Litter size traits in Black Slavonian and Nero di Parma pig breeds: effects of farrowing management and sow number per herd





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- uruga uzgajivača crne slavonske svinje Slavonije, Baranje i Zapadnog Srijema, Đakovo, Hrvatska ⁴Zavod za higijenu, ponašanje i dobrobit životinja, Veterinarski fakultet, Sveučilište u Zagrebu, Zagreb, Hrvatska ⁵Dipartimento di Scienze-Medico Veterinarie, Univeristà di Parma, Parma, Italia



Introduction

- the management of reproduction of local breeds of pigs is the key factor influencing their reproductive efficiency, genetic and pig biodiversity.
- the production of offspring and their further raising make lacksquarethe basis of production organization, as well as management strategies in conservation procedure for local pig breeds.



Figure 1. Black Slavonian - sow with litters (Menčik, S. 2017).

Figure 2. Nero di Parma - sow with litters (Sabbioni, A. 2017).

The aim of this study

The aim of this study was to analyse and evaluate Litter Size (LS) traits in two autochthonous pig breeds according to the Management of Farrowing (MF) \bullet and Number of Sows per Herd (NSH) to improve their reproductive performance and self-sustainability in economic competitiveness with other local pig breeds.

Material and Methods

- data analysis included 2026 parities of Black Slavonian (BS) and \bullet 906 of Nero di Parma (NP) pigs, from the 1st to 10th parity (P).
- LS traits referred to Total Number of Born (**TNB**), Number of Born Alive (NBA) and Number of Weaned (NW) piglets.
- the following effects were tested: breed (BR), parity (PAR), season \bullet of farrowing (SF), NSH (three levels: 1-3, 4-10 and >10reproductive sows per herd) and MF (two levels: controlled farrowing in roofed premises and farrowing at uncontrolled and nonroofed sites with interaction in the scalar equation as: BR*MF and BR*NSH)
- GLM in SAS package \bullet

 $Y_{ijklmn} = \mu + BR_i + PAR_j + SF_k + NSH_l + MF_m + (BR*MF)_{im} + (BR*NSH)_{il} + (BR*NSH$ e_{ijklmn}



Figure 3. Black Slavonian sow (left) with litters and Nero di Parma (right) in controlled roofed premises at farrowing (Menčik, S. and Sabbioni, A. 2017).



Results

Pooled (1st to 10th) farrowing analysis

TNB (LSM±SE)		NBA (LSM±SE)		NW (LSM±SE)	
BS	NP	BS	NP	BS	NP

 6.93 ± 0.08 8.31±0.13 6.48 ± 0.09 8.01 ± 0.15 6.47 ± 0.15 $6.24{\pm}0.09$

Significance of the effects that were tested:

TNB	NBA	NW
BR, PMF, BR*NSH	BR, P, MF, BR*NSH	P, SF, MF, BR*NSH
(P<0.001 all)	(P<0.001 all)	(P<0.001 all)
BR*MF (P=0.027)	SF (P=0.0021).	BR*MF (P=0.03)

Output from the calculated linear model

	TNB Mean	NBA Mean	NW Mean
	6.94	6.52	5.96
DF	21	21	21
Sum of Square	3027.15	3633.86	1724.41
F-value	34.84	35.23	16.29
Sig.	P<0.001	P<0.001	P<0.001
R-Square	0.2011	0.2029	0.1052
Coeff. Var.	29.27	33.96	37.61
Root MSE	2.03	2.21	2.24

Figure 4. Uncontrolled and non-roofed sites at farrowing for Black Slavonian (left) and Nero di Parma (right) at farrowing (Menčik, S. and A. Sabbioni 2017).

Discussion and Conclusion

- management of reproduction is the key of sustainability of local pig breeds
- uniform, improved and determined management conditions and techniques of farrowing during the weaning period
- differences between the breeds could be ascribed to the higher number of controlled farrowing and NSH of 4 to 10 in NP pigs vs. BS pigs
- study showed significant effect of different group on litter size traits between breeds.

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