

## ALTERNATIVE SYSTEMS USED IN MANGALITA SOWS EXPLOITATION

G. Hoha<sup>1\*</sup>, B. Pășărin<sup>1</sup>, Elena Costăchescu<sup>1</sup>, C. Radu<sup>1</sup>, Adina Petreanu<sup>2</sup>

<sup>1</sup> University of Agricultural Sciences and Veterinary Medicine Iasi, Romania

<sup>2</sup> Grupul Școlar Vasile Bacalu Mahmudia, Constanța, Romania

### Abstract

*This study is an experiment which was carried out to compare the reproductive performance of Mangalita sows exploited in two different breeding systems: traditional and intensive. We investigated several reproductive parameters: the age at the first insemination, weight at the first insemination, prolificacy, amount of piglets farrowed dead, piglets average weight at birth and the survival percentage till weaning. The results were better on all analyzed indicators in intensive system, compared to the traditional system (age at first mating 280 vs 345 days, average prolificacy 7.85 vs 7.1 piglets, piglet average weight at birth 1.1 vs 1.05kg etc.). The results indicated that both exploiting systems can be successfully adopted as production systems. The choice of husbandry system should depend especially on market requirements for such products.*

**Key words:** Mangalita, sows, exploiting systems

### INTRODUCTION

The system of industrial pig production has caused an accelerated decrease in local pig population worldwide, and especially in Europe, after the middle of the last century. According to FAO reports nowadays the remained races in Europe constitute almost 30% of the whole pig genetic resources with nearly 165 pig breeds. Several fatty pig breeds are still in danger of extinction, but fortunately lots of them have been re-discovered in the 1980–90ies by breeders, the meat industry, consumers and researchers again [1, 2].

The objective of oldest or modern pig breeding is to exhaust the genetic potential in reproduction performance of sows regarding to litter size and number of weaned piglets per litter [4, 5, 6]. Profitability of piglet production depends on litter size very high [1, 2, 7].

This study aims to compare the reproductive performance of Mangalita sows exploited in two different breeding systems: traditional and intensive.

### MATERIAL AND METHODS

Sows that have participated in this experience were exploited in two farms: one type extensively, and one intensive type.

All sows were of experience was from Mangalita breeds, red variety. Reproductive traits were analyzed from a total of 20 sows during two calving. They were the first mating age, weight at first calving, number and weight of piglets in each farrowing, number of piglets weaned and their weight.

In extensive systems, sows were maintained throughout gestation in the group of 20 individuals, in the paddock of approximately 500 m<sup>2</sup>. Calving period of maternity took place in individual boxes with an area of 8 m<sup>2</sup>.

The intensive system sows were kept in groups of 20 individuals, with an area of 1.8 m<sup>2</sup> per animal. Pregnant sows were kept in individual stalls in the first month of gestation and then transferred to common pens. Calving period of maternity took place in individual boxes, with limitation of movement of sows, with an area of 3 m<sup>2</sup>.

Data were analyzed and processed using Fisher's test.

---

\*Corresponding author: gabihoha@yahoo.com

The manuscript was received: 04.04.2012

Accepted for publication: 20.04.2012

**RESULTS AND DISCUSSIONS**

Age optimal breeding sow occur when body weight reach a certain influencing the number of piglets produced, and their weight at birth. Gilts using a lower body weight will have negative impact on fetal development and therefore, piglets born will have lower body weights and lower viability.

In general, gilts should be introduced first to mount after touching body weight of 95-100 kg, and at the age of about eight months, the improved breeds, and at age 10-12 months late as the breed.

In table 1 are shown the age and the weight at the first insemination of Mangalita breed.

Table 1 The age and the weight at the first insemination of Mangalita breed

Breeding systems		MU	N	Statistical parameters			Limits	
				$\bar{X} \pm s_{\bar{X}}$	s	V%	Minimal	Maximal
Traditional	Age	days	15	345± 6.45	29.45	14.40	305.00	402.00
	Weight	Kg	15	108± 1.52	6.24	6.78	98.50	118.00
Intensive	Age	days	15	280± 7.22	26.14	14.28	280.00	337.00
	Weight	Kg	15	104.7± 1.43	5.13	6.21	95.00	114.00

Mean age at first mating was 345 days in traditional system and 280 days in intensive system higher than in other breeds and hybrids of high productivity [2, 3, 4, 5].

When compared with the data presented by Istvan Egerszegi et al. (2003) for the Hungarian Mangalița, this advances growth by 1-3 months. Not all the animals have identical responses to the improved feed and keeping. There are animals that were used in reproduction at 280 days but also animals that achieved the same stage only at 402 days.

Average weight at first mating was in traditional system 108 kilograms with a minimum 98.5 and maximum of 118 kg, and for intensive system 104.7 kilograms with a minimum 95 and maximum of 114 kg.

However, the use of such technology depends on the possibility to recuperate the invested resources by an increase in the number of piglets.

Reproductive capacity in pigs is assessed by prolificacy, which requires a complex application and enforcement activities and measures, some dependent animal, and others related to ensuring the environment, ending with the number and

quality of weaned piglets during a production year. The number of piglets weaned is higher and fertility is good quality even better. Prolificacy is conditioned by ovulation rate, fecundity, nidation of zygotes, as well as by embryonic and fetal mortality.

Data on the Mangalita sows reproductive characteristics are presented in table 2.

From the data presented in table 2, it could be noticed that prolificacy, expressed by the amount of farrowed piglets calved, was higher in intensive system than in the traditional systems, during the 2 calving. Expressed in relative terms, these differences were comprised between 9.56% and 8.66%.

The number of piglets per female is higher than the breed average even for the first birth. Other authors [Pop T.M. et al., 1993] mention that the average for Romanian Mangalița is 5 to 6 piglets, the Hungarian Mangalița being similar with 4-7 piglets, the sows in our study have a mean of 7.35 animals for traditional system and 8.08 animals for traditional system.

There are sows that have given birth to 5 piglets and others for which the number is up to 10.

Table 2 Reproductive characteristics of Mangalica breed

Breeding systems	Characteristics		MU	N	Statistical parameters			Limits	
					$\bar{X} \pm s_{\bar{x}}$	s	V%	Min.	Max
Traditional	Piglets at first birth:	Number	Head	15	7.1± 0.25	1.52	17.23	5	10
		Weight	Kg	15	1.1± 0.02	0.18	15.21	0.90	1.4
	Piglets at second birth:	Number	Head	15	7.6± 0.29	1.48	18.11	6	10
		Weight	Kg	15	1.1± 0.04	0.16	15.33	0.95	1.44
Intensive	Piglets at first birth:	Number	Head	15	7.85± 0.21	1.44	18.14	6	10
		Weight	Kg	15	1.05± 0.02	0.17	15.78	0.9	1.35
	Piglets at second birth:	Number	Head	15	8.32± 0.24	1.49	17.33	6	10
		Weight	Kg	15	1.08± 0.03	0.18	16.18	0.9	1.40
Traditional	Piglets weaned after the first birth:	Number	Head	15	5.78± 0.28	1.42	23.14	5	10
		Weight	Kg	15	5.90± 0.03	1.10	16.56	4.52	7.21
		Mortalities	Head	15	1.32± 0.03	1.02	8.07	0	2
	Piglets weaned after the second birth:	Number	Head	15	6.4± 0.32	1.51	22.35	5	10
		Weight	Kg	15	6.05± 0.04	1.18	17.42	5.25	8.37
		Mortalities	Head	15	1.2± 0.02	1.01	7.12	0	2
Intensive	Piglets weaned after the first birth:	Number	Head	15	6.73± 0.21	1.55	22.73	6	10
		Weight	Kg	15	6.05± 0.03	1.18	15.16	4.92	7.40
		Mortalities	Head	15	1.12± 0.02	1.01	7.04	0	2
	Piglets weaned after the second birth:	Number	Head	15	7.27± 0.26	1.49	24.41	5	10
		Weight	Kg	15	6.15± 0.03	1.37	16.13	5.44	8.60
		Mortalities	Head	15	1.05± 0.02	1.01	7.15	0	2

Better feeding and keeping are considered to be the main reason for the improvement on breed average, but we haven't noticed any direct correlation between female weight at mating and the number of piglets. Also, the genetic make up of each animal has a great influence on these results.

Mean piglet weight on the first birth was 1.01 kg for traditional system and 1.05 kg for intensive system, the limits being 0.9-1.44 kg. For the sows that give birth to a number of piglets close to breed average, their number and weight are not proportional.

Mean piglet weight on the second birth is close to that registered on the first birth. This is in accordance with the research [3, 4, 6, 7] who have shown that in Mangalița sown during the first month of gestation the increase in length of the uterus and horns is minimal although the increase in weight is significant.

It should also be noticed the high percentage of weaned piglets, from the farrowed ones, meaning approximately 80 - 85% in both systems.

The early weaning of the piglets was possible because they had switched from milk to feed and were eating enough to sustain physiological processes and growth. In traditional system 80% of the piglets from the first birth were weaned and 20% died and in intensive system 85% of the piglets were weaned and 15% died.

The lack of experience and a reduced maternal instinct, a characteristic of the breed were the main causes for this occurrence. The decrease in mortality despite an increase in the number of piglets and a reduction of their weight is a consequence of the females acquiring experience.

The piglets have a mean weight of 5.95 kg for traditional system and 6.05 for intensive system indicating a low growth rate. There are

animals with a weight of 4.52 kg together with others that have 7.21 kg. The average weight of the piglets is close to the one registered for the first birth, the limits being between 5.25 kg and 8.37 kg, the animals being more similar to one another.

### ACKNOWLEDGEMENTS

“This work was cofinanced from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, project number POSDRU/I.89/1.5/S62371 Postdoctoral School in Agriculture and Veterinary Medicine area”.

### CONCLUSIONS

1. Weight and age at first mating were lower in intensive system (104.7 kg and 280 days) than the traditional system (108 kg and 345 days).

2. Number of piglets farrowing and number of piglets weaned were lower in intensive system (8.08 and 7.00) than the traditional system (7.35 and 6.05).

3. Based on these results we conclude that the system breeding influence productions at Mangalita breeds.

4. The Mangalica pig is a representative example for the success of preserving endangered breeds. Its population is continuously increasing in all colour types

although the number of Swallow Belly and Red Mangalica is still critical.

### REFERENCES

- [1]. Egerszegi I., Torner H., Rátky J., Brüssow K.P., 2001 - Follicular development and preovulatory oocyte maturation in Hungarian Mangalica and Landrace gilts. Arch. Tierz., Dummerstorf 44, 413-419;
- [2]. Egerszegi I., Brüssow K.P., Sarlós P., Tóth P. and Rátky J., 2008- Effect of early pregnancy diagnosis on reproductive performance in native Mangalica pigs Reprod Dom. Anim 43, 85-91;
- [3] Hoha G., Păsărin B., Costăchescu Elena, Fotea Lenuța, 2010 - Researches about the reproduction performances obtained by the Mangalica sows at first parturition, Simpozion USAMV Iasi, vol. 53: 12-15;
- [4] Miclea V., Zăhan M., Miclea Ileana, 2009 - Characterization of the reproductive activity of sows belonging to a Mangalita swine population, Simpozion USAMV Iasi, vol. 52, 31-34;
- [5] Pop T.M., Vlaic A., Spădaru F., Moldovan I., Bidian Altina, 1993 - Cercetări privind structura genetică a unei populații de suine din rasa Mangalița pentru fundamentarea elaborării planului de ameliorare, Simpozion USAMV, Cluj-Napoca, 1993, vol. XIX: 186-192;
- [6] Rátky J., Brüssow K.P., Egerszegi I., 1998- Ovarian activity in gilts including some characteristics of a native breed. Reprod. Dom. Anim. 33, 219-222;
- [7] Zsolnai A., Radnóczy L., Fésüs L. and Anton I., 2006 - Do Mangalica pigs of different colours really belong to different breeds? Archiv Tierzucht 49 (5):477-483.