

SOME PERFORMANCE TRAITS OF THE CALABRIAN × LARGE WHITE PIG IN RELATION TO THE HOUSING SYSTEM (INDOOR AND OUTDOOR): PRELIMINARY RESULTS

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ABSTRACT

The purpose of the present research was to verify the effect of the “housing system” on some performance traits of the Calabrian × Large White crosses (CA × LW). The research was carried out on 12 subjects of which 7 were housed in “indoor” system and 5 in “outdoor” system. The available area for head was equal to 4.6 m² for the “indoor” system and 45 m² per head for the “outdoor” system. The subjects were monitored from birth to slaughter and the following parameters were recorded: weight at typical ages, some relieves at slaughter, fat thickness in three anatomical regions and weight of meat and adipose tissue cuts. Mathematical-statistical elaboration demonstrated that housing system tended to be significant ($P < 0.10$) only in the case of fat thickness at L6-S region.

Key words: housing system / fat thickness / live weight

1 INTRODUCTION

The “Calabrian” pig would be the result of repeated crossings of autochthonous pigs of Mediterranean origin. Unfortunately there are no zoo-archaeological proofs for better defining its origin. Recently a renewed interest from farmers towards the autochthonous genetic types is observed as an expression of the microbiosphere of a given geographical area. In fact, it is known (Matassino, 1989) that the nutraceutical biomolecules content of the food is strongly variable in function of the bioterritory of farming. It is possible to remind that already Casanova (1725–1798), in his Memories, paid tribute to the Calabrian “salumi” obtained from the meat of the “black” pig as the best that he had ever eaten. In order to revalue wide “marginal” areas it was held opportune to implement a research line entitled “Innovation of the concept of pig meat ‘quality’ (IQUACS)” within the project “Modernization of the Southern pig farming”. Various studies (Russo *et al.*, 1998; Matassino *et al.*, 2000 and 2006; Acciaioli *et al.*, 2012) have underlined that the Calabrian pig

local genetic type is an animal that uses better the wood, has a good yield at slaughter and meat suitable for “salumi” manufacture. With the present research we wanted to investigate the effects of the housing system on some performance traits of Calabrian × Large White crosses.

2 MATERIALS AND METHODS

The research was carried out on 12 subjects of CA × LW cross of which 7 subjects [4 (♂♂) and 3 (♀♀)] housed in “indoor” system and 5 [3 (♂♂) and 2 (♀♀)] in “outdoor” system. The available area for head was equal to 4.6 m² for the subjects raised with “indoor” system and 45 m² for those raised with “outdoor” system. The two groups were fed with the same formulation until 30 kg (on average) of live weight and according to another formulation until slaughter (116 kg, on average). The subjects were monitored from birth to slaughter for the following parameters: the weight at typical age and some relieves at slaughter (live weight after a fasting period of

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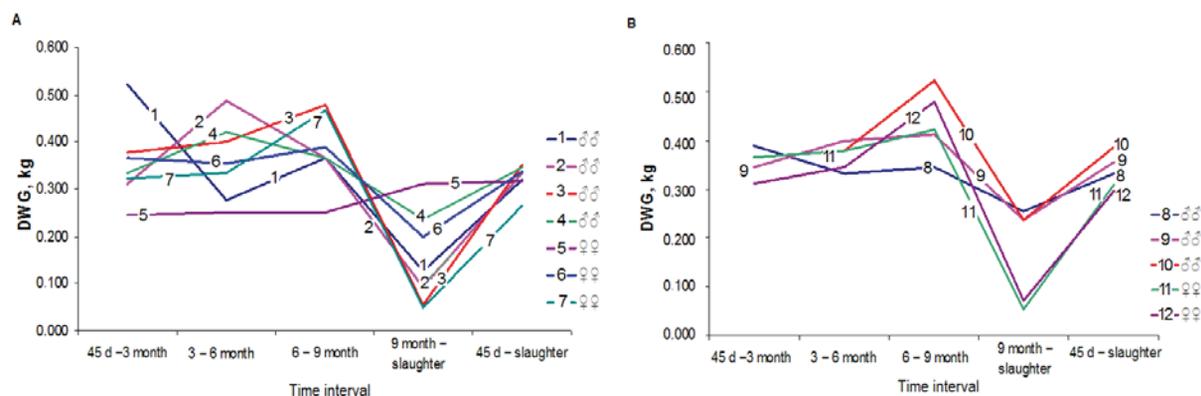


Figure 1: Daily weight gain (DWG) from weaning to slaughter, in “indoor” (A) and “outdoor” (B) system

Table 1: Analysis of variance related to the daily weight gain (DWG) at different ages

Variation source	Age at survey				
	45 d-3 months	3-6 months	6-9 months	9 months-slaughter	45 d-slaughter
	F	F	F	F	F
Housing system	0.002 (P < 0.969)	0.139 (P < 0.718)	0.666 (P < 0.435)	0.079 (P < 0.784)	0.418 (P < 0.532)

12-24 hours, live weight at slaughter, weight of carcass after 72 h of refrigeration); on the refrigerated carcass the following relieves were performed: fat thickness in three anatomical regions TH1 (1st thoracic vertebra), TH15 (last thoracic vertebra) and L6-S (maximum thickness of

Table 2: Analysis of the variance related to total meat and adipose cuts

Variation source	Total cuts	
	Meats	Adipose
	F	F
Housing system	0.174 (P < 0.687)	0.178 (P < 0.691)

the middle *gluteus* muscle), the weight of meat and adipose tissue cuts. For data elaboration the three following statistical models were employed:

a) monofactorial model (SPSS package, 15.0 version) for the Daily weight gain (DWG) at typical age:

$$Y_{ij} = \mu + \alpha_i + e_{ij}$$

where:

- μ = constant common to all observations (mean);
- α_i = fixed effect common to all observations relating to the i^{th} housing system ($i = 1, 2$);
- e_{ij} = residual random and / or unexplained effects.

b) monofactorial model (SPSS package, version 15.0) for the total of the meat and adipose cuts:

$$Y_{ij} = \mu + b_1x_1 + \alpha_i + e_{ij}$$

where:

- μ = constant common to all observations (mean);
- b_1 = regression coefficient of the dependent variable on the weight of the refrigerated carcass after 72 hours (x_1);
- α_i = fixed effect common to all observations relating to the i^{th} housing system ($i = 1, 2$);
- e_{ij} = residual random and/or unexplained effects.

c) monofactorial model (SPSS package, version 15.0) for the fat thickness in TH1, TH15 and L6-S anatomical regions:

$$Y_{ij} = \mu + b_1x_1 + \alpha_i + e_{ij}$$

where:

- μ = constant common to all observations (mean);
- b_1 = regression coefficient of the dependent variable on the live weight after the fasting period of 12-24 hours (x_1);
- α_i = fixed effect common to all observations relating to the i^{th} housing system ($i = 1, 2$);
- e_{ij} = residual random and/or unexplained effects.

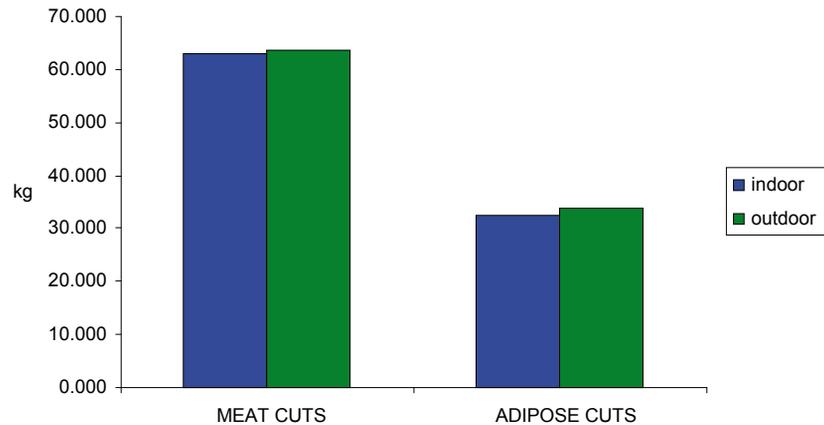


Figure 2: Total meat and adipose cuts distinctly for housing system

3 RESULTS AND DISCUSSION

The subjects were slaughtered at live weight (after a fasting period of 12–24 hours) of 97.20 ± 9.78 kg in the “outdoor” system and at 95.57 ± 9.61 kg in the “indoor” system. In Fig.1, the values for DWG for each surveyed period are showed according to two housing systems. In the limits of the observation field, based on the statistical analysis (Table 1), no significant differences were observed between two housing systems for DWG at typical ages.

From the Table 2 it emerges that ‘housing system’ was not significant for the total of meat or adipose tissue cuts; in the Fig. 2 the mean weight of meat (TC) and adipose tissue (TA) cuts are reported separately for each housing system [“indoor”: TC was 63.09 ± 5.24 kg, TA was 32.48 ± 5.11 kg; “outdoor”: TC was 63.50 ± 6.25 kg, TA was 33.70 ± 4.15 kg]. Fig.3 shows that ‘housing

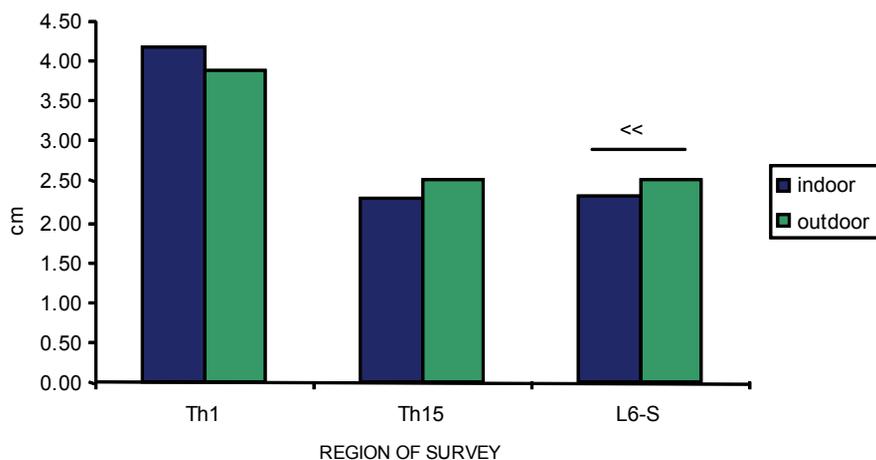
system’ factor tended to influence ($P < 0.10$) only the fat thickness in the L6-S region.

4 CONCLUSION

In the frame of present observations, it is possible to underline that the “factor” of housing system (“indoor” and “outdoor”) did not influence the parameters evaluated. The research is in progress, and it is not possible to draw definitive conclusions.

5 ACKNOWLEDGEMENTS

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<<= $P < 0.10$

Figure 3: Fat thickness in three anatomical regions (TH1, TH15 and L6-S), respectively for farming system

6 REFERENCES

- Acciaioli A., Grifoni F., Fontana G., Esposito S., Franci O. 2012. Evaluation of forest damage derived from the rearing of Apulo-Calabrese pig. In: Proceedings of the 7th International Symposium on the Mediterranean Pig. Cordoba, 14–16 Oct., 2010. De Pedro E.J., Cabezas A.B. (eds). Zaragoza, CIHEAM, Options méditerranéennes, Serie A, no. 101: 133–136
- Matassino D. 1989. Biotecniche innovative delle produzioni animali. Convegno CNR-Ente Fiera del Levante, III Sessione-AgroBiotecnologie, Bari, 10 sept. 1989, *Mimeografato*
- Matassino D., Barone C., Cappuccio A., Colatruglio P., Caiola G., Capone A., Zullo A. 2000. Aspetti somatici, riproduttivi e produttivi di alcuni tipi genetici suini autoctoni italiani. In: Proc. IV Simposio Internacional do porco Mediterraneo, Evora (Portogallo), 26–28 nov. 1998, Zaragoza, CIHEAM Options méditerranéennes, Serie A, no. 41: 71
- Russo V., Davoli R., Fontanesi L. 1998. Influenza dei metodi di allevamento sulla qualità della carcassa e della carne. *Rivista di suinicoltura*, 5, 37–43