

Genetic Parameters And Genetic Trends In The Sino-European Tiameslan Composite Line

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Introduction

Prolificacy becomes a major component of the economic efficiency of pig production, but is difficult to improve through selection because of its low heritability (around 0.1 – Haley et al. (1988)). Another possible way to increase sow prolificacy is to take advantage of the outstanding reproductive ability of some native Chinese breeds such as Meishan, Jiaxing, Fengjing or Min breeds. Legault and Caritez (1983), Bidanel (1993), Haley, C., Lee, G., and Ritchie, M. (1995) and Young (1995) confirmed the high prolificacy, the good mothering ability and the strong hardiness of Meishan, . . .

Material and methods

Creation and selection of the Tiameslan line. The Tiameslan line was created by mating in the summer of 1983 by mating 21 Meishan*Jiaxing F1 boars to 55 multiparous European sows selected for their high reproductive performance. No immigration has occurred later. Sows were allowed to produce only one litter until 1988 and were kept for several litters as in a standard nucleus herd since then . . .

Statistical analyses. (Co)variance components for DT, ABT, TN and litter size at birth (TNB = total number born) and at weaning (NW = number of piglets weaned) were analysed using restricted maximum likelihood (REML) methodology applied to a multiple trait animal model.

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Results and discussion

Estimates of genetic parameters and of phenotypic and genetic trends are shown in table 1 and figure 1, respectively. Heritability values for ABT and TN are larger than average literature values (Ducos (1994); Ligonésche, B., Bazin, C., and Bidanel, J. (1995)) and those previously obtained for ABT by Ducos, A., Bidanel, J., and Naveau, J. (1992). Conversely, heritability estimates for DT, TNB and NW do not widely differ from average literature values. ABT and DT tend to be favourably correlated. They show low genetic correlations with TN, but . . .

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Table 1: Estimates of genetic parameters in the Tiameslan line^a

Traits	ABT	DT	TN	TNB	NW
ABT	0.71±0.01	0.18±0.03	0.09±0.03	0.18±0.07	0.39±0.08
DT	0.06±0.01	0.39±0.02	0.06±0.04	- 0.04±0.07	0.16±0.06
TN	0.02±0.01	0.01±0.01	0.53±0.01	- 0.09±0.09	0.34±0.14
TNB	0.06±0.01	- 0.03±0.01	- 0.04±0.01	0.15±0.03	0.73±0.06
NW	0.08±0.01	0.06±0.01	0.08±0.01	0.70±0.02	0.08±0.03

^aHeritabilities (s.e.) on the diagonal, phenotypic and genetic correlations below and above the diagonal, respectively.

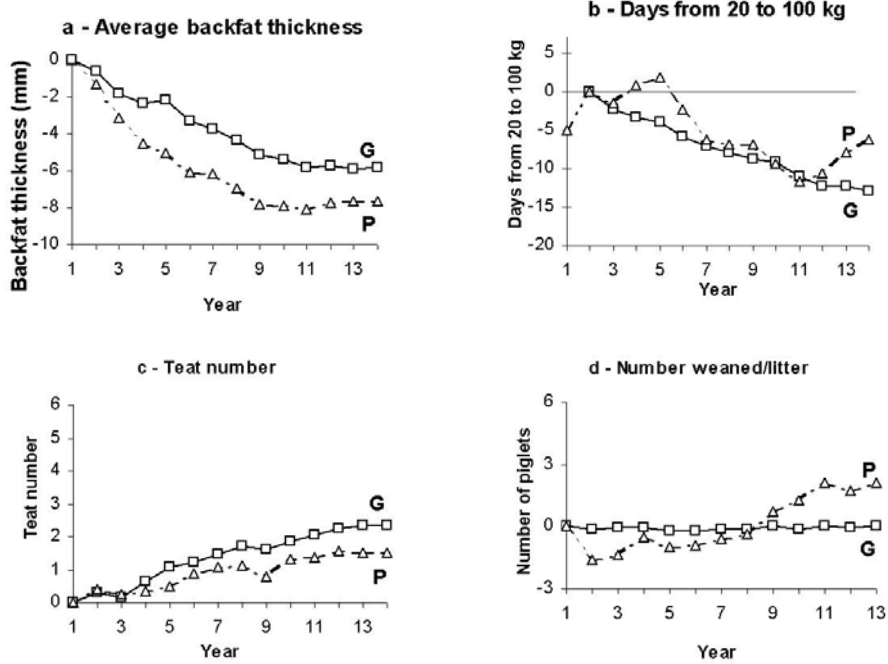


Figure 1: Estimated phenotypic (P) and genetic (G) trends for economically important traits in the Tiameslan composite line

Conclusion

These results clearly show that sino-european lines can be successfully selected for growth rate and carcass lean content without deteriorating reproductive performance. Recent advances in the knowledge of genes responsible for the differences between prolific Chinese and European breeds for economically important traits (e.g. Milan, D., Bidanel, J., Le Roy,

P. et al. (1998)) should be very helpful for more efficient selection strategies and a better genetic control of these lines.

References

- Bidanel, J. (1993). *Genet. Sel. Evol.*, 25:263–281.
- Ducos, A. (1994). *Techni-Porc*, 17(3):35–67.
- Ducos, A., Bidanel, J., and Naveau, J. (1992). *J. Anim. Breed. Genet.*, 109:108–118.
- Haley, C., Avalos, E., and Smith, C. (1988). *Anim. Breed. Abstr.*, 56:317–332.
- Haley, C., Lee, G., and Ritchie, M. (1995). *Anim. Sci.*, 60:259–267.
- Legault, C. and Caritez, J. (1983). *Genet. Sel. Evol.*, 15:225–240.
- Ligonesche, B., Bazin, C., and Bidanel, J. (1995). *J. Rech. Porcine en France*, 27:121–126.
- Milan, D., Bidanel, J., Le Roy, P. et al. (1998). In *Proc 6th WCGALP*, volume 26, pages 414–417.
- Young, L. (1995). *J. Anim. Sci.*, 73:711–721.