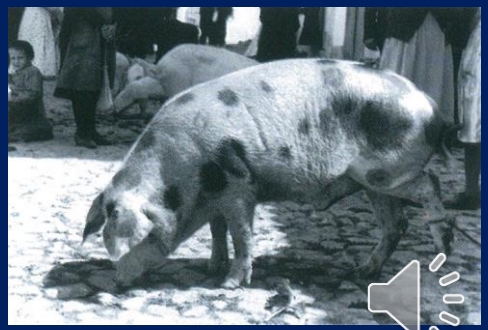
Managing the herdbook of an endangered Portuguese swine population: the Malhado de Alcobaça pig

Vicente A., Roque, A., Bastos, J. & Carolino N.

71st Annual Meeting of European Federation of Animal Science
Virtual Meeting - December 2020

Malhado (spotted) de Alcobaça

- 3rd Portuguese native swine breed
  - Recognized in 2003
  - Herdbook with info of more than 11,000 animals
    - ✓ From 1985 to 2020
  - Current population with more than 10 known generations
- Very endangered breed
  - Only 211 breeding sow, 12 boars and 9 active breeders



Managing the Herdbook

- Since 2014 all candidates for breeding are graded for morphology in 5 different marks
  - Also ear tagged and simultaneously tissue collected for DNA analysis
    - ✓ Parentage testing, stress syndrome test (HAL) and genetic characterization
    - ✓ Herdbook credibility for all breeding stock

Morphological gradings

- From 448 graded pigs (415 sows; 33 boars)
  - Descriptive statistics, study of linear and quadratic effect of age at grading
  - Study effects of breeder, gender and year
- Average age at grading: 15.87±8.88 m
  - ♀: 15.96±8.99; ♂: 14.61±7.35
- Only 7 breeders produced breeding sows and boars
  - 4 responsible for 83% of breeding stock
  - Increasing levels of inbreeding

Morphological gradings

	Trait	Mean±SD	CV(%)	Min	Max
SOWS (n=415)	Age at grading (m)	15.96±8.99	**56.33**	6.63	72.6
	Type & development (1.5)*	8.53±0.72	8.45	6	10
	Back, loin & croup (2)*	8.32±0.68	8.18	7	10
	Shoulders, chest, belly, flanks (3)*	8.24±0.64	7.76	7	10
	Legs, stances & gaits (2.5)*	8.00±0.81	10.09	5	10
	Sexual charact., genitals nipples (1)*	8.43±0.66	7.81	6	10
	Overall Score (OS)	82.47±4.42	5.36	70	95.5
BOARS (n=33)	Age at grading (m)	14.61±7.35	50.31	6.73	42.77
	Type & development (2)*	8.70±0.68	7.86	7	10
	Back, loin & croup (2.5)*	**8.76±0.56**	6.40	8	10
	Shoulders, chest, belly, flanks (2)*	8.33±0.60	7.14	7	10
	Legs, stances & gaits (2.5)*	7.88±0.89	**11.33**	6	10
	Sexual charact., genitals nipples (1)*	8.45±0.67	7.87	6	9
	Overall Score (OS)	**83.97±4.61**	5.49	75	**96**
	Overall Score (♀+♂)	82.58±4.45	5.39	70	96

SD - Standard Deviation; CV - Coef. Variation; * Weighting coefficient for OS

Morphological gradings

- Globally boars obtained +1.5 pts
- Score for legs the lowest with ⇑CV
- Breeder and year of grading significant

Effect	TD	BLC	SCBF	LSG	SCGN	OS
Breeder	**	**	**	**	*	**
Year of grading	*	**	**	*	**	**
Gender	ns	**	ns	ns	ns	ns
Age at grading	ns	ns	**	ns	**	*
Age at grading^2	ns	ns	**	ns	*	ns

*** p <0.05; ** p <0.01; ns - not significant**

71st EAAP, Vicente et al. 2020

Malhado de Alcobaça

THANKS!

Book of Abstracts of the 71st Annual Meeting of the European Federation of Animal Science

Book of abstracts No. 26 (2020)
Virtual Meeting
1-4 December 2020

Growth performance in Bísaro pigs under different feeding regimes

S. Botelho Fontela[1], C. Castelo[2], G. Paixão[1], R. Payan-Carreira[3] and A. Esteves[1]
[1]Animal and Veterinary Research Centre (CECAV), Quinta de Prados, 5000-801, Portugal, [2]Associação de Criadores de Suínos da Raça Bísara (ANCSUB), Edifício da Casa do Povo, Largo do Toural, 5320-311 Vinhais, Portugal, [3]MED – Mediterranean Institute for Agriculture, Environment and Development, University of Évora, 7006-554 Évora, Portugal; sbotelho@utad.pt

Bísaro pig is a Portuguese breed presenting the largest expression in the north of the country. The high industrialisation of the sector almost led this breed into extinction, and to be raised in mainly small family farms. With the implementation of a conservation program this rustic breed was recovered and due to the excellent meat and meat products quality is nowadays a prized asset in the region. The aim of this study was to evaluate the live weight of the piglets after weaning in three farms with different feeding regime. A total of 36 piglets were studied across the farms, starting at the age of 8 weeks old until 17 weeks old. All the animals were fed with growth commercial diets according to the farm's routine management and had water *had libitum*. The pigs were housed in indoor group pens, separated from the females albeit cohabiting the same room. The live weight records were taken every 15 days, and the amount of feed was recorded each time it was placed in the feeders. Average daily gain was significantly different in all three farms ($P<0.001$) as well as the feed intake ($P<0.001$). Data shows that Farm 3 was not feeding the animals enough to promote ideal growth, as shown by the feed conversion rate ($P<0.001$). In conclusion, the three different farms had very different feeding managements, and some did not promote optimal development of the animals. This results are important to the farmers as they can improve the animal production, obtaining larger and healthier pigs and, therefore, more profitable. This work was supported by the project Icas- Bísaro (reference nº. PDR 2020-101-031029) and the project UIDB/CVT/00772/2020 funded by the Fundação para a Ciência e Tecnologia (FCT).

Managing the herdbook of an endangered Portuguese swine population: the Malhado de Alcobaça pig

A. Vicente[1,2,3,4], A. Roque[4], J. Bastos[2] and N. Carolino[1,3,5]
[1]Sociedade Portuguesa Recursos Genéticos Animais, SPREGA, Santarém, 2005-048, Portugal, [2]Federação Portuguesa Associações Suinicultores, FPAS, Montijo, 2870-219, Portugal, [3]CIISA, Faculdade Medicina Veterinária, Lisboa, 1300-477, Portugal, [4]Escola Superior Agrária, IPSantarém, Santarém, 2001-904, Portugal, [5]Instituto Nacional Investigação Agrária Veterinária, INIAV, Santarém, 2005-048, Portugal; carolinonuno@hotmail.com

Malhado de Alcobaça breed is the 3rd Portuguese native swine breed and represents a population from the centre west of Portugal and was officially recognised in 2003. The herdbook has information of more than 11,000 animals (1985-2020) and the last animals have more than 10 known generations on their pedigree. It´s a very endangered breed with only 211 breeding sows, 12 boars and 9 active breeders. Since 2014 all candidates for breeding must be submitted to a grading process by analysing their morphology under 5 marks and, at the same time, placing an ear tag ID, collecting, simultaneously, tissue for DNA analysis, for parentage testing and genetic characterisation. All data from the gradings was analysed to obtain the descriptive statistics and the linear and quadratic effect of age at grading, besides considering the effects of breeder, gender and year. Since 2014, 448 pigs where graded (415 sows and 33 boars) with average age of 15.87±8.88 months (15.96±8.99♀; 14.61±7.35♂). Only 7 different breeders produced breeding sows and boars, and 4 of them are responsible for 83% of the breeding stock in use. For the grading grid (scale with maximum of 10 pts.) the average scores for morphology were 8.54±0.72 pts for type and development; 8.35±0.68 pts for back, loin and croup; 8.24±0.64 pts for shoulders, chest, belly and flanks; 7.99±0.81 pts for legs, stances and gaits; and 8.43±0.66 pts for sexual characteristics, genitals and nipples, obtaining and overall sum of 82.58±4.45 pts. Globally boars obtain more 1.5 points than sows and the score for legs was the lowest with higher coefficient of variation. Breeder and year of grading were significant ($P<0.05$) for all morphological traits analysed and gender was only significant ($P<0.001$) for back, loin and croup. Age at grading had a significant linear effect ($P<0.05$) in Overall sum and for some partial morphological scores. Acknowledgement: Project CIISA UID/CVT/00276/2020.