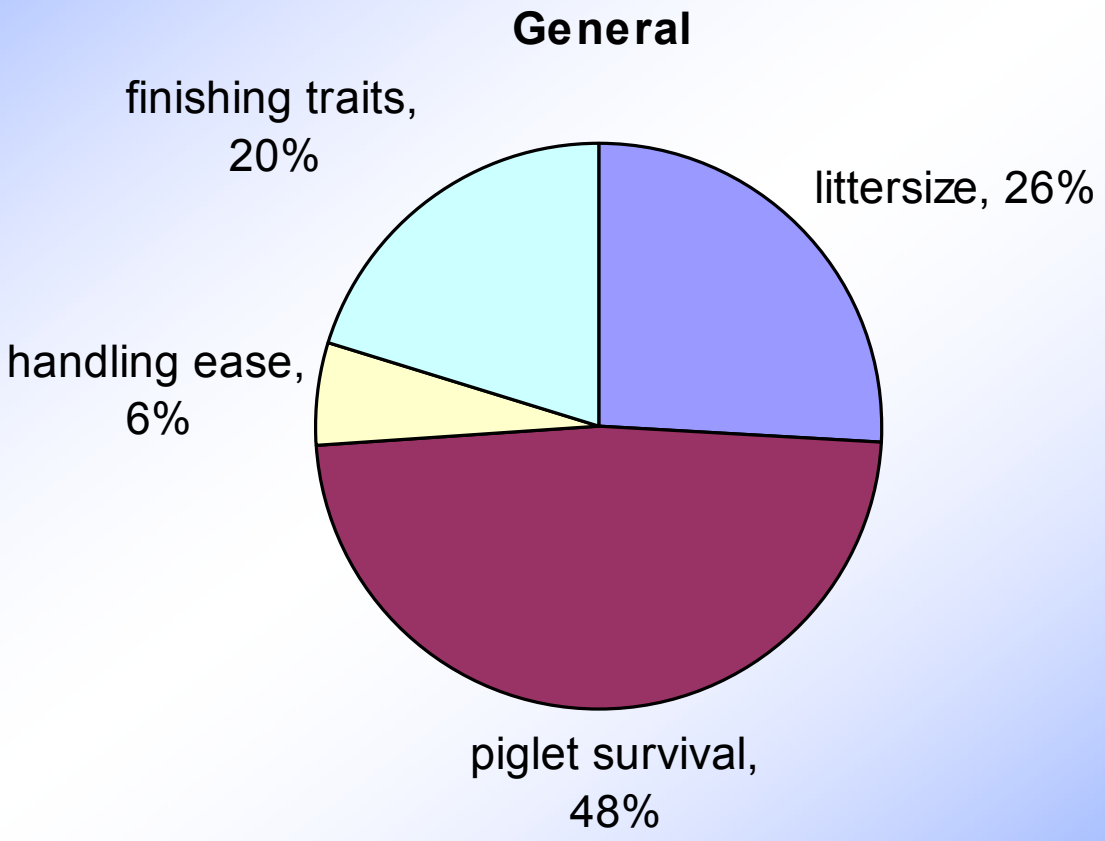
	FS	PWS
Animal	3.79	7.29
Dam	15.50	7.87
Foster	-	30.09
Error	623.5	819.8
Sum genetic	19.3	45.3
Heritability	0.03	0.05

Total born	13.65
Farrowing survival	93%
Pre Weaning Survival	87%

Consequences: Genetic progress possible

- h^2 low, genetic variation interesting
- Single trait mass selection:
  - 1.0-1.5% survival/year feasable
  - Eq. to 0.15-0.20 pigs/litter/year
- Similar weights in selection index
- Full index will yield 0.4% for farrowing- and 0.6% for PW survival

Full selection index in our situation



Practice and validation

- Survival protocol (weighing individual piglets and recording crossfostering) started 1990, implemented in all lines 2 years ago
- MiXBLuP for EBV's (MiX99 derivative)
- All data excl. last year, EBV estimation and validation of 2007. Highly significant, regressions close to expected 1.0 BUT line differences

Field results

year	2007	2006	2005	2004	2003	2002	2001	2000	1999
number of farms	942	768	812	629	409	444	478	485	496
present sows	391	374	336	309	297	296	263	251	237
weaned piglets/sow/year	26.4	25.7	25.1	25.0	24.9	24.5	24.1	24.0	23.7
live born piglets	12.8	12.5	12.2	12.1	12.0	11.9	11.8	11.7	11.6
%piglet losses till weaning	12.1	12.2	11.7	11.8	12.1	12.2	12.3	12.0	11.9
weaned piglets per litter	11.2	10.9	10.7	10.6	10.5	10.4	10.3	10.2	10.2
farrowing index	2.36	2.36	2.37	2.36	2.35	2.34	2.33	2.35	2.34

Increased total born, similar mortality, reduced labour!

Discussion

- Considerable genetic variation
- Considerable effort needed to collect necessary data
- Genetic modelling is complex
- Data volume and complex model are computationally demanding
- Parameters estimated in crossbred material
- All validations suggest that system reduces mortality

Thank you for your attention