Breeding for high welfare in outdoor pig production, a simulation study

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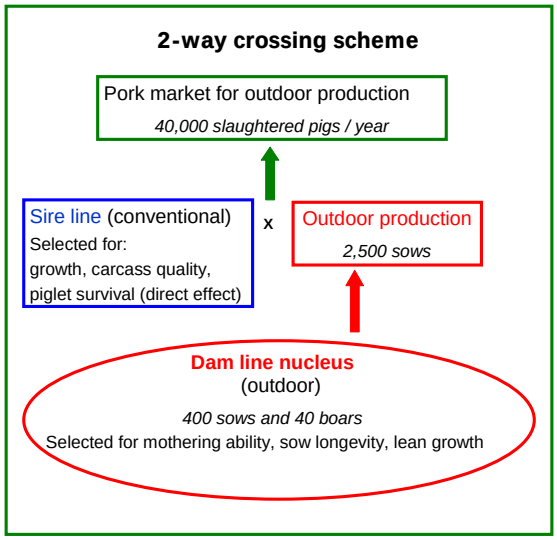
The aim of this study was to investigate the opportunities for genetic progress in a dam-line selected for outdoor production of pork products with an "animal friendly-label".

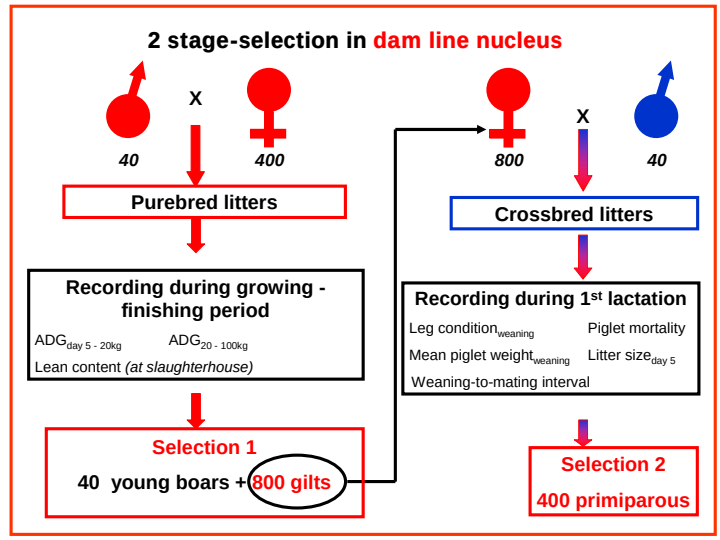
The genetic gain from two simulated breeding programs were compared:
- **Conventional**, a breeding program based on economic weights for production and reproduction traits
- **High welfare**, a breeding program with additional non-market weights on traits important for pig welfare

Conclusions

A breeding goal with strong emphasis on traits important for welfare will, in a short term perspective, substantially reduce the economic gain. The implementation of a breeding program for "high welfare outdoor production" therefore requires other prerequisites than only the market value of production, such as a higher price for products labeled as "animal friendly".

Selection structure of studied breeding programmes





Results

The simulations showed that approximately 3, 2 and 7 times higher weights on leg condition at weaning, piglet mortality and weaning-to-mating interval (compared to literature values) were required to avoid deterioration of these traits.

Economic weights and selection responses from the simulation program SelAction (Rutten et al, 2002)

		Conventional selection			High welfare selection		
	Breeding goal traits	Economic weights from literature	Trait units	%	Economic weights from simulation	Trait units	%
Sow	Litter size, piglets	100	0.11	28.1	100	0.08	27.4
	Piglet mortality, %	-10	0.1	-2.5	-20	-0.1	3.4
	Mean piglet weight, kg	70	0.18	32.2	70	0.14	33.6
	Weaning-to-mating interval, d	-3.75	0.05	-0.5	-27.5	-0.01	0.7
	Leg condition at weaning, points	-	-0.11	-	125	0.02	8.6
Growing pig	$ADG_{birth-20kg}$, g/d	0.2	0.8	0.4	0.20	0.9	0.6
	$ADG_{20-100kg}$	1	2.6	6.6	1	-2.5	-8.6
	Lean content, %	20	0.7	35.7	20	0.5	34.2

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