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Estimates of litter size traits in two local pig populations in the Mediterranean region

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INTRODUCTION

Local pig populations such as Black Slavonian (**BS**) and Nero di Parma (**NP**) contribute to genetic diversity and represent a unique genetic material of the Mediterranean region.

The objective of this study was to evaluate differences between the two genotypes in reproductive efficiency, as one of the most important factors for biological and economic sustainability of breeding.

MATERIALS AND METHODS

Data were collected from 1835 parities of 685 sows (264 BS and 421 NP). The following parameters were included in the analysis: total number of born (**TNB**), number of born alive (**NBA**), number of stillborn (**NSB**), number of weaned (**NW**) piglets. The effects included in the model were analysed (GLM procedure in SAS), separately for each parity (from 1st to ≥4th) and for all parities taken together. The following fixed effects were tested: breed (**BR**), herd (**HD**), interaction herd*breed (**HD*BR**), year-month of farrowing (**YMF**), parity order (**PO**), boar nested within breed (**BO(BR)**) and parity order nested within breed (**PO(BR)**); boar **(BO**) was added as a random effect. The model was as following:

$$Y_{ijklmn} = \mu + BR_i + BO_j + HD_k + (HD*BR)_{ik} + YMF_l + BO(BR)_{ij} + PO_m + PO(BR)_{mi} + \varepsilon_{ijklmn}$$

Table 1 : Analysis of variance (F values) for data from all parities

SOURCE OF VARIATION	**BR**	**PO**	**BO**	**HD**	**(HD*BR)**	**YMF**	**BO(BR)**	**PO(BR)**	**RSE**	**R^2**
DEGREE OF FREEDOM	1	3	132	1	1	31	11	3	-	-
TNB	12.25***	24.65 ***	2.26 ***	5.52 *	0.02	1.58 *	1.51	1.59	2.03	0.303
NBA	18.29 ***	18.08 ***	1.53	2.06 ***	0.19	2.22 ***	1.65 §	1.53	2.19	0.282
NSB	5.03 *	1.06	3.52 §	1.73 ***	1.19	2.04 ***	1.64 §	2.10 §	1.08	0.161
NW	6.74 **	15.02 ***	1.44	1.96 ***	6.06 *	2.93 ***	3.39 ***	0.25	2.41	0.252

§ :P<0.10; *:P<0.05; **:P<0.01; ***:P<0.001;

Table 2: LSmeans of reproductive parameters of BS and NP

PARAMETERS	**PARITY 1**		**PARITY 2**		**PARITY 3**		**PARITY ≥4**	
	BS	**NP**	**BS**	**NP**	**BS**	**NP**	**BS**	**NP**
TNB	5.9±1.9	7.3±2.1	6.7 ±2.4	8.3 ±2.1	7.1 ±2.1	8.1 ±2.1	7.4 ±2.4	8.3 ±2.4
NBA	5.6 ±2.1	6.9 ±2.3	6.3 ±2.4	7.9 ±2.2	6.6 ±2.4	7.8 ±2.4	6.9 ±2.6	8.1 ±2.5
NSB	0.25 ±0.96	0.38 ±1.2	0.34 ±1.2	0.32 ±1.8	0.40 ±1.13	0.29 ±1.1	0.53 ±1.31	0.31 ±0.91
NW	5.0 ±2.4	5.5 ±2.7	6.1 ±2.4	6.3 ±2.6	6.4 ±2.4	6.3 ±2.6	6.2 ±2.9	6.8 ±2.7

CONCLUSIONS

Reproductive parameters of the two local populations showed interesting results, probably related to both genetic and environmental effects. Future investigations of prolificacy are expected to establish genetic variation between the two local populations of pigs by use of the genetic markers that are involved in physiological process controlling reproduction. Knowing the variability between the two local populations of pigs will contribute to better preservation of local pig genetic types.