

CHARACTERIZATION OF THE REPRODUCTIVE ACTIVITY OF SOWS BELONGING TO A MANGALITA SWINE POPULATION

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Abstract

The number of pigs belonging to the Mangalița breed is currently under rapid decline. As a consequence is the need for a conservation program presents itself. It should include the breed's characterization from a morphological and productive point of view. Therefore, our aim has been to establish reproductive indexes for 25 sows belonging to a population kept at SUINPROD Roman. Research on these animals will continue, the final goal being to preserve it ex situ. Following bibliographical investigations we have concluded that an intensive rearing system reduces the age of the first mating to 9.2 months, the sows having 106.52 kg and the number of piglets is above breed average. The mean number of piglets increases from the first birth (7.96 piglets) to the third (8.46 piglets) without any negative influence on their weight which is between 1.0 – 1.04 kg. Mortality rates are the highest for young sows (13.56%) decreasing steadily as the animals get older. With optimum rearing and feeding piglets are weaned at 30-32 days. The total weight of the piglets at weaning rises, due to improvement in sow ability to feed them.

Key words: sows, reproductive indexes, Mangalița

INTRODUCTION

Mangalița is one of the oldest swine breeds that have been replaced, in Romania as well as in other eastern European countries by more economically efficient hybrids that suited consumer demands better. The danger of extinction has led to the establishment of *in situ* conservation programs. Preserving genetic resources is widely supported by government and non-governmental organizations, which are involved in over 360 such programs all over Europe [7]. The importance of conserving biodiversity stems from its scientific and economic significance coupled with the social and historical importance [6].

The preservation of certain breeds entails keeping and rearing a certain number of animals but also organising reproductive and selection activities. Considering this our goal has been to characterize the reproductive activity of Mangalița sows during 2008, even if this has already been attempted by other authors [4].

MATERIALS AND METHODS

The sows used in this research came from the genetic stock kept at SCDA Turda. Some of the animals were transferred to SUINPROD Roman where Mangalița boars from Hungary and Austria had been brought, to avoid inbreeding. All the animals belong to the red Mangalița variety.

The sows were kept in groups of 15-20 animals in a perimeter of 1-1.2 m²/animal. Pregnant sows were kept in individual stands for the first month and then transferred to group stands. They were fed so as to ensure the necessary amount of protein and energy for physiological processes and production.

Reproductive characteristics were measured for 25 animals selected according to the following criteria: the accuracy of phenotypic traits and genetic purity established with the help of fingerprinting using microsatellites technique.

The fact that most sows had already given birth three times enabled us to easily follow their reproductive characteristic. These were

represented by age, weight at the first mating, number and weight of piglets at every birth, number of live and dead born piglets and weight at weaning. Piglets were weaned at 30-32 days much faster than in the extensive rearing system.

Data was analyzed using ANOVA by computing mean, standard error of the mean, standard deviation and variation coefficient.

RESULTS AND DISCUSSION

The age of the first birth was considered to be very important as it is the end of a long interval of investment in the animal without any production. Feeding and keeping young sows in our experimental conditions reduced the growth time so that the animals can be used for reproductive purposes at 276.16 days (9.2 months approximately) when their weight is 106.52 kg. 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 248 days but also animals that achieved the same stage only at 318 days. All mated animals were between 97-115 kg, thus proving the importance of weight for reproductive maturity. Improved rearing conditions for Mangalița sows help the animals reach the correct weight or reproduction faster. However, the use of such technology depends on the possibility to recuperate the invested resources by an increase in the number of piglets.

The number of piglets per female is higher than the breed average even for the first birth. Other authors [4] 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 7,96 animals. There are sows that have given birth to 5 piglets and others for which the number is up to 10. 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 1.04 kg, the limits being 0.8-1.46 kg. For the sows that give birth to a number of piglets close to breed average, their number and weight are not proportional. Piglet weight for females with a high number of offspring per litter is low while for sows with a low number the weight is high.

On the second birth the average number of piglets is 8 animals, the limits being between 6 and 10. At 1.01 kg mean piglet weight is close to that registered on the first birth.

This is in accordance with the research of Ratky et al. (2005) [5] 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. The lack of growth in length is probably the reason for the reduced number of piglets but it may also favour an increase in their weight.

At the third birth the average number of piglets per female is 8.46. The lower limit for this characteristic is close to the values registered from the first two births. Therefore, we can recommend the removal of sows that give birth to a small number of piglets after the first birth. Piglet average weight is around 1000 g, the differences being due to a decrease of the higher limit.

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. 86.34% of the piglets from the first birth were weaned and 13.57% died. The lack of experience and a reduced maternal instinct, a characteristic of the breed were the main causes for this occurrence. The piglets have a mean weight of 6.11 kg indicating a low growth rate. There are animals with a weight of 3.57 kg together with others that have 8.57 kg. Considering growth rate and weight, piglets were weaned at 32 days. 90% of the piglets born after the second mating were weaned. 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

average weight of the piglets is similar to the one registered for the first birth, the limits being between 4.5 kg and 7.57 kg, the animals being more similar to one another.

Table 1
 Mean values and the variation of reproductive characteristics

Characteristics	MU	n	Statistical parameters			Limits	
			X ± sx	s	V%	Minimal	Maximal
Sows mated for the first time:	days	25	276,16 ± 7,51	37,54	13,59	148,00	318,00
- age	kg	25					
- weight			106,52 ± 1,07	5,35	5,02	97,00	115,00
Piglets at first birth:							
- number	animals	25	7,96 ± 0,3	1,49	18,66	5,00	10,00
- litter weight	kg	25	8,14 ± 0,20	1,01	12,42	6,00	9,80
- average weight	kg	25	1,04 ± 0,03	0,16	15,50	0,80	1,46
Piglets at second birth:							
- number	animals	25	8 ± 0,2	1,00	12,50	6,00	10,00
- litter weight	kg	25	8,05 ± 0,09	0,49	6,09	7,20	8,90
- average weight	kg	25	1,01 ± 0,02	0,12	11,53	0,76	1,31
Piglets at third birth:							
- number	animals	13	8,46 ± 0,29	1,05	12,41	7,00	10,00
- litter weight	kg	13	8,36 ± 0,19	0,69	8,25	6,90	9,30
- average weight	kg	13	1 ± 0,03	0,10	9,62	0,80	1,16
Piglets weaned after the first birth:							
- number	animals	25	6,88 ± 0,32	1,59	23,10	4,00	10,00
- litter weight	kg	25	41,57 ± 2,02	10,10	24,31	30,00	60,00
- average weight	kg	25	6,106 ± 0,2	1,01	16,55	3,57	8,57
- mortalities	animals	25	1,08 ± 0,2	1,00	92,28	0,00	3,00
Piglets weaned after the second birth:							
- number	animals	25	7,2 ± 0,16	0,82	11,34	5,00	8,00
- litter weight	kg	25	44,24 ± 1,21	6,06	13,70	36,00	55,00
- average weight	kg	25	6,17 ± 0,15	0,76	12,26	4,50	7,57
- mortalities	animals	25	0,8 ± 0,17	0,87	108,25	0,00	3,00
Piglets weaned after the third birth:							
- number	animals	13	7,46 ± 0,14	0,52	6,95	7,00	8,00
- litter weight	kg	13	48,23 ± 1,75	6,32	13,11	34,00	57,00
- average weight	kg	13	6,47 ± 0,21	0,77	11,88	4,85	7,85
- mortalities	animals	13	1 ± 0,28	1,00	100,00	0,00	3,00

The piglets produced by sows on the third birth have 6.46 kg at weaning, the average number of deaths being 1 per sow. They too are more similar to one another, the difference between the lower and the higher limits being of only 3 kg (4.85 – 7.85 kg).

CONCLUSIONS

Reproductive activity of Mangalița sows can be characterized following the dynamic analysis of piglet number, weight and mortality as follows.

1. Intensive rearing decreases the age of reproductive maturity to 276.16 days, the sows having 106.52 kg and increases the number of piglets from the first birth above breed average.

2. The number of piglets increases from 7.96 animals (first birth) to 8.46 animals (second birth)

3. Piglet average weight at birth is not influenced by sow prolificacy and it is between 1.00 and 1.04 kg.

4. The percentage of dead piglets is highest for the first birth (13.56 %),

decreasing by 10.00% (second birth) because of improved maternal behaviour.

5. When intensively reared Mangalița can be weaned at 30-32 days, their weight being between 6.01 – 6.47 kg/animal.

6. Total piglet weight at weaning increases steadily because of sow ability to produce better milk for more piglets.

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